JOURNAL OF THE MALAYSIAN INSTITUTE OF PLANNERS

PLANNING MALAYSIA

MALAYSIA INSTITUTE OF PLANNERS
PLANNING MALAYSIA VOLUME 21 ISSUE 1 (2023)
[ISSN 1675-6215] e-ISSN 0128-0945]
www.planningmalaysia.org

PLANNING MALAYSIA

Journal of the Malaysian Institute of Planners

Editorial & Business Correspondence
PLANNING MALAYSIA
Journal of the Malaysian Institute of Planners
B-01-02, Jalan SS7/13B, Aman Seri, Kelana Jaya
47301, Petaling Jaya, Selangor Darul Ehsan, MALAYSIA
Tel: +603 78770637 Fax: +603 78779636 Email: mip@mip.org.my
www.planningmalaysia.org

This journal is a refereed journal.
All articles were reviewed by two or three unanimous referees identified by the Institute (MIP).

Published By
Malaysian Institute of Planners

ISSN Number
1675-6215
e-ISSN
0128-0945

Date Published: 28th April 2023

CONTENTS

MIP Council Members
2023 - 2025 Session

President
Datin TPr. Hjh Noraida Saludin (468/02)

Immediate Past President
TPr. Hj Ihsan Zainal Mokhtar (305/94)

Vice President
TPr. Hj. Abdul Hamid Akub (450/01)
TPr. Wan Andery Wan Mahmood (572/10)

Honorary Secretary
TPr. Juwairiyah Ho Abdullah (453/02)

Honorary Treasury
Datin TPr. Mazrina Dato' Abdul Khalid (559/09)

Council Members
TPr. Mohamad Fauzi Ahmad (418/99)
TPr. Abdul Halim Ali Hassan (407/98)
TPr. Saiful Azman Abdul Rashid (474/03)
Asst. Prof. TPr. Dr. Syafiee Shuid (813/21)
TPr. Hj Nik Mohd Ruiz Ahmad Fakhrul Razy (570/10)
TPr. Rene Fu Swee Yun (553/99)
TPr. Dr. Marlyana Azyyati Marzukhi (582/11)
TPr. Annie Syazrin Ismail (670/17)
TPr. Diyanah Inani Azmi (839/22)
TPr. Young Elias Young Daud (815/21)

PLANNING MALAYSIA:
Journal of the Malaysian Institute of Planners
VOLUME 21 ISSUE 1 (2023), Page 1 – 11

RESPONSIBLE TOURISM AND QUALITY OF LIFE AMONG THE LOCAL COMMUNITY IN CAMERON HIGHLANDS

Aikal Liyani Mohd Rasdi[1], Ahmad Puad Mat Som[2], Nur Shahirah Mior Shariffuddin[3]

[1]*Faculty of Hospitality, Tourism and Wellness*
UNIVERSITI MALAYSIA KELANTAN
[2,3]*Faculty of Applied Social Science*
UNIVERSITI SULTAN ZAINAL ABIDIN

Abstract

The primary objective of the research is to examine at the relation between responsible tourism and community quality of life. A questionnaire survey was carried out to gather responses from a sample of 322 locals from the Malaysian Cameron Highlands' Ulu Telum, Tanah Rata, and Ringlet subdistricts. The data analysis revealed that there was no correlation between the quality of life in the local community and any of the four pillars of responsible tourism (economic, environmental, social, and cultural). Although tourism has an impact on locals' quality of life in tourist destinations, it can only measure residents' opinions and not their actual experiences. Or, to put it another way, it may not be appropriate to assess locals' quality of life using indices of tourist impacts. According to the findings of this study, the components of responsible tourism may only partially represent the quality of life among local communities affected by tourism in a host community. The results of this study suggest that the elements of responsible tourism might need to accurately reflect the quality of life of the local communities impacted by tourism in a host community.

Keywords: Quality of Life, Local Community, Responsible Tourism, Cameron Highland

[2] Professor at University Sultan Zainal Abidin Email: puadms@unisza.edu.my

INTRODUCTION

In recent years, regardless of the outcome, sustainable development has become an important aim of any human activity, including the tourism industry (Miocic et al., 2016). Aside from the favourable economic advantages, tourism has a detrimental influence on some places by deteriorating local populations' environment and socio-cultural aspects. As a result, tourism has emphasised the importance of sustainable development at all levels. However, the industry faces a number of sustainability challenges, including resource manipulation, economic uncertainty, and changes in tourism demand, prompting tourism policymakers to promote and provide the benefits of renewal and resilience to residents and areas (Hanafiah et al., 2016). The idea of sustainable tourism has long presented a conundrum to those working in the business, as well as to policymakers, researchers, and governments. Confusion occurs from tourism's rapid growth, which can harm the environment because it is frequently regarded in economic terms (Azinuddin et al., 2022a). Hence, responsible tourism was presented and formed in tourism study and practice in response to these difficulties in order to improve the existing sustainable tourist development (Caruana et al., 2014; Spenceley, 2010). There has been a rising public interest in the notion of responsible tourism, a movement that aims to reduce any negative consequences of travel activities (Weeden, 2014). Tourism requires a high level of responsibility (Goodwin, 2011). Responsible tourism has therefore become a viable solution to several urgent challenges such as excessive destination attractions (Hanafiah et al., 2016).

The lives of the people in a community are impacted by tourism once it becomes a destination; hence, the support of the whole population in the tourist community is critical for tourism development, planning, operational success, and sustainability (Aman et al., 2013; Jurowski, 1994). Indeed, community lifestyles are thought to affect structural changes in the business, such as local economic, social-cultural, and environmental improvements, through sustainable tourism expansion (Dyer et al., 2007). For a start, the locals are able to get crucial insights into the plans of networking events or programmes that are beneficial for the expansion and development of tourism attractions and businesses through recognising the characteristics of Small and Medium-Sized Tourism Enterprises (SMTEs) entrepreneurs (Azinuddin et al., 2020). Therefore, finding the ideal balance between the financial return and the preservation of sociocultural diversity and the environment has become difficult for those involved in the tourism industry (Azinuddin et al., 2022b).

According to Faulkner and Tideswell (2010), while expanding tourism in a community, the citizens' perceived quality of life is a crucial factor to consider; hence, the effects of tourism on quality of life should be regularly examined to minimise any negative consequences. Various studies have discussed the potential consequences of tourism on citizens' quality of life,

according to Alonso and Nyanjom (2016), but not in connection to sustainable tourism, especially responsible tourism. As a result, this paper focuses on responsible tourism and the local community's quality of life in Malaysia.

LITERATURE REVIEW

Responsible Tourism

The definition of responsible tourism has been a source of heated discussion, both in theory and in reality (Caruana, 2014). According to Weeden (2014), responsible tourism focuses on minimising environmental interference, respecting cultural variety, boosting local people's engagement in delivering tourist services, and increasing consumer and visitor happiness. Responsible tourism focuses on the responsible consumption of tourist products and the economic, social, and environmental impacts and advantages that this sort of tourism should have on the environment and local communities (Petrovici, 2014). Responsible tourism is a tourist management strategy aimed at maximising economic, social, and environmental advantages while minimising negative consequences for destinations (Xin & Chan, 2014).

According to Cooper et al. (2008), responsible tourism cannot be a viable alternative to mass tourism. Mass tourism, it is arguable, may cause a location to suffer from a slew of social and environmental issues. As it turns out, the notion of responsible tourism arose in response to mass tourism (McCabe et al., 2012; Wheeller, 1991). 'Sustainable tourism,' 'ecotourism,' and other natural and social tourism practises have many parallels to responsible tourism (Caruana et al., 2014). Sustainable tourism and responsible tourism have a tight link and are frequently used interchangeably (Glen, 2017). The purpose of responsible tourism and sustainable tourism is the same (Hanafiah et al., 2016). On the other hand, the notion of sustainability is accepted as a theory, whereas the concept of responsibility is accepted as a practice (Mihalic, 2016). Responsible tourism is a more realistic strategy than sustainable tourism (Glen, 2017).

According to Sariskumar and Bhavan (2018), Mathew and Nimmi (2021), responsible tourism may be classified into four dimensions: economic, social, cultural, and environmental.

1. Economic Responsibility

According to Mathew and Nimmi (2021), economic responsibility derived from responsible tourism strengthens the community's belief that tourism activities are aimed at generating better employment opportunities, upgrading skills, improving living standards, domestic procurement, and supporting local businesses. Their life domain satisfaction with material well-being, which reflects their contentment with personal goods and amenities, rises and improves as a result of their view of economic responsibility. Kim and colleagues (Kim et al., 2013).

2. Social Responsibility

Social responsibility requires combating the sexual exploitation of human beings, particularly the exploitation of minors, and being more sensitive to the host culture, preserving and supporting social and cultural diversity. Furthermore, when a community believes that responsible tourism practices in a particular destination are consistent with community goals, such as activities geared toward local community involvement, facilitating social development programmes, developing social infrastructure, and other socially relevant activities (Mathew & Nimmi, 2021).

3. Cultural Responsibility

According to Mathew and Nimmi (2021), responsible tourism is also responsible for maintaining local customs and culture. Local arts and culture promotion, the sale of regional mementoes, cultural exchange, and landscape maintenance are a few examples of how local culture, traditions, and customs are supported and encouraged. When it comes to community views, cultural responsibility initiatives can have a cascading impact, affecting people's emotional well-being perspectives. In such that a destination tends to make the most of its natural resources and potential while also considering the economic and social well-being of the society (Rasdi et al, 2022).

4. Environmental Responsibility

According to the Cape Town Declaration (2002), environmental responsibility is ensuring that negative consequences are minimised, and good benefits are maximised throughout the life cycle of tourism establishments and operations, including the planning and design phase.

Quality of Life

According to Ko (2014), residents' overall assessments of the connection between existing societal realities and ideals important to their lives can be described as quality of life. This operational definition looks at the community, concentrating on the subjective aspects of a citizen's life input. This enables local decision-makers to obtain feedback from individuals on how successfully local governments respond to local requests considering changing local conditions. The terms "quality of life," "happiness," "well-being," and "utility" are commonly used interchangeably (Yassin et al., 2011). Appreciating the community's quality of life helps local decision-makers evaluate how successfully local governments react to residents' demands and how efficiently local resources are allocated. The term "quality of life" refers to comparing a community's or society's well-being to a particular evaluation of an individual's or group's circumstances (Chahal and

Devi, 2016). According to Gullion et al. (2015), "quality of life" is a broad concept that may signify various things to different people.

Quality of life, as it pertains to the economic, social, and environmental goals (Cusack, 2019), and beyond the limited economic performance techniques, such as gross domestic product, may be the most important aim of sustainable development (Dwyer, 2020). Improved quality of life may be accomplished, according to Andereck and Nyaupane (2011), by expanding tourism offerings that can be enjoyed by residents, such as festivals, restaurants, natural and cultural attractions, and outdoor recreational possibilities. Andereck and Nyaupane (2011) identified eight domains of tourism quality of life, including community well-being, urban issues, the way of life, community pride and awareness, natural and cultural preservation, economic strength, recreation amenities, crime, and substance abuse in the context of tourism. Urban concerns, community economic strength, family and personal well-being, the way of life, and community awareness and amenities are the four tourism quality of life dimensions identified by Liang and Hui (2016).

RESEARCH DESIGN

This study employed a descriptive research approach using cross-sectional data. The data for this study was obtained at a single moment in time, hence it was a cross-sectional survey. A comprehensive review of prior research in similar fields was conducted in order to determine the instruments required for the questionnaire. The questionnaire is divided into three sections: Section A is for demographic information; Section B is for responsible tourism and Section C is for quality of life. The target population and sampling unit for this research is the local community who lives in Cameron Highlands, Pahang, Malaysia. Cluster sampling was utilised to approach the sample in this study since it is more accurate in terms of representing subgroups in samples and purposeful in terms of generalizability. According to Hair et al., (2007), cluster sampling considers the target population to be made up of diverse groupings, and geographic area sampling is the most common kind of cluster sample. A total of 400 questionnaires were distributed to the local community at three sub-districts in Cameron Highlands which are Ulu Telum, Tanah Rata and Ringlet. However, after doing a missing data assessment and data normality assessment, 78 questionnaires were rejected. There were only 322 questionnaires that accepted for further analysis. The collected data were analysed using the Statistical Packages for Social Sciences (SPSS) version 2.3 software for factor analysis, reliability testing, mean, frequency, standard deviation, Pearson's correlation, and linear and multiple regressions.

ANALYSIS AND DISCUSSION

From this study, 40.4 per cent of respondents were from the sub-district of Ulu Telum. About 50.6 per cent of respondents were males with 30.1 per cent aged between 21-30 years old and 40.4 per cent living in Cameron Highlands for more than 21 years. A total of 57.1 per cent of respondents were married, and the majority of them (64.3 per cent) were Malay and Muslim (66.8 per cent). Around 33.9 per cent had secondary school education and 32 per cent had income below RM1500. Results reported that most respondents were aware of responsible tourism (92.2 per cent) and 96 per cent had experienced responsible tourism.

The descriptive statistics analysis was conducted to describe and summarise the main characteristics of the data set on each dimension of responsible tourism and quality of life. The mean and standard deviation of each variable was computed to understand the variability and interdependence of the dimensions in this research. Table 1 presents the mean value for each construct that can be measured as high. Environmental responsibility is the highest mean score among all other variables. It indicates that respondents believe environmental responsibility is important for their quality of life.

Table 1: Descriptive Statistics for Each Construct

Variables	No. of Items	Mean	Std. Deviation
Economic Responsibility	8	4.3661	.47807
Environmental Responsibility	8	4.4686	.46940
Social Responsibility	8	4.2873	.49083
Cultural Responsibility	7	4.1925	.52341
Quality of Life	11	3.5960	.87656

Note: N=331
Measurement scale: 1- Strongly Disagree to 5- Strongly Agree
Measurement level: 1.00 – 2.49: Low; 2.50 – 3.49: Moderate; 3.50- 5.00: High

In this study, responsible tourism was evaluated from the perspective of local populations in Cameron Highlands, Malaysia, using four categories: 1) economic responsibility, 2) environmental responsibility, 3) social duty, and 4) cultural responsibility. The findings suggest that all aspects of responsible tourism are critical to responsible tourism activities. However, when compared to the others, environmental responsibility has the highest mean value. According to Costa (2019), the environment is concerned with the planet's natural resources and how society, communities, and companies use them. Since there were so many environmental difficulties in Cameron Highlands, environmental responsibility may be considered an essential component of responsible tourism.

As stated by Hair (2010), the correlations between the variables were analysed to examine the relationships between the variable of the model (significant and positive correlations). Based on Table 2, the results show that

there is no relationship between each independent variable and dependent variable ($p>0.05$). Because the p-value is greater than 0.05, the data demonstrate that there is no relationship between all components of responsible tourism and quality of life in the local community.

Table 2: Correlation between Responsible Tourism and Quality of Life

		TRT	TQOL
TRT	Pearson Correlation	1	.086
	Sig. (2-tailed)		.122
	N	322	322
TQOL	Pearson Correlation	.086	1
	Sig. (2-tailed)	.122	
	N	322	322

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

The result contradicts with previous study by Mathew and Kumar (2014), Mathew and Sreejesh (2017), Sariskumar and Bhavan (2018), Shaheb et al (2020) and Saldanha et.al (2020). However, Yu et al. (2014) suggested that while tourism impacts influence locals' quality of life in tourism destinations, measures for tourism impact can only capture residents' perceptions rather than their real lived experiences. It may not be appropriate to assess the quality of life of locals using indications of visitor impacts. The results of this study proposed that the elements of responsible tourism might not accurately reflect the quality of life among local communities impacted by tourism.

Natural diversity should be managed responsibly, restored, and the capacity and kind of tourism that the environment can sustain, as well as the integrity of vulnerable ecosystems and protected areas (Mathew & Kumar, 2014). Furthermore, most prior research concluded that environmental sustainability must be safeguarded for current and future generations as a natural ecosystem (Chalal and Devi, 2016; Sutawa, 2012; Ciraci, Turgut and Kerimoglu, 2008). As a result, the local community believed that environmental responsibility should be a significant concern while practising responsible tourism and sought advice from environmental and conservation professionals.

CONCLUSION

The results of this survey are based on replies from local individuals in a specific location. As a result, the findings cannot be fully generalised. If the data was obtained from several locations in Malaysia, the strength of the association between variables might change. It is worth noting that the survey instrument gathered responses on responsible tourism, destination sustainability, and quality

of life. As a consequence, like other survey studies, may introduce bias into the results.

Future research should broaden the geographic scope of the questionnaire distribution. This research is limited to Cameron Highlands in Pahang, Malaysia, and excludes other highland tourism attractions such as Genting Highlands and Frazer's Hills. In order to generalise the study's conclusions, it would be equally vital to widen the study's geographical scope. In addition, future research might include other geographic areas, such as island tourism destinations.

These findings may aid government agencies in better understanding individuals' complicated and changing requirements, resulting in more responsive policy decisions. Government authorities must consider public safety, parks and recreational services, natural environmental conservation, sanitation, emergency management, and local economic realities when allocating funds. As part of the tourism stakeholders, it is imperative that the government deliver competitive products and services, whilst maintain the tourist destination's prosperity and livelihood, networks, and expertise (Azinuddin, 2022c).

ACKNOWLEDGEMENT

This research was supported by Ministry of Higher Education (MOHE) through Fundamental Research Grant Scheme FRGS/1/2019/WAB12/UNISZA/01/1, titled 'Developing Typology and Institutional Framework of Overtourism to Enhance Destination Sustainability in Malaysia'.

REFERENCES

Alonso, A. D., & Nyanjom, J. (2016). Tourism, Quality of Life, and Residents of a Rural Town. *Tourism Analysis*, *21*(6), 617–629. https://doi.org/10.3727/108354216X14713487283165

Aman, O., Manap, A. A., Ismail, A. F., Kudus, N., & Rahmiati, F. (2013). The Impact Of Tourism Innovation On Quality Of Life Of Residents In The Community: A Case Study Of Sungai Melaka. *Journal of Human Capital Development*, *6*(1), 27–39.

Andereck, K. L., & Nyaupane, G. P. (2011). Exploring the Nature of Tourism and Quality of Life Perceptions among Residents. *Journal of Travel Research*, *50*(3), 248–260. https://doi.org/10.1177/0047287510362918

Azinuddin, M., Som, A. P. M., Saufi, S. A. M., Zarhari, N. A. A., Amin, W. A. A. W. M., & Shariffuddin, N. S. M. (2022a). Investigating overtourism impacts, perceived man-made risk and tourist revisit intention. *Planning Malaysia*, *20*(3), 239-254.

Azinuddin, M., Hafiz, M., Hanafiah, M., Mior Shariffuddin, N. S., Kamarudin, M. K. A., & Mat Som, A. P. (2022b). An exploration of perceived ecotourism design affordance and destination social responsibility linkages to tourists' pro-environmental behaviour and destination loyalty. *Journal of Ecotourism*, 1-24.

Azinuddin, M., Mior Shariffuddin, N. S., Hanafiah, M. H., Mat Som, A. P., & Wan Mohd Zain, W. M. A. (2022c). A systematic literature review on tourism networks, knowledge transfer, absorptive capacity, and performance. *Asia-Pacific Journal of Innovation in Hospitality and Tourism*, *11*(1), 179-218.

Azinuddin, M., Mior Shariffuddin, N. S., & Wan Mohd Zain, W. M. A. (2020). Profiling Entrepreneurs Inclinations Towards Networking: A Case of Small and Medium-Sized Tourism Enterprises (SMTEs) in Terengganu, Malaysia. *International Journal of Innovation, Creativity and Change*, *13*(5), 417-432.

Cape Town (2002) The Cape Town Declaration of Responsible Tourism in Destinations, August 2002. https://www.capetown.gov.za/en/tourism/Documents/Responsible%20Tourism/Toruism_RT_200 2_Cape_Town_Declaration.pdf

Caruana, R., Glozer, S., Crane, A., & McCabe, S. (2014). Tourists' accounts of responsible tourism. *Annals of Tourism Research*, *46*, 115–129. https://doi.org/10.1016/j.annals.2014.03.006

Chahal, H., & Devi, A. (2016). Impact of local community quality-of-life (QOF) on sustainable development of pilgrimage destinations: Mediating role of destination image. *International Journal of Applied Business and Economic Research*, *14*(4), 2627–2654.

Chahal, H., & Devi, A. (2016). Impact of local community quality-of-life (QOF) on sustainable development of pilgrimage destinations: Mediating role of destination image. *International Journal of Applied Business and Economic Research*, *14*(4), 2627–2654.

Çıracı, H., Turgut, S. & Kerimoğlu, E. (2008). A Governance Model for Sustainable Tourism Development: The Case of Frig Valley, İ.T.Ü. *Journal A/B/C/D: A, Architecture, Planning and Design, in Turkish, forthcoming, 7*(2), 89 -102.

Cooper, C. Hall, C. M. (2008). *Contemporary Tourism – an international approach,* Elsevier Butterworth-Heinemann, Oxford. European

Cusack, C. (2019). *Sustainable development and quality of life.* In Sinha, B. (Ed.), Multidimensional Approach to Quality-of-Life Issues, Springer, Singapore, pp. 43-58.

Dwyer, L. (2020). Tourism development and sustainable well-being: a beyond GDP perspective. *Journal of Sustainable Tourism*, doi: 10.1080/09669582.2020.1825457. published online.

Dyer, P., Gursoy, D., Sharma, B., & Carter, J. (2007). Structural modeling of resident perceptions of tourism and associated development on the Sunshine Coast, Australia. *Tourism Management,* 28, 409-422

Glen, N. (2017). *Sustainable Tourism Implementation for Small Accommodation Establishments in South Africa. University of South Africa.* http://uir.unisa.ac.za/handle/10500/23595

Goodwin, H. (2011). *Taking responsibility for tourism: Responsible tourism management.* Oxford: Goodfellow Publishers Limited

Gullion, C., Hji-Avgoustis, S., Fu, Y. Y., & Lee, S. (2015). Cultural tourism investment and resident quality of life: a case study of Indianapolis, Indiana. *International Journal of Tourism Cities*, *1*(3), 184–199. https://doi.org/10.1108/IJTC-08-2014-0018

Hair, J.F. Jr, Anderson, R.E., Tatham, R.L. and Black, W.C. (2007), Multivariate Data Analysis, 6th ed., Prentice-Hall, Englewood Cliffs, NJ.

Hanafiah, M. H., Azman, I., Jamaluddin, M. R., & Aminuddin, N. (2016). Responsible Tourism Practices and Quality of Life: Perspective of Langkawi Island communities. *Procedia - Social and Behavioral Sciences*, *222*, 406–413. https://doi.org/10.1016/j.sbspro.2016.05.194

Hanafiah, M. H., Azman, I., Jamaluddin, M. R., & Aminuddin, N. (2016). Responsible Tourism Practices and Quality of Life : Perspective of Langkawi Island communities. *Procedia - Social and Behavioral Sciences*, *222*, 406–413. https://doi.org/10.1016/j.sbspro.2016.05.194

Jurowski, C. (1994). *The interplay of elements affecting host community resident attitudes toward tourism: a path ana- lytic approach.* Unpublished doctoral dissertation. Virginia Polytechnic Institute and State University.

Kim, K., Uysal, M., & Sirgy, M. J. (2013). How does tourism in a community impact the quality of life of community residents? *Tourism Management*, *36*, 527–540. https://doi.org/10.1016/j.tourman.2012.09.005

Liang, Z. X., & Hui, T. K. (2016). Residents' quality of life and attitudes toward tourism development in China. *Tourism Management*, *57*, 56–67. https://doi.org/10.1016/j.tourman.2016.05.001

Mathew, P. V, & Sreejesh, S. (2017). Impact of responsible tourism on destination sustainability and quality of life of community in tourism destinations. *Journal of Hospitality and Tourism Management*, *31*, 83–89. https://doi.org/10.1016/j.jhtm.2016.10.001

Mathew, P. V., & Nimmi, P. M. (2021). Sustainable tourism development: discerning the impact of responsible tourism on community well-being. *Journal of Hospitality and Tourism Insights*. https://doi.org/10.1108/JHTI-02-2021-0052

Mathew, P., & Kumar, R. (2014). Responsible Tourism - A Grass Root Level Empowerment Mechanism: Case Study from Kerala. *Innovative Issues and Approaches in Social Sciences*, *7*(1), 53–70.

McCabe, A.S., Sharples, M. and Foster, C. (2012). Stakeholder Engagement in the Design of Scenarios of Technology-enhanced Tourism Services. *TourismManagement Perspectives,* 4: 36–44.

Mihalic, T. (2016). Sustainable-responsible tourism discourse - Towards "responsustable" tourism. *Journal of Cleaner Production*, *111*, 461–470. https://doi.org/10.1016/j.jclepro.2014.12.062

Miocic, B., Razovic, M., & Klarin, T. (2016). Management of sustainable tourism destination through stakeholder cooperation *. *Management*, *21*(2), 99–120.

Petrovici, A. (2014). Public Relations in Tourism. A Research on the Perception of the Romanian Public Upon Responsible Tourism. *Procedia - Social and Behavioral Sciences*, *163*, 67–72. https://doi.org/10.1016/j.sbspro.2014.12.287

Rasdi, A. L. M., Som, A. P. M., Azinuddin, M., Nasir, M. N. M., & Khan, N. F. A. H. (2022). Local community perspective on responsible tourism and destination sustainability. *Planning Malaysia*, *20(3)*, 255-269.

Saldanha, E. S., Santos, V. Dos, Piedade, S. D. R., Seran, A. N., & Freitas, J. R. (2020). The Effects of Responsible Tourism on the Quality of Life of Community in

Tourism Destination of Com Village. *Timor Leste Journal of Business and Management*, *2*(2), 21–29. https://doi.org/10.51703/bm.v2i0.31

Sariskumar, N., & Bhavan, T. (2018). The Impact of Responsible Tourism on Destination Sustainability and Quality of Life in Passikudah Tourism Destination. *International Journal of Science and Economic Research*, *03*(11), 5933–5959.

Shaheb, E., Aminbeidokhti, A. A., & Jafari, S. (2020). Mediator role of destination sustainability in responsible tourism relationship to local community life quality. *Second National Conference on Environmental Science and Engineering and Sustainable Development*. Tehran, Iran. https://civilica.com/doc/1007539

Spenceley, A. (2008). Responsible tourism: critical issues for conservation and development. In *Earthscan, London* (Vol. 2). https://doi.org/10.1080/19407960903542482

Sutawa, G. K. (2012). Issues on Bali tourism development and community empowerment to support sustainable tourism development. *Procedia Economics and Finance,* 4, 413–422.

Weeden, C. (2014). *Responsible Tourist Behaviour*. *Routledge* (Vol. 1). https://doi.org/10.1016/j.tourman.2014.01.006

Wheeler, M. (1994). The Emergence of Ethics in Tourism and Hospitality. In C. Cooper and A. Lockwood (eds) *Progress in Tourism, Recreation and Hospitality Management,* 6, University of Surrey, Belhaven Press, 46–56.

Xin, T. K., & Chan, J. K. L. (2014). Tour Operator Perspectives on Responsible Tourism Indicators of Kinabalu National Park, Sabah. *Procedia - Social and Behavioral Sciences*, *144*, 25–34. https://doi.org/10.1016/j.sbspro.2014.07.270

Yassin, M. S., Shaffril, H. A. M., Hassan, M. S., Othman, M. S., Samah, B. A., Samah, A. A., & Ramli, S. A. (2011). Human development index of the rural community in the three major cities along Pahang River and Muar river, Malaysia. *Australian Journal of Basic and Applied Sciences*, *5*(8), 876–884.

Received: 28th Feb 2023. Accepted: 31st March 2023

PLANNING MALAYSIA:
Journal of the Malaysian Institute of Planners
VOLUME 21 ISSUE 1 (2023), Page 12 – 23

ASSESSMENT OF SAFETY MANAGEMENT ATTITUDE PRACTICES TOWARD THE SAFETY CULTURE OF THE CONSTRUCTION SECTOR

Nik Fadhilah Nik Him[1], Noor Aina Amirah[2], Wan Nor Azilawanie Tun Ismail[3], Tengku Noor Zaliha Tuan Abdullah[4]

[1,2,4]*Faculty of Business and Management*
[3]*Faculty of Applied Social Sciences*
UNIVERSITI SULTAN ZAINAL ABIDIN, MALAYSIA

Abstract

A safety management attitude is essential to create a safety culture at construction sites. The construction sector was known to have a high risk of site accidents. Then, preventing the risk of accidents requires the implementation of safety culture measures. A safety culture acts as a guide to decrease the risk. This study aims to assess the safety management attitudes toward safety culture at construction sites. A sample of 376 respondents was recruited to complete the questionnaires regarding management commitment, safety procedures, and compliance with safety culture. The SPSS 24.0 and AMOS 24.0 software were used to conduct the data analysis. The findings demonstrated that management commitment, safety procedure, and safety compliance significantly and positively affected safety culture (p-value< 0.05). Thus, adequate implementation of a safety culture was ensured to decrease the accidents at the construction site and achieve zero industrial accidents.

Keywords: Safety Management Attitude, Safety Culture, Construction Sector

[2] Lecturer at Universiti Sultan Zainal Abidin. Email: ainaamirah@unisza.edu.my

INTRODUCTION

The construction sector is known for its elevated risk of occupational accidents because it includes a transitional stage with the progress of the project (Him et al., 2020). The most significant cause of accidents in the global construction sector is rapid economic development and growth. Occupational accidents occur daily at construction sites. Juhari and Arifin (2020) agreed that the construction sector is the most dangerous industry due to high accident rates and fatalities at work. In the construction sector, accidents would negatively affect the company and extend the due date of a particular project. The high prevalence of workplace accidents at construction sites is related to issues with illness or injury, damage to property or equipment, near misses or decreased performance and productivity. Ahmed (2019) argued that workplace injuries had a significant budgetary impact on society, people, and businesses. It follows that the productivity and quality of construction enterprises have been affected by accident cases.

PROBLEM STATEMENT

The risk of accidents in the construction industry is more elevated compared to other sectors (Him et al., 2019). The typical accidents are slipping, sliding, contact with objects or equipment, and involving vehicles (Brolin et al., 2021). From the beginning to the end of the construction process, there is a danger of mistakes, which later become factors of industrial accidents (Bhagwat & Delhi, 2021). Accidents happened due to the usage of hazardous equipment, challenging working environments, complicated operating procedures, unsafe culture practices, and dangerous working conditions at construction sites. (Ahmed, 2019).

Unsatisfactory safety culture practices in the construction sector contributed to the high rate of accidents (Wu et al., 2016). This is the result of the contractor's attitude and their lack of awareness of the need to develop safety culture practices on construction sites (Naji et al., 2022). Most Malaysian contractors fail to create a culture of safety on the job site, especially among management and lower-level staff (Zaira & Hadikusumo, 2020).

As a result, the Occupational Safety and Health Department (DOSH) tracks the number of accidents in the construction sector each year. As shown in the accident statistics of Table 1 for Malaysia, which covers seven years from 2015 to 2021, accidents occur every year in the construction sector, whether they result in death, Non-Permanent Disability (NPD), or Permanent Disability (PD). (DOSH, 2021). Based on the increase in accidents and deaths involving workers on construction sites, it is evident that the number of industrial accident cases is growing alarmingly.

Table 1: Number of Accident Cases in the Construction Industry for Seven years

Types of accident (Case)	2015	2016	2017	2018	2019	2020	2021
Death	88	91	111	118	84	66	56
NPD	138	126	123	106	227	137	116
PD	11	5	6	8	15	3	7
Jumlah	**237**	**222**	**240**	**232**	**326**	**206**	**179**

Source: DOSH

The accident statistics (Table 1), clearly show that accidents in the construction sector need to be controlled to ensure that the industry develops in a relevant way and contributes to strengthening the national economy. This study was conducted to assess the relationship between safety management attitudes and safety culture. This study can contribute to the formation of theories and practices that help policymakers and construction contractors have a better understanding of the relationship between the variables of practice at construction sites (Onubi et al., 2020).

HYPOTHESIS

The formation of research hypotheses is formed as follows;
H^a1: There is a significant effect between management commitment and safety culture.
H^a2: There is a significant effect between safety procedures and safety culture.
H^a3: There is a significant effect between safety compliance and safety culture.

LITERATURE REVIEW

Safety Culture

The term safety culture describes an organization's environment and practices that have an impact on workplace safety risks (Cooper et al., 2019). Through internal elements including communication system efficiency, organizational readiness for change, and organizational accountability for occupational safety procedures, these practices assist in the formation of an effective safety culture. While Jaafar et al. (2018) stated that the effectiveness of external factors refers to the work environment, economic considerations, and attitudes that help to improve the establishment of a safety culture in the sector.

In a previous study, safety quality in the construction industry needs to be emphasized through safety culture practices. According to Amirah et al. (2019; Liao, 2015), safety culture is crucial to the effectiveness of safety management at work. This element can provide direction for the creation of policies and procedures to enhance safety performance (Hinze et al., 2013). Accident risk can be decreased by effectively executing procedures and rules in the development of

a safe work environment (Bhattacharya, 2015). This is following the safety culture practices that educate employees to behave responsibly and guide the behaviors to perform jobs safely (Goncalves & Waterson, 2018).

According to Amirah et al. (2013), the practice of a safety culture is the key factor in creating people who are constantly conscious of workplace safety. As a result, the construction industry needs to increase its commitment to a safety culture to reduce workplace accidents (Hinze et al., 2013). The promotion of a safe working environment indirectly increases awareness among those working in the construction industry, strengthens PPE programs and improves worker safety on construction sites (Li et al., 2015).

Management Commitment

The safety management attitude in the safety culture can be formed in the commitment of the management. According to Huang et al., (2012), the primary aspect of a safety culture is the contribution of managerial commitment. This is supported by Zohar's (2008) discussion of management commitment as the fundamental element in the theoretical or empirical development of the construct. High management commitment in the construction industry is based on the attitude and behavior of contractors who place a high priority on safety management practices (Rundmo & Hale, 2003). This statement is supported by previous studies that point out the importance of managerial commitment in creating a safe culture (Jaselskis et al., 1996). Ye et al. (2020) claim that top management's dedication to management systems, processes, and procedures promotes employees' comprehension of the value of maintaining safety on construction sites. In the meantime, Hong et al. (2018) have examined the efficacy of management commitment through safety management and planning. This is consistent with the management's successful implementation of safety management in the manufacturing sector.

Safety Procedures

Alruqi et al. (2018) assert that the contractor is in charge of putting safety procedures in place at the construction site. The use of procedures can aid in the widespread application of planning for a measure that reduces risks in construction projects (Sousa et al., 2015). Implementing safety procedures can increase safety performance, manage risk, and lower accidents on construction sites.

Safety procedures are the process of developing and implementing laws that act as instructions to be followed to increase safety at work. According to the Infrastructure Health and Safety Association (IHSA, 2021), a safety process is a set of instructions that takes workers step-by-step through a task and is intended to lower risk by reducing potential hazards at work. This procedure was

developed by recommendations and a risk assessment, as well as the best methods of prevention.

Safety Compliance

Safety compliance is another name for workplace safety conduct (Razak et al., 2013). According to Kvalheim and Dahl (2016), safety compliance is the requirement for individual behavior to maintain maximum safety at work. This refers to voluntary or natural conduct to improve safety issues that raise safety concerns and the willingness to suggest changes to workplace safety standards. Behavior is the primary factor in safety compliance, acting and thinking to uphold the quality of safety standards at the building site (Gressgard, 2014).

Observing safety compliance helps to lower the probability of workplace accidents. By following safe procedures while performing job duties, individuals can contribute to safety compliance approaches (Khoo et al., 2018). The danger of accidents in the entire construction process can be reduced with this compliance. This thus starts the construction process without the risk of occupational accidents (Cheng et al., 2022).

METHODOLOGY

A questionnaire served as the primary technique of data collection for this quantitative study. Based on a literature review, a set of questionnaires with 29 questions on them has been created. The questions are related to four areas of safety culture practices and their role in preventing occupational accidents in the construction sector. Aspects of management commitment (7 questions), safety procedures (6 questions), safety compliance (8 questions), and safety culture are among the four components (8 questions). Questions are formed based on a 10-point interval scale (1= Strongly disagree, 10 strongly agree).

Construction contractors from Malaysia's East Coast made up the study population. The East Coast region of Malaysia was chosen because of the construction industry's growth through the rapid development of infrastructure including basic facilities. Using stratified and systematic random sampling methods, 16185 construction contractors that are registered with CIDB and have construction licenses between G7 and G1 were chosen for the sample. Based on the number of the population, the sample size represented is as many as 376 people consisting of project managers in contractor companies. Project managers were given a total of 376 questionnaires. Two methods are used to distribute questionnaires to respondents: (1) direct distribution through meetings at construction sites and other locations, and (2) electronic distribution through Google Forms, including emails and text messages, as well as phone calls to remind respondents to complete the survey. Direct distribution yielded 215 responses in all, and electronic distribution brought in the remaining 161 responses. There were 376 responses from respondents in all.

Using IBM SPSS-AMOS Version 24 software, the data collected from the respondents were analyzed using the Structural Equation Modeling (SEM) technique. To respond to the study's hypothesis, analysis (SEM) was used. The estimated value of the regression (regression weight) between the constructs illustrates the AMOS program. In this study, the research hypothesis is put to the test to see if the independent construct has any impact or influence on the dependent construct. To determine whether certain elements of the analyzed data variations are consistent or inconsistent, SEM analysis is utilized.

RESULTS

SEM is used in this study's hypothesis testing to examine the interactions between constructs and determine whether the study model and study sample are compatible (Ismail & Amin, 2020). Based on SEM analysis, three hypotheses were evaluated to address the research questions and achieve the study's objectives. Combining indirect effects between the two variables is the aim of SEM analysis (Sahrir et al., 2022). Awang et al. (2018) explain that SEM produces two different types of output, namely graphic output and text output. Standardized regression values between constructs and typical regression values are produced via the graphical output. As seen in Figure 1, the SEM procedure generates standardized regression values as standardized regression weights.

The R^2 value for the safety culture construct is 0.48, according to the results of the SEM investigation summarised in Figure 1 (standard regression). This demonstrates that 48% of the safety culture among construction contractors is contributed by management commitment, safety procedures, and safety compliance. According to Akossou and Palm (2013), this model is accepted in the study based on the three constructs' greater than 40% contribution to the safety culture. While management commitment (32%), safety procedures (51%), and safety compliance (34%) all contributed to the safety culture.

The analysis of the study's findings was then approved under the three hypotheses (Ha1, Ha2, and Ha3). Ha1 demonstrates that management commitment and safety culture have a significant relationship (CR: 7.512, P: 0.00). Ha3 supports the hypothesis that there is a significant relationship between safety compliance and safety culture, while Ha2 establishes a significant relationship between safety procedures and safety culture (CR: 11.230, P: 0.00). (CR: 7.704, P: 0.00). All three hypotheses are accepted since the regression coefficient value, which $P<0.05$, is significant according to the analysis of the findings. Alternative hypotheses have now been accepted as a result of this. Table 2 presents a thorough analysis of the findings.

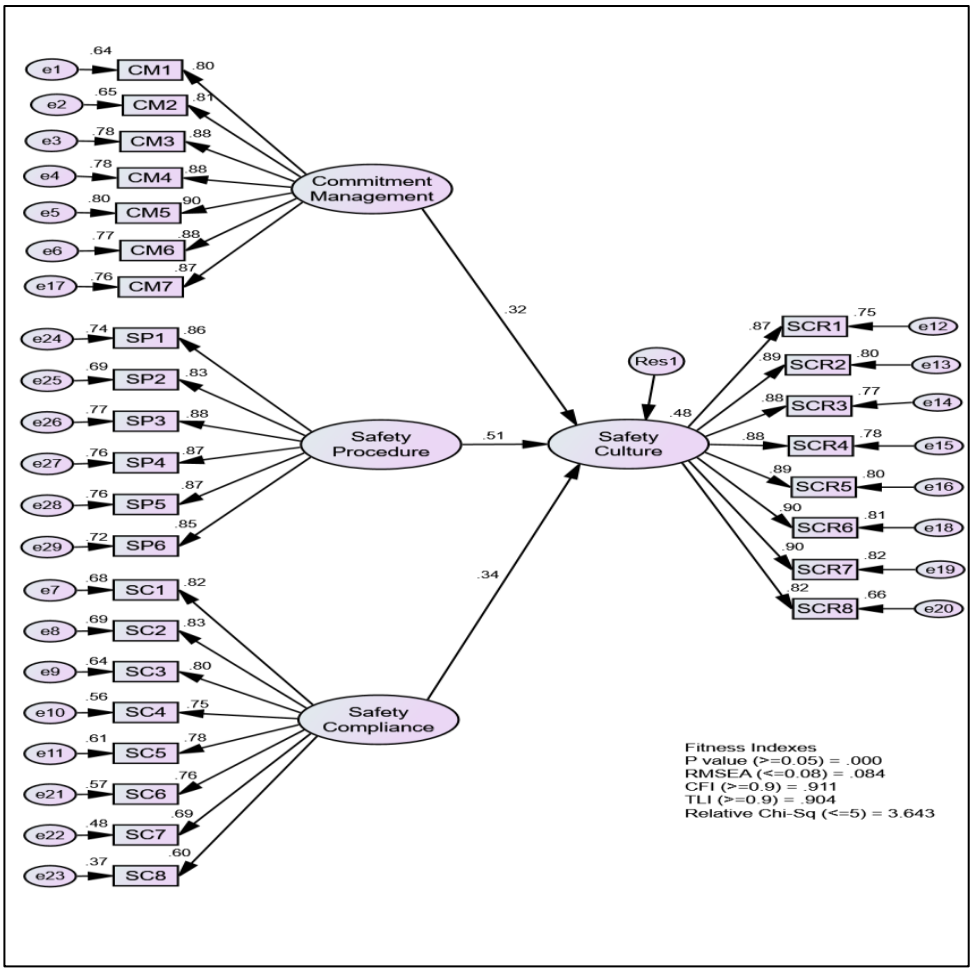


Figure 1: Structural Model SEM

Table 2: Regression Coefficient Value Between Constructs

		Construct	Estimate	S.E.	C.R.	P
Safety_Culture	<---	Commitment_Management	0.351	0.047	7.512	0.00
Safety_Culture	<---	Safety_Procedure	0.476	0.042	11.230	0.00
Safety_Culture	<---	Safety_Compliance	0.552	0.072	7.704	0.00

Note: P < 0.05
Estimate: *Beta - β*, same value with *regression weights*
S.E.: *Standard Error*
C.R.: *Critical Ratio*
P: *Probability Value*

DISCUSSION

The study's findings demonstrate that management commitment influences respondents' safety culture practices in the construction industry in a favorable way. This is so because management's strong commitment influences employees' commitment to exercising caution at work and helps establish a safe work culture on construction sites. Mpettianagement commitment is a key component in the development of safety culture attitudes. This is consistent with the findings of the study by Amirah et al. (2017), who discovered that management commitment stems from the perception of top management and industrial workers, who have infused knowledge to always apply safety culture practices well when doing work duties. This study demonstrates how management commitment aids construction contractors in developing and putting into practice safety culture measures at construction sites.

The analysis's results demonstrate that one of the activities that positively affect respondents' safety cultures is following safety procedures. Construction workers can control their conduct to reduce the likelihood of accidents at the site by following safety procedures. Muthuveeran et al. (2022) stated that risk assessment can guarantee a distinct risk context for project management procedures. This could assist in enhancing the management of safety procedures on construction sites. Workers are constantly aware of the possibility that exists in the construction sector thanks to safety procedures. Hu et al. (2016) claim that the backing of mining industry supervisors has had a beneficial direct impact on the application of safety procedures and the development of a safety culture. This demonstrates unequivocally how management's attitude toward continually reviewing and updating accident prevention measures at construction sites has been impacted by safety procedures (Alruqi et al., 2018).

The analysis of the findings from the hypothesis also demonstrated that safety compliance influenced the safety culture favorably. This is because safety compliance is an important component as a guide to compliance with safety regulations in the workplace. High compliance helps the construction industry to form a clean image and fewer occupational accident issues. Indirectly, safety culture practices can be effectively developed on construction sites. Abdullah et al. (2021) corroborate the study's findings by pointing out that safety compliance can be used to implement safety culture practices. This is because high compliance influences how easily rules and procedures are applied in the construction industry, improving safe work practices. These two techniques have reduced the danger of occupational accidents and improved the efficiency of the development of construction projects.

CONCLUSION

In Malaysia, the construction industry's implementation of a safety culture is far from ideal. The absence of a safety culture in the construction industry is attributed to several variables, including management commitment, adherence to safety procedures, and compliance. Various parties must therefore make efforts to enhance safety management at construction sites. The SEM analysis method was used in this study to improve the safety culture in the construction industry on Malaysia's East Coast. It places a strong emphasis on management commitment, safety procedures, and safety compliance. The establishment of a safety culture is influenced, according to standard regression results, by the management commitment factor model, safety procedures, and safety compliance. By continually enhancing the implementation of management commitments, safety procedures, and safety compliance, the study's findings which are the developed model can be used as a guide for all industry practitioners in the construction industry, including developers, contractors, subcontractors, law enforcers, occupational safety training centers, and others.

REFERENCES

Abdullah, K. H., Aziz, F., Abdullah, N. A. C., Isa, M., & Othman, Z. (2021). Iklim Keselamatan dan Gelagat Selamat di dalam Makmal dalam Kalangan Pelajar Universiti. *Sains Humanika*, *13*, 35–54

Ahmed, S. (2019). Causes and effects of accident at construction site: A study for the construction industry in Bangladesh. *International Journal of Sustainable Construction Engineering and Technology*, *10*(2), 18-40.

Alruqi, W. M., Hallowell, M. R., & Techera, U. (2018). Safety climate dimensions and their relationship to construction safety performance: A meta-analytic review. *Safety Science*. https://doi.org/10.1016/j.ssci.2018.05.019

Amirah, N. A., Amin, A., Muda, S., Talaat, W. I. A. W., & Rashid, N. M. N. N. M. (2017). Relationship Between Behavioral Aspects and Safety Culture in the Peninsular Malaysia Manufacturing Industry, (May 2020). https://doi.org/10.5829/idosi.wasj.2017.1880.1884

Amirah, N. A., Asma, W. I., Muda, S., & Amin, A. (2013). Operationalisation of safety culture to foster safety and health in the Malaysian Manufacturing Industries. *Asian Social Science*, *9*(7), 283.

Amirah, N. A., Asma, W. I., Muda, S., Amin, A., & Him, N. F. N. (2019, January). Analysis of individual factors on employees' perception towards safety culture in the Malaysian manufacturing industry. In *1st Aceh Global Conference (AGC 2018)* (pp. 613-619). Atlantis Press.

Awang, Z., Lim, S. H., & Zainudin, N. F. S. (2018). *Pendekatan Mudah SEM (Structural Equation Modelling)*. Bandar Baru Bangi: MPWS Rich Resources.

Bhagwat, K., & Delhi, V. S. K. (2021). Review of construction safety performance measurement methods and practices: a science mapping approach. *International Journal of Construction Management*, 1–15. https://doi.org/10.1080/15623599.2021.1924456

Bhattacharya, Y. (2015). Measuring Safety Culture on Ships Using Safety Climate: A Study among Indian Officers. *International Journal of E-Navigation and Maritime Economy*, *3*, 51–70. https://doi.org/10.1016/j.enavi.2015.12.006

Brolin, K., Lanner, D., & Halldin, P. (2021). Work-related traumatic brain injury in the construction industry in Sweden and Germany. *Safety Science*, *136*, 105147. https://doi.org/10.1016/j.ssci.2020.105147

Cheng, J. P., Wong, P. K. Y., Luo, H., Wang, M., & Leung, P. H. (2022). Vision-based monitoring of site safety compliance based on worker re-identification and personal protective equipment classification. *Automation in Construction*, *139*, 104312.

Cooper, M. D., Collins, M., Bernard, R., Schwann, S., & Knox, R. J. (2019). Criterion-related validity of the cultural web when assessing safety culture. *Safety Science*, *111*, 49–66. https://doi.org/10.1016/j.ssci.2018.09.013

Department Of Occupational Safety And Health. (2021). Occupational Accident Statistics. Retrieved from https://www.dosh.gov.my

Goncalves, F. A. P., & Waterson, P. (2018). Maturity models and safety culture: A critical review. *Safety Science*, *105*, 192–211.

Gressgard, L. J. (2014). Knowledge management and safety compliance in a high-risk distributed organizational system. *Safety and Health at Work*. https://doi.org/10.1016/j.shaw.2014.03.002

Him, N. F. N., Amirah, N. A., & Hassan, A. (2020). Exploratory factor analysis of safety management commitment and safety administration in the context construction industries. *Asian People Journal (APJ)*, *3*(1), 132-140.

Him, N. F. N., Hassan, A., & Amirah, N. A. (2019). Readiness construction employee towards occupational safety and health programme. *Journal of Sultan Alauddin Sulaiman Shah*, *3*, 188-197.

Hinze, J., Hallowell, M., & Baud, K. (2013). Construction-Safety Best Practices and Relationships to Safety Performance. *Journal of Construction Engineering and Management*, *139*(10), 04013006. https://doi.org/10.1061/(ASCE)CO.1943-7862.0000751

Hong, C. C., Ramayah, T., & Subramaniam, C. (2018). The relationship between critical success factors, internal control and safety performance in the Malaysian manufacturing sector. *Safety Science*. https://doi.org/10.1016/j.ssci.2018.01.002

https://doi.org/10.1016/j.autcon.2011.11.009

Hu, X., Griffin, M. A., & Bertuleit, M. (2016). Modelling antecedents of safety compliance: Incorporating theory from the technological acceptance model. *Safety Science*, *87*, 292–298. https://doi.org/10.1016/j.ssci.2015.12.018

Huang, Y.-H., Verma, S. K., Chang, W. R., Courtney, T. K., Lombardi, D. A., Brennan, M. J., & Perry, M. J. (2012). Management commitment to safety vs. employee perceived safety training and association with future injury. *Accident Analysis & Prevention*, *47*, 94–101.

Infrastructure Health & Safety Association. (2021). Safe Job Procedures. Retrieved January 3, 2021, from https://www.ihsa.ca/resources/safe_practices_procedures.aspx

Ismail, W. N. A. T., & Amin, A. (2020). Examining the relationship between factors influencing environmental behavior among polluted river communities.

International Journal of Advanced Science and Technology, 29(7s), 479–487.

Jaafar, M. H., Arifin, K., Aiyub, K., Razman, M. R., Ishak, M. I. S., & Samsurijan, M. S. (2018). Occupational safety and health management in the construction industry: a review. *International Journal of Occupational Safety and Ergonomics*, *24*(4), 493–506. https://doi.org/10.1080/10803548.2017.1366129

Jaselskis, E. J., Anderson, S. D., & Russell, J. S. (1996). Strategies for Achieving Excellence in Construction Safety Performance. *Journal of Construction Engineering and Management*, *122*(1).

Juhari, M. L., & Arifin, K. (2020). Pembentukan model faktor bahan dan peralatan sebagai penyebab kemalangan dalam industri pembinaan Mass Rapid Transit (Development of materials and equipment factor model in contributing to accidents in the Mass Rapid Transit construction industry). *Geografia*, *16*(2).

Khoo, N. K., Hussin, H., & Abdullah, N. (2018). Managing Occupational Safety And Health (Osh) Culture Practices At Small And Medium (S&M) Malaysia Manufacturing Sector. *Journal of Human Capital Development*, *11*, 79–90.

Kvalheim, S. A., & Dahl, O. (2016). Safety compliance and safety climate: A repeated cross-sectional study in the oil and gas industry. *Journal of safety research*, *59*, 33-41.

Li, H., Lu, M., Hsu, S. C., Gray, M., & Huang, T. (2015). Proactive behavior-based safety management for construction safety improvement. *Safety Science*, *75*, 107–117. https://doi.org/10.1016/j.ssci.2015.01.013

Liao, M.Y. (2015). Safety Culture in commercial aviation: Differences in perspective between Chinese and Western pilots. *Safety Science*, *79*, 193–205. https://doi.org/https://doi.org/10.1016/j.ssci.2015.05.011

Muthuveeran, A. A. S., Tahir, O. M., Hassan, M. A., & Yin, I. (2022). Investigating The Current Risk Management Process Practice In Malaysian Landscape Planning Projects. *Planning Malaysia*, *20* (1), 48 – 63.

Naji, G. M. A., Isha, A. S. N., Alazzani, A., Saleem, M. S., & Alzoraiki, M. (2022). Assessing the Mediating Role of Safety Communication between Safety Culture and Employees Safety Performance. *Frontiers in Public Health*, *10*.

Onubi, H. O., Yusof, N. A., & Hasan, A. S. (2020). Effects Of Sustainable Construction Site Practices On Environmental Performance Of Construction Projects In Nigeria. *Planning Malaysia*, *18*(11). https://doi.org/10.21837/pm.v18i11.710

Razak, U. A., Mustafa, M., & Ismail, M. A. (2013). Prestasi keselamatan pekerja: definisi, konstruk dan instrumen pengukuran.

Rundmo, T., & Hale, A. R. (2003). Managers' attitudes towards safety and accident prevention. *Safety Science*, *41*(7), 557–574.

Sahrir, S., Ponrahono, Z., & Sharaai, A. H. (2022). Modelling The Community Adaptive Behaviour Towards Air Pollution: A Confirmatory Factor Analysis With PLS-SE. *Journal of the Malaysian Institute of Planners*, 20 (3), 205 – 216.

Sousa, V., Almeida, N. M., & Dias, L. A. (2015). Risk-based management of occupational safety and health in the construction industry - Part 2: Quantitative model. *Safety Science*, *74*, 184–194. https://doi.org/10.1016/j.ssci.2015.01.003

Wu, C., Wang, F., Zou, P. X. W., & Fang, D. (2016). How safety leadership works among owners, contractors and subcontractors in construction projects. *International Journal of Project Management*, *34*(5), 789–805.

Ye, X., Ren, S., Li, X., & Wang, Z. (2020). The mediating role of psychological capital between perceived management commitment and safety behavior. *Journal of Safety Research*, *72*. https://doi.org/10.1016/j.jsr.2019.12.004

Zohar, D. (2008). Safety climate and beyond: A multi-level multi-climate framework. *Safety Science*, *46*, 376–387. https://doi.org/10.1016/j.ssci.2007.03.006

Received: 28th Feb 2023. Accepted: 31st March 2023

PLANNING MALAYSIA:
Journal of the Malaysian Institute of Planners
VOLUME 21 ISSUE 1 (2023), Page 24 – 35

CITIZEN ENGAGEMENT IN TANGIBLE HERITAGE CONSERVATION STRATEGIES IN TERENGGANU

WN Jazmina W. Ariffin[1], Normah Awang Noh[2], Muaz Azinuddin[3], Asmawi Ibrahim[4], Farah Syazrah Ghazalli[5], Emma Marini Abd Rahim[6]

[1,2,3,4]*Faculty of Applied Social Science*
[5]*Faculty of General Studies & Advanced Education*
UNIVERSITI SULTAN ZAINAL ABIDIN, MALAYSIA
[6]*Academy of Language Studies*
UNIVERSITI TEKNOLOGI MARA

Abstract

Heritage upholds high values in a society. Arts and culture passed down by the previous generations have a significant influence on the identity formation of a particular race. In Terengganu, much of its heritage and relics left by its ancestors were abandoned and forgotten by modernization. The impact of globalization is feared to sink local heritage if it is not well taken care of and lack of sustainable actions to maintain these heritages. Generally, heritage can be classified into two categories; tangible heritage and intangible heritage. Tangible heritage can be further divided into two – static and mobile. Historical landmarks, monuments, buildings, tombs and mines are some examples of static tangible heritage and possess their values in the identity formation of the local citizens. In order to preserve the tangible heritage assets in Terengganu, integrated and proactive solutions need to be taken by various parties by taking into account all the factors that would form a sustainable model that can be referred to as means to preserve the heritage. This study employs a mixed methodology approach; qualitative method and supported quantitative method. The researchers have conducted a few series of in-depth interviews with respondents identified to be able to provide the necessary information, then widened further to the sample population through instruments of questionnaires in certain locations with tangible heritage. Several locations identified were Bandar Bukit Besi, Bukit Tebuk in Dungun, Pura Tanjung Sabtu and Duyong Island in Kuala Terengganu. Research data were then analyzed using Nvivo software for qualitative data and SPSS software in descriptive design to support the findings of the research. This study would make a huge impact on society, particularly on the aspects of tangible heritage preservation, to ensure that they can be inherited by the younger generations to maintain their strong identity as local citizens.

Keywords: Preservation, tangible heritage, cultural heritage, community attachment

[1] Lecturer at University Sultan Zainal Abidin Email: wnjazmina@unisza.edu.my

INTRODUCTION

Heritage is an invaluable asset to a city, district, territory or society and is considered as the utmost important component for a sustainable development of the society and its economy. Heritage is regarded as a core element that has escentric value in a society. A society's civilization that has transformed from one phase to another new phase would leave its own historical traits. There are parts that can be preserved but there would also be some parts that will eventually be vanished by modernization.

Heritage preservation, be it tangible or intangible, have sinced gained appropriate attention by the responsible bodies, locally and abroad. Several methods have been implemented to ensure sustainable heritage. In the context of tourism for instance, the industry has always been dependent on long term planning which taking account the importance of sustainable and responsible tourism (Mohd Rasdi et al., 2022). Based on this premise, the tourism industry plays an important role in promoting heritage as a product to motivate and attract tourists. Besides, the tourism industry is dependent on long term planning In any parts of the world, the growth of the tourism sector (see Azinuddin et al., 2022a) has witnessed many forms of attractions to tourists. Tendencies and passions toward heritage and cultures of certain communities have encouraged positive growth of the heritage-related tourism industry. This phenomenon has given a good impact to these heritages to be preserved and maintained.

Every culture consists of many practises and activities in the society that create cultural elements and thus passed down from one generation to another. These cultural elements, whether tangible or intangible, such as monuments and knowledge from the past, were evaluated presently based on different criterias, knowledge, beliefs and purposes, and thus defined as heritage (Jasna 2016). Heritage comprises of several categories. Heritage can also be defined as the results of previous actions used by the present society and became part of their life tools to survive (Yuszaidy et. al 2011). There are few types of heritage owned by the locals; some are in the forms of physical assets and some are abstracts.

In the effort of preserving this heritage, society needs to know what is meant by heritage. Comprehension is the key to understand the definition used to explain its meaning. Generally, the definition of heritage is something that is accepted by individuals in a certain group of society from their ancestors for generations. This explanation is also supported by the definition proposed in the Antiquities Act 1976 that stated any object of heritage that is movable or immovable, man-made or natural and visible or invisible.

Meanwhile, the National Heritage Act 2005 (Act 645) highlighted that heritage is considered as cultural heritage; any heritage site, heritage object, underwater cultural heritage or any living person declared as a National

Heritage. Provision mentioned in the Act also categorized two cultural heritage – intangible cultural heritage and tangible cultural heritage. Intangible cultural heritage refers to all cultural practices existed through the inventions and ideas based on the observations of the universe to fulfil everyday life. It is often connected to the knowledge and expertise possessed by humans, accepted through the process of experiences inherited through dreams or through learning. This heritage can be passed down from one generation to the other and can be inherited by descendants of the ancestors. It is formed through the cultural activities, thoughts and philosophies embedded in the previous society. Intangible cultural heritage also creates human civilization based on knowledge and life experience to form heritage that becomes a self-symbol and icon for the next generation. UNESCO regards intangible cultural heritage as a tradition or life expression, inherited from the previous generations. Convention for the safeguarding of the intangible cultural heritage held in 2003 by UNESCO pointed out five domains of intangible cultural heritage. They are; (i) Oral traditions and expressions, (ii) Performing arts, (iii) Social practices, rituals and festive events, (iv) Knowledge and practices concerning nature and the universe, and (v) Traditional craftsmanship (Idris, et.al, 2017).

Tangible cultural heritage, on the other hand, can be divided into two; static and movable. Tangible cultural heritage refers to physical artefacts that can be transmitted intergenerationally with its own add-on value. It comprises of landmarks like mosque, temple, buildings, monuments, towns, tombs, beaches, manuscripts, ancient scripts and new scripts that have been given high value by the society, historical artefacts, and museums. They belong to the category of sites, monuments, and buildings. Humans perform tasks related to economy and current social activities in the effort to fulfil their needs in life. These created buildings, monuments, landmarks and artefacts such as arches, sculptures, statues, clothing, tombstones and beads that are seen in the architectural aspects and motive-engraved decorations and patterns on walls and building pillars (Yuszaidy, 2015). Historical sites such as Lembah Bujang, Pusat Bandar Lama Melaka, Sg. Lembing mining areas, monuments like castles, forts, bunkers, tombs, towers as well as natures like forests, mountains, caves, rivers, flora and fauna are also accounted as tangible cultural heritage. These heritages are important as they preserve history and the beliefs of the society, protect the importance of architectures and cultures, portraying the value of historical buildings and are able to reflect the town's image and identity (Nawi, et.al, 2020).

RESEARCH BACKGROUND

Heritage, as defined by the United Nations Educational, Scientific and Cultural Organization (UNESCO, 2005), is "our heritage from the past, what we live with today, and what we passed down to the future generations" (Mensah,

2022). Heritage conservation gained universal attention when it was listed in one of the SDG 11 targets, referred to as the goal to create sustainable towns and societies. Cultural heritage is currently in the verge of extinction caused by the modernization of the local citizens. Cultural heritage is a traditional legacy bestowed by the previous generations to the present generation not solely as a reminder but more on the aspect of identity construct of local citizens. Traditional culture includes practices and way of life of various races including clothing, food, customs, arts and can be seen on its cultural art heritage. These cultural heritages need to be maintained for their own unique identity. According to Yuszaidy (2018), cultural heritage must be protected so they can be preserved for future generations and their identity.

Malaysia has taken proactive approaches in conserving its cultural heritage through the legal systems improvised from time to time. In the initial phase, Malaysia relies on the laws enacted since the British colonial era taken from Treasure Act 1957 (Act 524) (Yuszaidy, 2015). However, this Act has flaws in terms of its allocation and is only limited to treasures as opposed to other matters related to protection and conservation of heritage. Act 524 was then abolished and replaced with Antiquities Act 1976 (Act 168) and was in enforcement until 2005 (Azizi, 2011). It was since then that the National Heritage Act 2005 (Act 645) was enacted and acted as the main Act in relation to heritage and treasure. This shows that from the legal aspects, the government is providing necessary attention in its effort to preserve cultural art heritage in the country. This Act has been the guideline in all legal aspects to the administration and management of of the cultural heritage. This Act is comprehensive in all aspects to rescue and protect the various kinds of cultural heritage regardless of races and ethnics. (Yuszaidy, 2011).

Commercialization is one of the steps to safeguard the cultural heritage. This means to promote cultural heritage as tourism products or known as heritage tourism. Heritage tourism is regarded as one of the fast growing form of tourism. In general, heritage tourism is based on culture in the form of architectures, craft sites gazetted as historical remains and artefacts (Ugong & Bilcher Bala, 2017).

As mentioned by Samsudin M. & Mohamad S. (2013), Malaysia has also developed historical sites as tourist attractions. It is therefore undeniable that the major tourist attraction is to visit historical sites. MacCannel (1992), for instance, considered that "*tourism is not just an aggregate of merely commercial activities; it is also an ideological framing of history, nature and tradition; a framing that has the power to reshape culture and nature to its own needs*". Thus, tourism activities in relation to historical heritage have indeed getting more important particularly with the progress of heritage tourism (Urry, 1990). Commercialization of tangible heritage is set to be one of the attractions in the tourism industry and can be seen in the effort to preserve it from threats of

extinction. Therefore, it can be summarized that through the effort of sustaining cultural heritage in the country, it has got to be done through integration of laws, government roles, citizen awareness, education, commercialization, and tourism. Nevertheless, the conservation of arts and cultural heritage cannot be implemented uonly with law enforcement on its own. It has to be complemented with efforts from various sectors and institutions. As an approach to cultural heritage conservation, education is considered to be the best medium to instill love towards cultural art heritage in a society. Heritage education is learning through seeing, touching, listening and holding (experience) through series of collections or artefacts exhibited in museums. Aside from heritage education, public education also plays key role in ensuring the preservation of cultural heritage. Public education can be carried out through various ways including printed media, radio, television, internet and group activities like demonstrations and workshops, formal education, co-curricular activities and experiential learning in schools. Formal education as well as informal education used to provide exposure about cultural heritage can actually raise the awareness of the society towards the issue.

The level of community awareness will affect the local community's involvement in heritage conservation (Halim& Tambi, 2021). Public awareness on the extent of the values of heritage is very important in the effort to conserve and preserve cultural heritage. The definition of awareness is referred to as the behaviours of individuals that recognize, understand and appreciate the existence of cultural heritage around them. A society that possesses the awareness is predicted to be able to control and manage their daily activities without endangering and threating the cultural heritage especially the tangible cultural heritage. As proposed by R Dharmasanti & S P Dewi (2020), the awareness level of individuals that influence their engagement in the conservation of cultural heritage is seen through several criteria. Firstly, they have basic knowledge on cultural heritage and are able to gather information on plans and rules to preserve the cultural heritage. Secondly, that individuals need to have a sense of belonging towards the cultural heritage. Third is the willingness to preserve cultural heritage, fourth is to possess a sense of concern and noting the tangible cultural heritage around them while the fifth criteria is to continuously support the government’s efforts by abiding all laws related to the conservation of cultural arts heritage particularly on tangible cultural heritage.

RESEARCH METHODOLOGY

This study employs a mixed-methodology qualitative research that combines quantitative method to obtain data. The implementation of qualitative method preceeding the quantitative method in data collection process has enabled the researchers to explore and understand the issues thoroughly and to view it from

a wider scope and perspective (Matthews & Ross, 2010). Data collected in this study were gathered from primary source and secondary source. Among the techniques used to collect the data include unstructured interviews from selected and identified respondents to support the data. Apart from that, a set of questionnaires consisted of several items identified based on the research objectives were distributed to 130 respondents selected through random sampling method. This questionnaire was distributed to residents living within the area of each research location consisted of residents in Bandar Bukit Besi for Bukit Besi Mine and Bukit Tebuk Tunnel, residents in Kampung Manir for Pura Tanjung Sabtu, and residents in Kampung Duyung for Kota Lama Duyung. This questionnaire is divided into two parts; namely Part A that consists of demographical information and Part B which comprises of several indicators of society engagement in the process of conserving the tangible heritage in their villages and includes few aspects such as concern, knowledge, engagement, and responsibility. Qualitative data obtained through the interview process were then transcripted and analyzed using Nvivo software while quantitative data gathered from the questionnaires were analyzed using SPSS software.

RESEARCH FINDINGS

The research findings are aimed to explicitly show how diversity, creativity, and collaborative engagement from the local citizens can be utilized in the effort to preserve the tangible cultural heritage. In this sense, it reflects the importance of stable network and collaborations between the different stakeholders in sustaining the tangible cultural heritage as tourism products that are rare, inimitable or irreplaceable (see Azinuddin et al., 2022b; 2020; Mior Shariffuddin, 2020). Through series of interviews conducted to respondents, it can be seen that the element of local citizen's engagement is vital in the issue of conserving the tangible cultural heritage. Local citizens are the closest entities to these heritages. Negligence of heritage by the local citizens would make conservation efforts by responsible parties even harder. Interviews conducted with few parties representing local administration and villagers found that the element of citizen engagement from aspects of awareness, education, volunteering and responsibilities greatly affected the conservation efforts. For instance, the Pura Tanjung Sabtu heritage building in Kampung Tanjung Sabtu, Kuala Terengganu. According to a few respondents that were interviewed, this area was once an attraction when many festive events and programs were held in the area. This heritage building was a combination of seven Terengganu traditional wooden houses from lands nearby the Sungai Nerus river bank. Pura Tanjung Sabtu is owned by an individual who is fond of arts and detailed engravements on buildings. According to the respondents, Tanjung Sabtu was a homestay founded by a member of the Terengganu royal family, the late Tengku Ismail Tengku Su,

about 30 years ago, around the 1990's. Pura Tanjung Sabtu was even popular among tourists, local and abroad, particularly the VIPs and royalties.

Figure 1: Condition of Pura Tanjung Sabtu that has been abandoned.

Nevertheless, researchers' observation in this historical site found out that Pura Tanjung Sabtu is seen to be obsolete and abandoned. As a matter of fact, many break-ins and burglaries by irresponsible individuals were reported over the years. Valuable items such as doors, vases, and furnitures were stolen through land and river route. According to the nearby villagers, these actions have ruined the heritage building as time went by.

Condition is a bit contrary in Bandar Bukit Besi, which holds the remains of the mining area and the memories of the impacts of colonization towards the sosio economy of the local citizens in Bukit Besi around the 1930s. As an iconic and historical town, tangible cultural heritage in this area are well-maintained and well preserved under the attention of the local government through Central Terengganu Development Board or Lembaga Kemajuan Terengganu Tengah (KETENGAH). From the interviews conducted with several local residents and leaders, the conservation efforts done by the local government are crucial to preserve the heritage in their village. Citizens in Bukit Besi were mostly aware on the importance of heritage but admitted that they hardly join the conservation efforts and considered those as the responsibility and tasks of the government. For the respondents, conservation efforts involve huge financial allocations and to them, it is certainly the role of the government to fund the efforts. However, few respondents interviewed expressed that citizen engagement in the conservation effort can be further intensified through Non-Government Organizations or NGOs. One of the respondents who is also a representative from Dungun Historical Association or Persatuan Sejarah Kawasan Dungun highlighted that citizens' role through NGOs can greatly assists the cultural heritage conservation efforts in general. In the context of tangible heritage conservation in Bukit Besi, Persatuan Sejarah Kawasan Dungun also contributed in advicing the responsible parties for the tangible heritage

conservation in Bukit Besi until the Bukit Besi Museum was built that has sinced becomes the center for the historical references of the mining era before. This association even involved in the effort to gather and collect information and evidences so they can be kept and preserved as historical items.

Table 1: Interview summary on respondents of the study in relation to citizen engagement in cultural heritage conservation

Issue	Respondent
Concern and care towards cultural heritage in their surrounding area	R1, R2, R5, R6, R7,
Education and awareness on the issue of tangible cultural heritage conservation ▪ *Responsibility in preservation and conservation* ▪ *Role of older generation in instilling the value of cultural heritage to the younger generation*	R2, R4, R5, R8,
Role of local leaders in maintaining tangible heritage in their area ▪ *Control and protection*	R1, R2, R3, R7
Citizen preparedness to engage in conservation efforts	R1, R2, R4, R7, R8

Heritage conservation in few research areas are faced with local citizen awareness on the heritage in their villages. The elderly in the society can play roles as they have much more experiences and knowledge regarding the tangible cultural heritage in their area. Several respondents felt that the role of the older generations is vital to instil love towards the heritage. Nevertheless, they also admitted that younger generation nowadays could not care less about the history at their own place including its heritage. When concern and awareness are limited, citizens are insensitive of what is happening to their heritage. The vandalism issues at heritage sites proved the lack of concern and sense of belonging towards cultural heritage that is supposed to be taken care of. Respondents residing the nearby area of Bukit Besi Mines told that before the government enforcement, this area is freely accessible to be visited. Unfortunately, few irresponsible individuals had tarnished the relics and even stole and sold them. This situation is almost similar to what happened in the case

Pura Tanjung Sabtu. Because of that small profit, these actions have actually harmed and destroyed the value and originality of the tangible heritage.

Figure 2: Parts of the remains in Bukit Besi mining site

Researchers also distributed questionnaires to citizens living the nearby research areas. A total of 130 individuals residing near the heritage building responded to the questionnaires that include citizen engagement in cultural heritage conservation consisting elements of concern towards tangible cultural heritage in their area, their knowledge on tangible cultural heritage and its conservation efforts, their engagement in the conservation efforts and their inner responsibility towards cultural heritage close to them.

Table 2: Citizen Role in Local Heritage Conservation

Role		*Mean Value*
Concern		3.91
Aware on cultural heritage existence	3.5583	
Consider conservation as crucial	4.1000	
Concern about heritage	3.8417	
Love heritage for its historical value	4.1500	
Knowledge		3.75
Possess in-depth knowledge	3.4667	
Keen on reading facts and history about heritage	3.6417	
Know facts and history about heritage	3.5333	
Engagement		3.831
Easy to visit heritage site	4.2833	

Frequently visit heritage site	3.5083	
Join heritage program	4.0000	
Responsibility		3.933
Heritage conservation is my responsibility	4.2417	
I am willing and ready to engage in any heritage conservation efforts	3.9750	
Citizen is responsible to conserve heritage	4.2917	

As shown in Table 2 above, research findings depicted that elements of responsibility and concern scored highest mean with 3.93 and 3.91 respectively, followed by citizen engagement with 3.83 average mean value and knowledge with mean value of 3.75. Responsibility relates to the willingness of individuals to perform tasks and obligations appropriately. In this research context, citizen role under the element of responsibility refers individual perception that regards the conservation issue as mutual responsibility be it as individuals or as a society. It is parallel with the element of concern where, as individuals residing nearby the research area, it is vital that they concern and care about heritage in their area. The findings of the study found that community is one of the social dimensions in the formation of heritage preservation strategies. There are still many options to ensure the engagement of the community in implementing social actions and involvement to preserve cultural heritage. Local communities share a sense of proximity to heritage monuments (Bruku, 2015). Although the community does not represent official positions in the government, their views should be taken into account in sustainable heritage management. Their ideas, views, and involvement either individually, in associations, or as community representatives can be integrated with other cultural heritage preservation measures. The community needs to be educated and aware of the issue of the preservation of significant cultural heritage.

CONCLUSION

The cultural heritage inherited by previous generations should be preserved to be appreciated by future generations to maintain the identity of the nation. Various strategies can be implemented to ensure that cultural heritage continues to survive in the current modernity. The cooperation of all parties through various channels and parties is a concerted effort required to succeed in the mission of preserving this cultural heritage. In the context of this study, whether in tangible or intangible form, the role of the community is the dominant factor in the effectiveness of heritage preservation efforts. The discussion and findings of this study can be

used as valuable information and insights for academics, destination managers, and policymakers in the preservation of tangible cultural heritage in Malaysia.

ACKNOWLEDGEMENTS

This paper is a research outcome from the "Integrated Model of Tangible Cultural Heritage Sustainability in Terengganu" project funded by the Internal Research Grant (UniSZA/2020/DPU/08) Universiti Sultan Zainal Abidin (UniSZA), Terengganu. The utmost appreciation goes to the Universiti Sultan Zainal Abidin (UniSZA) for the funds granted for this project.

REFERENCES

Ahmad, M.Z., Ibrahim, J.A. & Salleh, H. (2008). Membangunkan Kuala Kedah Sebagai Destinasi Pelancongan Warisan: Penerapan Konsep Pembangunan Pelancongan Lestari. Prosiding Seminar Kebangsaan Ekonomi Malaysia 2008.

Azinuddin, M., Mat Som, A. P., Mohd Saufi, S. A., Zarhari, N. A. A., Amin, A., & Mior Shariffuddin, N. S. M. (2022a). Investigating overtourism impacts, perceived man-made risk and tourist revisit intention. *Planning Malaysia, 20*(3), 239-254.

Azinuddin, M., Mior Shariffuddin, N. S., Hanafiah, M. H., Mat Som, A. P., & Wan Mohd Zain, W. M. A. (2022b). A systematic literature review on tourism networks, knowledge transfer, absorptive capacity, and performance. *Asia-Pacific Journal of Innovation in Hospitality and Tourism, 11*(1), 179–218.

Azinuddin, M., Mior Shariffuddin, N. S., & Wan Mohd Zain, W. M. A. (2020). Profiling entrepreneurs inclinations on networking: A case of small and medium-sized tourism enterprises (SMTEs) in Terengganu, Malaysia. *International Journal of Innovation, Creativity and Change, 13*(5), 417–432.

Azizi A. Husin (ed.) (2011). Pemuliharaan dan pemeliharaan warisan di Malaysia. Pulau Pinang: Penerbit Universiti Sains Malaysia.

Bruku, S. (2015). Community engagement in historical site protection: Lessons from the Elmina Castle Project in Ghana. *Conservation and Management of Archaeological Sites, 17*, 67-76.

Dharmasanti, R. & Dewi, S.P. 2020. The Awareness Level of Building Owners to Conserve Cultural Heritage Area in Kotagede, Yogyakarta. *IOP Conf. Ser.: Earth Environ.* Sci. 409 012025

Eva Parga-Dans, González, P.A., Enriquez, R.O. (2020). The social value of heritage: Balancing the promotion-preservation relationship in the Altamira World Heritage Site, Spain. *Journal of Destination Marketing & Management*, 18, 100499.

Halim, U.L. & Tambi, N. (2021). Awareness of community on the conservation of heritage buildings in Georgetown, Penang. *Journal of the Malaysian Institute Of Planners, 19*(1), 114 – 126.

Idris, M.Z., Mustaffa, N. & Syed Osman (2016). Preservation of Intangible Cultural Heritage Advance Digital Technology: Issues and challenges. *Harmonia: Journal Of Arts Research And Education, 16*(1),1-13.

Ivanovic, Milena. (2009). *Cultural Tourism. Cape Town*. South Afrika: Juta and Company Ltd.

Jasna. (2016). Cultural heritage and the role of voluntary associations in the process of achieving sustainable development in rural communities. *Studia Ethnologica Croatica*, 28(1), 21-45.

Malaysia (2005). Akta Warisan Kebangsaan 2005 (Akta 645). Kuala Lumpur: Jabatan Penerbitan Negara

Matthews, B. & Ross, Liz (2010). *Research Methods: A Practical Guide For The Social Sciences.* Edinburgh Gate: Pearson Education

Mensah, J. (2022). Community perception of heritage values regarding a global monument in Ghana: Implications for sustainable heritage management. *Journal of Humanities and Applied Social Sciences*, *4*(4), 357-375.

Mohd Rasdi, A. L., Mat Som, A. P., Azinuddin, M., Nasir, M. N. M., & Khan, N. F. A. H. (2022). Local community perspective on responsible tourism and destination sustainability. *Planning Malaysia, 20*(3), 255-269.

Mior Shariffuddin, N. S., Wan Mohd Zain, W. M. A., & Azinuddin, M. (2020). Collaborative challenges among stakeholders on destination competitiveness. *International Journal of Innovation, Creativity and Change, 13*(1), 456–466.

Mustafa, S. & Saleh, Y. (2017). An Overview on Intangible Cultural Heritage In Malaysia. *International Journal of Academic Research in Business and Social Sciences*, *7*(4), 1053-1058.

Nawi, M.N.H., Haron, C.R., & Kamarudin, Z. (2020). Risk Cost Analysis In Malay Heritage Conservation Project Planning Malaysia. *Journal of the Malaysian Institute of Planners*, *18*(2), 59 – 72

Samsudin, M. & Sulong, M. (2013). Pengaruh warisan sejarah dalam industri pelancongan langkawi. *International Journal of The Malay World And Civiliisation* (1), 99-109.

Ugong, N.A., & Bilcher Bala (2017). Warisan Budaya Ketara: Peranan Kampung Budaya Sarawak. *Jurnal Borneo Arkhailogia (Heritage, Archaeology and History*), *1*(1), 11-28.

Urry, J. 1990. *The Tourist Gaze: Leisure and Travel in Contemporary Societies*. London: Sage

YuszaidY, M.Y., Dollah, H. & Kechot, A.S (2011). Akta Warisan Kebangsaan, 2005: Tinjauan Sepintas Lalu National Heritage Act, 2005: A Review. *Jurnal Melayu* (8), 173 – 188

Yuszaidy, M.Y. (2015). Undang-undang dan akta perlindungan warisan kebudayaan di Malaysia: Satu analisis perkembangannya. Tesis Doktor Falsafah tidak diterbitkan, Pusat Pengajian Bahasa, Kesusasteraan dan Kebudayaan Melayu: Universiti Kebangsaan Malaysia

Yuszaidy, M.Y. (2018). Pemuliharaan Warisan Budaya Melalui Perundangan Warisan Dan Agensi Pelaksana Di Malaysia. *Jurnal Melayu*, *17*(2), 143-159.

Received: 28th Feb 2023. Accepted: 31st March 2023

PLANNING MALAYSIA:
Journal of the Malaysian Institute of Planners
VOLUME 21 ISSUE 1 (2023), Page 36 – 47

STRATEGY FORMULATION TO EMPOWER INDIGENOUS COMMUNITY INVOLVEMENT IN CULTURAL ECOLOGICAL TOURISM OF KUALA TAHAN NATIONAL PARK

Asmawi Ibrahim[1], Ramle Abdullah[2], Wan Nor Jazmina[3], Wan Nor Azilawanie Tun Ismail[4], Ahmed Olaitan[5]

[1,2,3,4]*Faculty of Applied Social Sciences,*
UNIVERSITI SULTAN ZAINAL ABIDIN, MALAYSIA
[5]*Research Institute of Nigeria,*
IBADAN, NIGERIA

Abstract

Cultural ecological tourism is a source for the preservation of habitats and species of life. This sector is seen as having the potential to generate job opportunities and income for indigenous communities, especially the Orang Asli of the Batek tribe who live around the Kuala Tahan National Park. The main objective of this paper is to discuss strategies to empower the involvement of indigenous communities in cultural ecological tourism in Kuala Tahan National Park. The study was conducted in six Batek settlements by adopting qualitative methods. Data was collected by the application of participatory observation techniques, in-depth interviews, and document analysis. Data was coordinated and analyzed using QSR Nvivo software. The findings of the study show that various strategies can be applied to empowering the Batek people's involvement in cultural ecological tourism such as the cooperation of all parties including government agencies, Non-Governmental Organizations, universities, and tourism companies. Empowerment strategies can also be applied by applying an integrated approach, which is the amalgamation of ecological, and cultural tourism with other economic activities in addition to improving the delivery of quality tourism products and services.

***Keyword**:* Formulate Strategy; Indigenous community; Cultural ecological tourism; National Park

[1] Lecturer at Universiti Sultan Zainal Abidin Email: asmawiibrahim@gmail.com

INTRODUCTION

The Batek people are one of the Orang Asli tribes from the Negrito tribe. The Negrito tribe is the smallest and oldest of the Orang Asli communities in Malaysia. The Negrito tribe is said to be related to the Hoabinhians who settled here about 800-1000 years before Christ (Nicholas, 2000). According to a DNA study conducted by a group of researchers, the Negrito tribe has existed since 50,000 years ago, they migrated from the African continent to Southeast Asia (Suki Mee, 2009). In most cases, the Batek people live on the outskirts of the Titiwangsa range. All in all, they live around the National Park area that is in Kuala Tahan, around the Upper Tembeling River, Kechau River, and Teluk Gunung in Pahang, Gala River, Chiku River, Tako River, Lebir River, Koh River and Aring River in Kelantan and Sayap River in Besut, Terengganu. In terms of population, their total number is 1,447 people, about 0.81% of the total Orang Asli inhabitants in the country (JAKOA, 2011; 2013).

Dichotomizing the Batek people, Endicott (1979) segregates them into several groups such as (i) Batek De' in Sungai Koh, Sungai Aring, and Sungai Lebir; (ii) Batek Iga in Sungai Tahan and Sungai Kechau; (iii) Batek Nong in Sungai Cheka Jerantut Pahang; (iv) Batek Teh is found in Sungai Lah and Sungai Tako Gua Musang, Kelantan and; (v) Batek Te' in Sungai Sayap, Hulu Besut, Terengganu. This division is based on; first, the difference between dialects and spoken language so accordingly dialect becomes their identity. Secondly, their settlement areas are distinct even though there is no clear boundary between one group and the other due to the existence of intermarriage among members of the respective tribal groups (Ramle Abdullah & Suda Kazuhiro, 2009).

The life of the Batek people based on the natural environment forms a variety of unique knowledge and dynamics related to it. All the knowledge they have is the result of exposure, familiarity, and experience with all the elements of the jungle environment they live in. Such ecological knowledge allows the Batek people to organize their lives in an orderly and perfect manner. The knowledge they possess allows the Batek people to exploit all the valuable resources and treasures found in the jungle within the National Park area. Especially knowledge related to the use of flora and fauna as a source of food, economy, housing, medicine, and so on.

Historically, the Batek people are one of the indigenous communities that have a very intimate relationship with the life of nature. Notably, it was also revealed that for the Batek people, the forest is the world (denya) for them. Nature for the Batek people is the wilderness. The life of the Batek people is closely related to their rainforest environment. They sometimes call themselves 'forest people' (batek hep) (Carey, 1976). They consider the forest to be their true abode; when they build a settlement in or near an open area, they say they only hitch a ride (tompang) there (Endicott, 1979). The Batek people explain that their life in

the forest is part of the order of nature which is accounted for by supernatural forces (Endicott, 1979). Although Batek individuals can leave in the forest for a quite long time, they generally believe that if all members of the group move out of the forest, supernatural forces (Hala Asal/Tohan) will destroy the world. This is because supernatural powers have entrusted the Batek people to take care of the forest and everything contained in it from any form of betrayal or actions that could damage the forest ecosystem. Similarly, the minds of the Batek people, not only consist of the physical aspects of nature but also include the spiritual aspects. Forests are considered important in their lives because they have several meanings and functions, namely: (i) as a residential area; (ii) a source of sustenance and economy; (iii) a source of spiritual needs; (iv) the heritage of their ancestors; (v) a place to release the feeling of 'loneliness' and longing (haip); (vi) a place to assimilate with supernatural power and; (vii) a place to get a healthy life (Endicott, 1979; Nurul Fatanah, 2009; Asmawi Ibrahim, 2013).

They are also very knowledgeable about the ins and outs of the National Park jungle. The area is not only where they were born, play and earn a living, but has been a residential area for them for generations. Therefore, all the secrets found in the Kuala Tahan National Park area are stored in the minds of the Batek people. As such, they are the ones who should be prioritized in the tourism industry in the area based on their knowledge. The tourism industry is a rapidly growing sector in many countries (Azinuddin et al., 2022a). Specifically, the ecological and cultural tourism industry is seen to be able to generate jobs and a good income for the surrounding communities (see Mohd Rasdi et al., 2022), especially the Batek people. This industry not only increases the income of the local community but also helps in improving the national economy. This is because tourism products are available in the area and the Batek people themselves can become a tourism asset that can attract the attention of tourists. Therefore, the main objective of this paper is to discuss strategies to empower the Batek people's involvement in cultural ecological tourism in the Kuala Tahan national park (Fatanah et al., 2012; Nur ‘Adilah et al., 2020).

CONCEPTUAL ANALYSES

Cultural ecological tourism is travel and visits that are responsible for the environment and natural areas to enjoy and realize the natural properties, create the cultural understanding that is part of the environment, promote environmental conservation, and enable the involvement of local communities in socio-economic activities that positive (Ros & Wall, 1999; Weaver, 2001; JAKOA, 2013). The concept of ecological cultural tourism is also based on several principles. These principles help the tourism industry achieve its goals and should be supported by other stakeholders such as tourism centre operators, travel agencies and residents. Orang Asli tourism according to Hinch and Butler (1996;

2007) refers to a form of tourism activity that directly involves Orang Asli either controlling or presenting their culture as the basis of attraction. Orang Asli tourism is a phenomenon that involves interrelated elements and involves cultural experiences for visitors. These elements include geography (habitat), ethnographic tradition (heritage), effects of change (history) and marketable products (handicrafts).

Orang Asli culture can be a strong attraction for tourists. From an economic perspective, the Orang Asli are seen as having an advantage through competitive tourism based on their unique culture, hospitality and traditional land. The relationship between the maintenance of culture and interdependence where culture is seen to be able to contribute to economic success and economic success contributes to the maintenance of culture (Hinch & Butler, 2007; Saja et al., 2018). The status of Orang Asli involvement in the tourism industry shows that it is not something foreign. It is proven that Orang Asli abroad and also in the country have been involved in this industry for a long time. For example, there are various Orang Asli tourism agencies certified at the international level that provide various tourism products among the Orang Asli. The agencies are such as; the World Indigenous Tourism Alliance (WINTA), the Western Australian Indigenous Tourism Operators Council (WAITOC) in Australia, the Aboriginal Tourism Association of British Columbia in Canada and the New Zealand Maori Tourism Council in New Zealand (UNESCO, 2007).

In Malaysia, there are Orang Asli who can increase their income and change their socioeconomic status as a result of their involvement with the tourism industry. For example, in a study by Kamaruddin (2008) on the involvement of the Jakun tribe in the ecotourism industry in Endau Rompin State Park. The results of the study show that the involvement of the Jakun people with eco-cultural tourism has changed the socioeconomics of their community. Their knowledge and expertise with the natural environment are applied in the scope of career building and increasing income. As a result of deep traditional knowledge about the secrets of the tropical jungle, the Jakun Indigenous people can generate a very lucrative income of between RM1,500 to RM2,000 per month. They are involved in the eco-cultural tourism industry as tour guides and boat carriers. Almost all the youth and adults in Kampung Peta are involved in the profession. This is because the career they pursue is a career that provides a decent income and can prevent them from being plagued by incidents of poverty. For instance, the Orang Asli who lives in the Endau Rompin State Park has been made one of the tourism products just like the flora and fauna and waterfalls found in the tropical forest. The Orang Asli village and its culture are the focus of people from developed countries (Europe, the United States, Japan, Korea and Singapore) as an exotic and interesting tourist destination to visit. Tourists from developed

countries do not miss the opportunity to visit the Orang Asli village in the middle of the tropical wilderness (Harun et al., 2021).

Orang Asli handicraft art is one of the aspects that can be highlighted as one of the main tourism products. Handcrafted products can open opportunities for Orang Asli to increase income. They can produce handicrafts, art elements closely related to motifs and patterns applied to wood carvings, bamboo, weaving, personal ornaments, snuff, tambourine and a lot more. Handcrafted products can be marketed widely in the country and abroad. Foreign tourists will not miss the opportunity to bring home their handicrafts to their respective countries of origin (Adi, Hood & Rashid, 2006).

METHODOLOGY

This study was conducted among the Batek people who are located in six settlements around the Kuala Tahan National Park area. The settlements that are the focus of the study are Kuala Atok, Kuala Yong, Teresek, Jeram Dedari and Kuala Terengganu and Sungai Keniam. The research method used is a qualitative approach. The use of qualitative methods can help the researcher obtain comprehensive, more accurate, clear data and allow the researcher to make a descriptive statement regarding the aspects being studied. More specifically, this study was carried out within the scope of an ethnographic research design that had been conducted on the Batek Indigenous People in Kuala Tahan, Pahang. The data collected is in descriptive form. The researcher has used three data collection techniques, namely participant observation, in-depth interviews and content analysis. The use of three different techniques is a triangulation technique that will further strengthen the reliability of the study results.

Participant observation is the main technique for obtaining data from study informants. This technique is used to understand the culture and situation of the Batek people such as the relationship of the Batek people with nature, the knowledge and skills they possess as capacity in tourism activities, their involvement in the tourism industry in Kuala Tahan National Park as well as their aspirations in the tourism industry. In applying this technique, the researcher participated in every daily activity carried out by the Batek people, especially related to their knowledge of the elements of nature. The use of this technique is particularly beneficial in the following aspect: (i) allow the researcher to directly observe some issues or phenomena related to the research problem; (ii) get a clear and accurate picture of the issue and also; (iii) Avoiding the possibility of falsification of information by the informant during the interview process.

Regarding the in-depth interview technique as well, it is an important source of data aimed at obtaining a complete description and explanation regarding the things observed, accompanied and things not understood by the researcher. The interview also aims to add as much information or relevant data as possible. Some

of the informants who were interviewed consisted of local leaders, youth groups involved in tourism activities, tourism company employers and related agency staff.

In addition, the researcher also used content analysis techniques, which is to analyze documents related to this study. The researcher has examined documents related to the results of previous studies that are considered relevant and can be used as a backup in further clarifying phenomena related to the study issue. The documents consist of journal articles, seminar papers, related agency reports and previous research findings. Data were analyzed and coordinated using QSR NVivo computer software. The software helps researchers transcribe, store, coordinate and organize research data systematically.

RESULT AND DISCUSSION

The research findings have identified some strategies and procedures for the issues of batek people's involvement in cultural ecological tourism.

Developing a Strategy

In previous studies conducted by Nurul Fatanah (2009), Mohd Sayuti (2013) and Zanisah Man et al. (2009), they all explained that Kuala Tahan National Park is an important tourist destination in Peninsular Malaysia, especially on the East Coast. The combination of tourism resources, attractions and products from clean tropical rainforests and the cultural uniqueness of the Batek people highlight the potential for ecotourism development. An analysis of documents related to rural tourism and current development planning in Kuala Tahan National Park, on the other hand, shows that there is no specific study that has been carried out, especially in forming a strategy/framework to plan, develop and empower ecotourism among the Batek people.

Without a strategy/framework, Twinning-Ward (2007) highlights the potential risk of undermining the planning and empowerment process (misleading stakeholders and potential investors in tourism) of cultural ecological tourism. In the long term, the absence of a strategy/framework causes constraints for stakeholders/authorities to monitor developments including identifying components that require immediate improvement actions (Kamarudin, 2008).

Cooperation of all Parties

Empowerment of ecotourism in an integrated manner brings many benefits not only to the National Park itself but also to interested parties, especially the Batek community. Realizing the importance of collaboration between agencies (see Azinuddin et al., 2020; 2022b), all parties whether government agencies, NGOs, universities and tourism companies need to play an important role in ensuring

that the Batek people benefit from the initial stage of empowerment planning to the implementation stage.

One of the recommendations quoted from the book titled 'A Handbook of Managers of Cultural Landscapes with Natural Resources Values' explains that areas with landscapes characterized by cultural and natural values require a decision-making process that is accepted and fair by all parties involved. Those involved in decision-making must be represented by professionals such as historians, archaeologists, biologists, zoologists, forestry experts, hydrologists, ethnologists, anthropologists, landscape architects, engineers, interpreters, executive officers and entrepreneurship and business experts. An important role that can be played by the experts is to create a team made up of people from different backgrounds. It can be formed specifically as an executive committee or technical committee that will be responsible for empowering Batek people's ecotourism based on the levels of the model that is formed. The role of this committee is not only to guide the Batek people towards the empowerment of ecotourism but also to guide the related government agencies in planning policies, policies to be formed and the implementation of development to ensure that the Batek people get the maximum benefit in ecotourism activities.

Applying an Integrated Approach (Cultural Ecological Tourism with Other Economic Activities)

Building entrepreneurs is a strategic step and alternative livelihood in an effort to improve the socioeconomic status of the Orang Asli. Since many of the Orang Asli tend to be self-employed, alternative livelihoods as entrepreneurs is an approach that suits their aspirations and tastes. The field of entrepreneurship that is developed should not be seen as a process to find a source of sustenance alone, but as a field to empower the Orang Asli community so that they can share the opportunity to reap the wealth of the country like other races in Malaysia.

Ideally, tourism empowerment at the village level will be more effective when it is integrated with other rural economic sectors (using the potential of tourism in supporting other economic activities). As explained, the settlement of the Batek people in Kuala Tahan is located in an area that has many natural and cultural heritage resources. This resource is a very potential product for ecotourism projects. However, the community does not take full advantage of its potential due to internal and external issues such as capital problems, lack of knowledge and skills in managing the business as well a lack of interest among community members to start eco-cultural tourism projects.

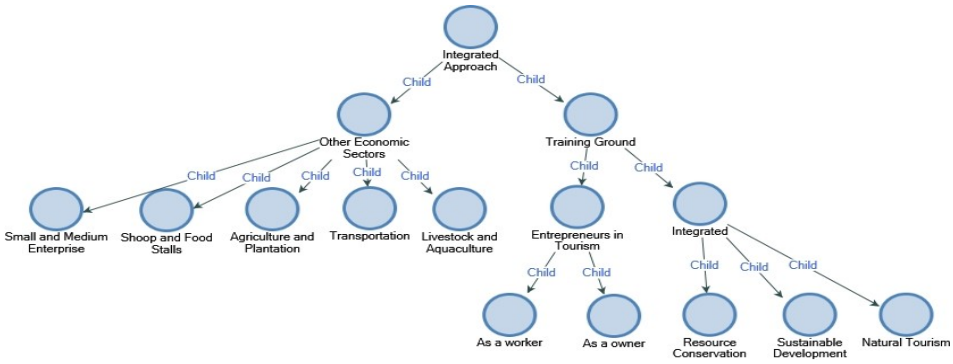


Figure 1: An Integrated Approach in Ecotourism Empowerment

Most of these sectors are pioneered by the Malay and Chinese communities. Batek people are only involved as workers only in the transport service sector and accommodation facilities. They don't own either of those sectors while those two sectors are the main sectors in generating income in Taman Negara Kuala Tahan. If the Batek people or their association manage the transport sector and accommodation facilities themselves, of course, it will provide a good income return to the Batek people. Similarly, in the business sector such as shops and food stalls, the Batek people do not take the opportunity to venture into these fields even though this sector also has a great impact on economic generation in Taman Negara. In addition, other sectors such as fish and animal husbandry, agriculture and plantation, and small and medium enterprises (except handicrafts) are also not carried out among the Batek people.

The attitude of the Batek people regarding external issues further forms the missing link between the community, ecotourism and the local economic sector (Figure 2). Perhaps with the existence of ecotourism empowerment management in the future, the Batek people and other local economic sectors can work together to further benefit directly or indirectly from the sustainability of ecotourism including creating job opportunities, income generation, conservation of local cultural resources, and protection of natural resources and environment for tourism purposes. Figure 2 shows that the Batek people do not have direct contact with various other sectors of the tourism industry in Kuala Tahan National Park.

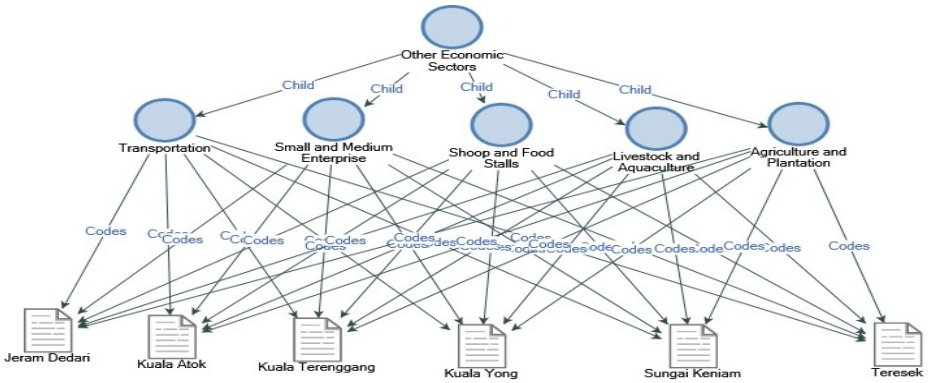


Figure 2: Local Economic Sector

Delivery of Quality in Ecotourism Products and Services

An important indicator in strengthening the sustainability of ecotourism is ensuring the quality of products and services that will be delivered to tourists throughout their stay and visit at any ecotourism destination (Figure 3). The two main strategies that can be adopted are the Development of cultural ecological tourism products - this includes offering interesting activities, providing basic facilities to support ecotourism activities, affordable accommodation facilities with good maintenance and improving access and connections between tourists, Batek people and ecotourism products. In the context of the development of Batek cultural ecological tourism products, the branding of the program concept that will be developed is very important so that it is easily recognized and becomes popular locally and internationally. The brand of the proposed Batek ecotourism empowerment project refers to the Orang Batek Cultural Village (OBCuV). The four domains that will be focused on in this OBCuV project refer to physical facilities, demo/presentation products, sales products and activities.

The physical facilities proposed to be developed in the OBCuV project are tourist accommodation rooms or chalets based on natural materials such as the haya' of the Batek people. In addition, other facilities that need to be built are such as a performance hall, an exhibition hall, a practice hall for blowpipe, an open hall serving water and herbal medicinal products, an open hall for the preparation of traditional food, stalls selling handicrafts and souvenirs, as well as stalls selling food and drinks. The facilities need to be built more neatly and comfortably for visitors who visit the cultural village. As for the demonstration/performance product domain, it covers existing products such as fire lighting and blowpipe demonstrations. While the existing products that have not been empowered are such as demos of preparing drinks and herbal medicinal products for health, demos of traditional food preparation, handicrafts demos and hunting and fishing activities.

While the domain of sales and services covers boat transport and land transport, tourist guides and porters for mountain climbing. Sales products include herbal medicinal products, food and beverages, clothing (shirts, pants and hats), handicrafts and other products that carry the image of the Batek people. Handcrafted products produced by Batek people such as blowpipe and damak tubes, bracelets, hair combs, and woven items such as bags, mats, containers and others.

To complete the OBCuV product, the activity domain also plays an important role for tourists to provide a fun and unforgettable experience for visitors. Among the suggested activities is rafting through the Tembeling River from one location to a specific location. In addition, tourists are also provided with flora and fauna exploration activities such as seeing pakma flowers and orchids, bird watching, wildlife and insects. Tourists will also be provided with jungle survival activities, which are camping and trying to survive in the jungle, in addition to jungle tracking activities and climbing Mount Tahan. In short, the OBCuV product is shown in figure 3.

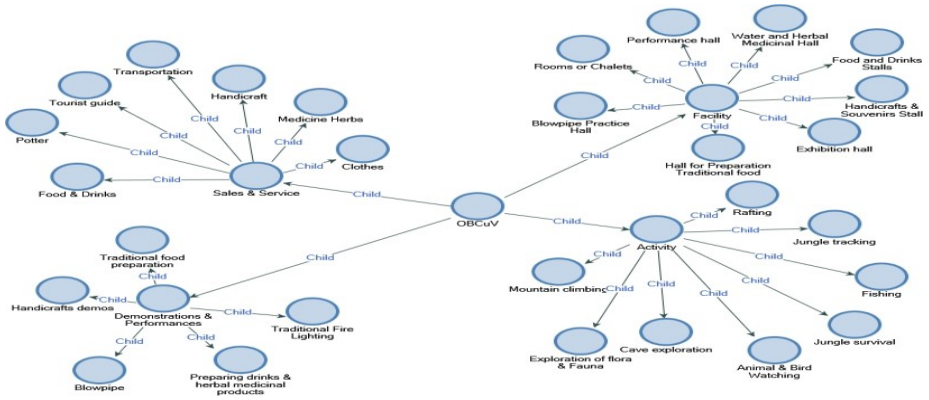


Figure 3: Facilities and Products of the Orang Batek Cultural Village (OBCuV)

The strategy is to emphasize the management side to ensure excellent delivery of the OBCuV destination, fun and tourists/visitors get an unforgettable visit experience with each other. The delivery of high-quality products and services can project a good image to the OBCuV destination. It is also important to highlight during the product promotion and marketing process.

CONCLUSION

Toward empowering Orang Asli cultural ecological tourism in Malaysia, especially in the Kuala Tahan National Park, the involvement of the Batek people needs to be increased directly. This involvement covers several strategies that

have been elaborated. The implementation of this strategy needs to be studied so that the benefits and effects are good for all parties involved including the government represented by specialized agencies, Batek people and visitors. The tourism sector that involves the indigenous community if implemented with the right methods and strategies as discussed allows the Batek people to make this sector a new economic source while also being able to defend their culture and way of life. This success can be used as an example to indigenous communities in other places if this project is successful.

REFERENCES

Adi Taha, Hood Salleh, Rashid Esa. (2006). Orang Asli: Khazanah Tersembunyi. Kuala Lumpur: Jabatan Muzium Malaysia.

Asmawi Ibrahim. (2013). Pengetahuan Tradisional Berkaitan Pemakanan Masyarakat Orang Asli Suku Kaum Batek, Kuala Koh Gua Musang Kelantan. Tesis Ijazah Sarjana Sains Sosial. Kuala Terengganu: Universiti Sultan Zainal Abidin.

Azinuddin, M., Mat Som, A. P., Mohd Saufi, S. A., Zarhari, N. A. A., Amin, A., & Mior Shariffuddin, N. S. M. (2022a). Investigating overtourism impacts, perceived man-made risk and tourist revisit intention. *Planning Malaysia, 20*(3), 239-254.

Azinuddin, M., Mior Shariffuddin, N. S., Hanafiah, M. H., Mat Som, A. P., & Wan Mohd Zain, W. M. A. (2022b). A systematic literature review on tourism networks, knowledge transfer, absorptive capacity, and performance. *Asia-Pacific Journal of Innovation in Hospitality and Tourism, 11*(1), 179-218.

Azinuddin, M., Mior Shariffuddin, N. S., & Wan Mohd Zain, W. M. A. (2020). Profiling entrepreneurs inclinations on networking: A case of small and medium-sized tourism enterprises (SMTEs) in terengganu, Malaysia. *International Journal of Innovation, Creativity and Change, 13*(5), 417–432.

Carey. (1976). Orang Asli: The Aboriginal Tribes of Peninsular Malaysia. Kuala Lumpur: Oxford University Press.

Endicott, K. (1979). Bateq Negrito Religion: The World View and Rituals of a Hunting and Ghatering People of Peninsular Malaysia. Oxford: Clarendon Press.

Fatanah, Nurul & Omar, Mustaffa & Daim, Salleh. (2012). Lawad, Ye' Yo' and Tum Yap: The Manifestation of Forest in the Lives of the Bateks in Taman Negara National Park. *Procedia - Social and Behavioral Sciences. 42*. 190–197. 10.1016/j.sbspro.2012.04.181.

Harun, N. Z., Jaffar, N., & Mansor, M. (2021). The contribution of public space to the social sustainability of traditional settlements. *Journal of the Malaysian Institute of Planners, 19*(5), 192–205. https://doi.org/https://doi.org/10.21837/pm.v19i19.1071

Hinch, Tom, & Butler, Richard. (2007). Introduction: Revisiting Common Ground. In Richard Butler & Tom Hinch (Eds.), Tourism and Indigenouse Peoples; Issues and Implications (pp. 2). USA: Elsevier Ltd.

Hinch Tom, & Butler Richard. (1996). Indigenous Tourism: A Common Ground for Discussion. Tourism and Indigenous People pp3-19.

JAKOA. (2011). Pelan Strategik Kemajuan Orang Asli 2011-2015. Kuala Lumpur:

Jabatan Kemajuan Orang Asli Malaysia.

JAKOA. (2013). Sistem eDamak. http://damak.jakoa.gov.my/ (Mac 2013).

Kamaruddin M. Said. (2008). Ekopelancongan dan Transformasi Sosial Komuniti Orang Asli di Endau Rompin. Dalam Yahaya Ibrahim, Sulung Mohamad & Habibah Ahmad (eds), Pelancongan Malaysia; Isu Pembangunan, Budaya, Komuniti dan Penempatan (pp. 220-227). Sintok: Universiti Utara Malaysia.

Mohd Rasdi, A. L., Mat Som, A. P., Azinuddin, M., Nasir, M. N. M., & Khan, N. F. A. H. (2022). Local community perspective on responsible tourism and destination sustainability. *Planning Malaysia, 20*(3), 255-269.

Nicholas, Colllin. (2000). The Orang Asli and The Contest for Resources. Indigenous Politics, Development and Identity in Peninsular Malaysia. Copenhagen, Denmark. International Work Group for Indigenous Affairs.

Nur 'Adilah Hassan, Nor Zalina Harun & Alias Abdullah. (2020), The Formation of Social Capital in Malay Traditional Settlement. *PLANNING MALAYSIA: Journalof the Malaysian Institute of Planners. VOLUME 18* ISSUE 2 (2020), Page121–132.

Nurul Fatanah. (2009). Batek Hep: Manifestasi Alam dan Kebergantungan Hidup Terhadap Rimba. Tesis Ijazah Sarjana Sains. Institut Alam Sekitar dan Pembangunan (LESTARI), Universiti Kebangsaan Malaysia.

Ramle Abdullah dan Suda Kazuhiro. (2009). Penerimaan Pembangunan di Kalangan Suku Bateq. Dalam Abdul Razaq Ahmad dan Zalizan Mohd Jelas (pnyt). Masyarakat Orang Asli: Perspektif Pendidikan dan Sosiobudaya. Bangi: Universiti Kebangsaan Malaysia.

Ross S, & Wall G. (1999). Evaluating ecotourism: The case of North Sulawesi. Tourism Management in press, Indonesia.

Saja Jamil Alamoush, Nor Haslina Ja'afar, Elina Mohd Husini, & W. N. W. I. 2018. Comfort Character of Landscape Features of Traditional Streets in Amman Jordan. *Journal of the Malaysian Institute of Planners 16*(1): 63–74.

Suki Mee. (2009). Perayaan Jis Pai dan Adat Perkahwinan. Ipoh, Perak: Yayasan Orang Asli. Tom Hinch (Eds.), Tourism and Indegenouse Peoples; Issues and Implications (pp. 2). USA: Elsevier

Twinning-Ward, L. (2007). A Toolkit for Monitoring and Managing Community-Based Tourism. Hawaii: School of Travel Industry Management. (Available online: http://www.snvworld.org/en/Documents/Knowledge

UNESCO. (2007). The Taman Negara National Park of Peninsula Malaysia. UNESCO World Heritage Tentative List Database. http://www.unesco.org/tetativelist/1921 (September 2012).

Weaver. (2001). Chapter 3. Ecotourism environment. pp. 64-95 (optional reading: Fennell (2003). (Natural resources, conservation and protected areas) pp. 39-59.

Zanisah Man, Nurul Fatanah Zahari & Mustaffa Omar. (2009). Kesan Ekonomi Pelancongan Terhadap Komuniti Batek di Kuala Tahan, Pahang (The Impact of Tourism Economy on the Batek Community of Kuala Tahan, Pahang) *Journal e-Bangi. Volume 4*, Number 1, 1 - 12, 2009.ISSN: 1823-884x

Received: 28th Feb 2023. Accepted: 31st March 2023

PLANNING MALAYSIA:
Journal of the Malaysian Institute of Planners
VOLUME 21 ISSUE 1 (2023), Page 48 – 57

APPLICATION OF GIS IN SPATIAL MODEL DEVELOPMENT OF ATTITUDE RESIDENTS TOWARDS RIVER POLLUTION: A CASE STUDY OF THE TERENGGANU RIVER BASIN, MALAYSIA

Norshahida Akma Alias[1], Wan Nor Azilawanie Tun Ismail[2], Aziz Amin[3], Mohd Khairul Amri Kamarudin[4]

[1,2,3,4] *Faculty of Applied Social Sciences,*
UNIVERSITI SULTAN ZAINAL ABIDIN, MALAYSIA

Abstract

Like any other country, Malaysia also faces environmental issues and should not be separated from the threat of water quality deterioration that contributes to river pollution. River pollution occurs due to the community's irresponsible attitude that ignores its importance as a life source. This study aims to develop a spatial model of attitude towards river pollution using GIS. This study used a survey method, which is purposive sampling through questionnaires, involving 396 respondents. The findings were analyzed using XLSTAT to obtain the mean value. GIS was then applied to implement buffer analysis and spatial analysis. The Attitude model was then successfully developed. The study's findings show that the number of people living in Kampung Menerung and Kampung Lubuk Periuk is low. A moderate level of attitude is represented by the people living in Kampung Pasir Pelatar, Kampung Jenagur, Kuala Berang, Kampung Lerek, Kampung Tanggul, Kampung Kuala Ping, Kampung Pelong, Kampung Payung, and Kampung Merbau Menyusut. Next, the findings show the high level of attitude is represented by people living in Kampung Langkap, Kampung Sungai Tong, Bandar Kuala Terengganu, Kampung Seberang Takir, Chabang Tiga, Lapangan Terbang Sultan Mahmud, Manir, Kampung Peradung, Kampung Kuala Jeneris, Kampung Kuala Tajin, and Kampung Kuala Telemong. The study results show that GIS usage is the best approach to assist decision-making for the stakeholders. Therefore, future studies should focus on various variables, including environmental awareness, environmental concerns, environmental values, environmental practices, and involve GIS in solving environmental issues.

Keywords: Attitude, River Pollution, GIS, Terengganu River Basin, Malaysia

[2] Lecturer at Universiti Sultan Zainal Abidin. Email: azilawanieismail@unisza.edu.my

INTRODUCTION

Like any other country, Malaysia also faces environmental issues and should not be separated from the threat of water quality deterioration that contributes to river pollution (Abdullah, 2004). According to Ma'arof & Hua (2015) and Mohd Khairul Amri Kamarudin et al. (2015), river pollution is dissolved chemicals in river water that threaten life. Based on a report released by the Department of Environment (DOE) in 2017, it was found that there are 51 polluted rivers in Malaysia. One of them is the Kim Kim River, located in Johor, due to irresponsible people's disposal of toxic waste, which has negatively impacted people's lives, water quality, aquatic life, and national administration (Utusan, 2019).

The damage that occurred in the environment resulted from the increase in population, which demands development. As a result of this irresponsible attitude, the people are categorized as the major contributors to environmental problems (Wan Nor Azilawanie Tun Ismail & Aziz Amin, 2020; Hanafiah et al., 2019; Yaakob & Moris, 2012; Jaafar et al., 2010). A study conducted by previous researchers proved that the Malaysian public attitude toward the environment is still low (Wan Nor Azilawanie Tun Ismail & Aziz Amin, 2020a and Jamilah Ahmad et al., 2011).

According to the Department of Irrigation and Drainage (DIS) (2016), Sungai Hiliran, part of the Terengganu River Basin, has been contaminated because of commercial activities. Based on the studies conducted by Suratman, Sailan, Hee, & Latif (2015), the average water quality index value in the Terengganu River Basin was approximately 71.5% to 94.6%, which is classified as slightly polluted to clean (Mohd et al., 2019; Wahab et al., 2019; Nalado et al., 2017). While the Terengganu River Basin has been contaminated, it still can be preserved in various ways (Nur Usani Anuar et al., 2019). The limited capacity to solve environmental problems has created various conferences at multiple levels, such as Stockholm Conference in 1972, Tbilisi in 1976, etc.

The Malaysian Plan also emphasizes environmental management at the local level. Therefore, the community's well-being can be achieved easily if activities emphasize the importance of the environment, as a clean environment requires continuous preservation efforts from various parties (Rasdi et al., 2022; Azinuddin et al., 2022). However, although various efforts have been made, human activities that destroy the environment's quality have increased and continue to put the environment seriously (Sahrir et al., 2022). Therefore, this article aims to develop a spatial model of attitude toward river pollution.

LITERATURE REVIEW

According to Petty & Brinol (2010), attitude is an expression of what people like or dislike, support or disprove, positive or negative views of individuals, objects,

and events. At the beginning of 1960, sociologists and environmental researchers introduced studies related to environmental attitudes, Yu (2014), who also studied social psychology (Mostafa, 2007). In this case, environmental attitudes were shaped by individual beliefs and values that ultimately shape verbal commitment, actual commitment, motivation, and intention to act (Zareie & Navimipour, 2016).

The scale widely used to measure human attitudes toward the environment is called the new environmental paradigm, known as the new ecological paradigm, founded by Dunlap & Van Liere's in 1978 (Dunlap et al., 2000; McIntyre & Milfont, 2015). The concept of a new environmental paradigm focuses on the belief that humans can easily damage the environmental balance, that there is a lack of several individuals capable enough to protect the environment, and that humans have the right to control the environment (Dunlap et al., 2000; Lundmark, 2007). Thus, this scale is a basis for developing attitudes to be shaped into pro-environmental behaviors (Dunlap et al., 2000).

METHOD

This study involved 22 areas that are located around the Terengganu River Basin. Areas of study involved four districts, namely Hulu Terengganu, Setiu, Kuala Terengganu, and Kuala Nerus. This study used non-probability sampling by applying the purposive sampling technique. Data collection was conducted through the survey method using a questionnaire as an instrument. A total of 396 respondents participated in this study.

In this study, two analytical methods were used, which are Statistical Software for Excel 2014 (XlStat2014) and ArcMap or ArcGis 10.2, a Geographic Information System (GIS) application. XLSTAT was used to analyze attitudes by using descriptive statistics to obtain mean values. GIS was applied to implement buffer analysis and spatial analysis. Before both analyses were carried out, data for each studied location were collected using the Global Positioning System (GPS). The coordinates obtained from the GPS were based on the coordinate system Latitude and Longitude. After identifying the areas of study located along the Terengganu River Basin, the areas' coordinates were then marked on Google Earth. Using Google Earth, screen digitizing was performed in point, line, and polygon to build a data point for each study area identified. Data built into Google Earth was then converted into the Keyhole Markup Language (KML) format, then transferred into GIS.

In this study, the GIS function was to interpolate the mean data of attitude scores to form spatial models. The space interpolation process was then performed using the Inverse Distance Weighting (IDW) technique to produce a spatial model based on the mean score. Spatial interpolation techniques are an

attribute estimation process with the value of the data recorded by generating new data values (Siti Haslina et al., 2018).

Based on the buffer analysis, residents must live no less than 500 meters from the riverbank. The 500 meters were specified because people living near the riverbank area within the range contributed to the pollution. For spatial analysis, the database involved an overall mean of attitude at each study location, while the geographic base involved the map of the Terengganu River Basin's surroundings. Figure 1 shows the Terengganu River Basin's map.

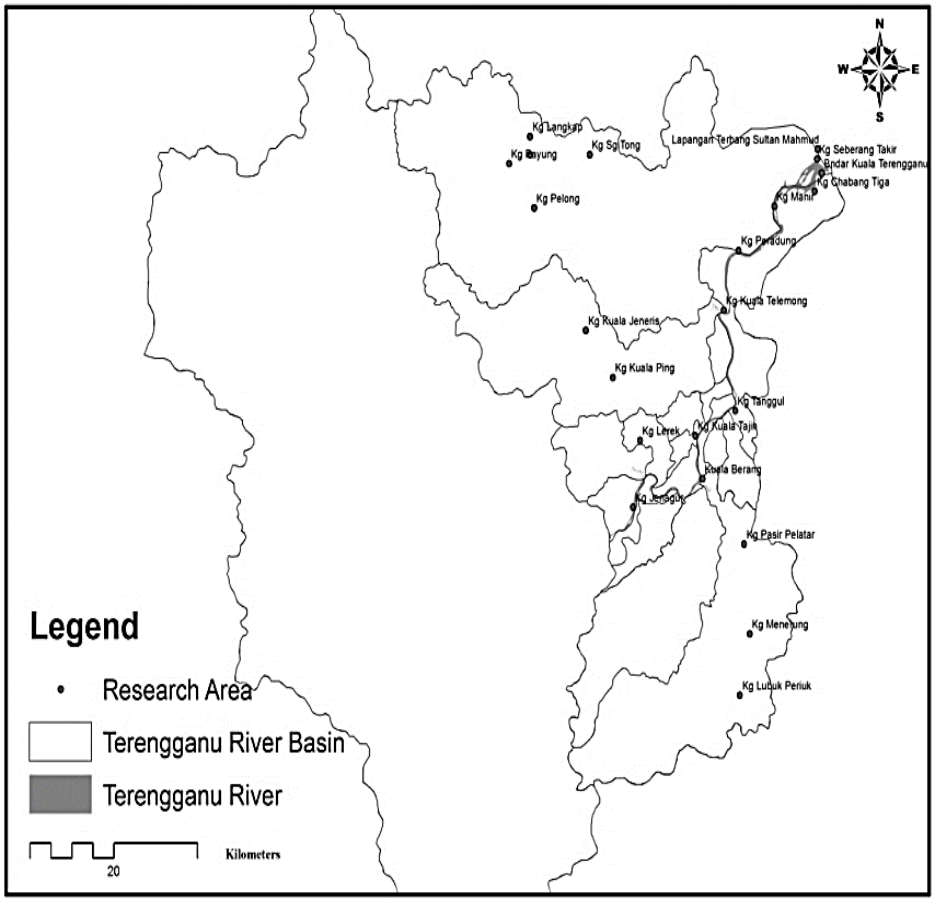


Figure 1: Terengganu River Basin Map
Source: (Norshahida Akma Alias, 2020)

RESULT AND DISCUSSION

Table 1 shows the mean scores for the attitude variables and the mean value obtained from the study areas.

Table 1: Mean Score of Attitude Towards River Pollution.

No.	Areas of Study	Mean Value
1	Kg Kuala Jeneris	5.110
2	Kg Kuala Ping	4.908
3	Kg Lerek	4.857
4	Kg Kuala Tajin	5.188
5	Kuala Berang	4.678
6	Kg Pasir Pelatar	4.796
7	Kg Tanggul	5.093
8	Kg Kuala Telemong	5.087
9	Kg Menerung	3.952
10	Kg Lubuk Periuk	3.904
11	Kg Jenagur	4.586
12	Kg Seberang Takir	5.153
13	Lapangan Terbang Sultan Mahmud	5.097
14	Bndar Kuala Terengganu	5.596
15	Chabang 3	5.676
16	Manir	5.514
17	Kg Peradung	5.195
18	Kg Pelong	4.686
19	Kg Langkap	5.387
20	Merbau Menyusut	4.702
21	Kg Sg Tong	5.485
22	Kg Payung	4.809

Source: (Norshahida Akma Alias, 2020)

The model was developed based on the data from the mean score of attitude variables toward river pollution. The findings show that population distribution based on each study's attitude level can be differed according to the color distribution.

Three colors were produced in the spatial model, and the colors represent each level of attitude, as shown in Figure 2. The results from the map show that the attitude level measurement scales representing the lowest values are (3.90-4.49), the medium values (4.49-5.08), and the high values (5.08-5.67). The results of the attitude towards river pollution at the Terengganu River Basin are described in Figure 2.

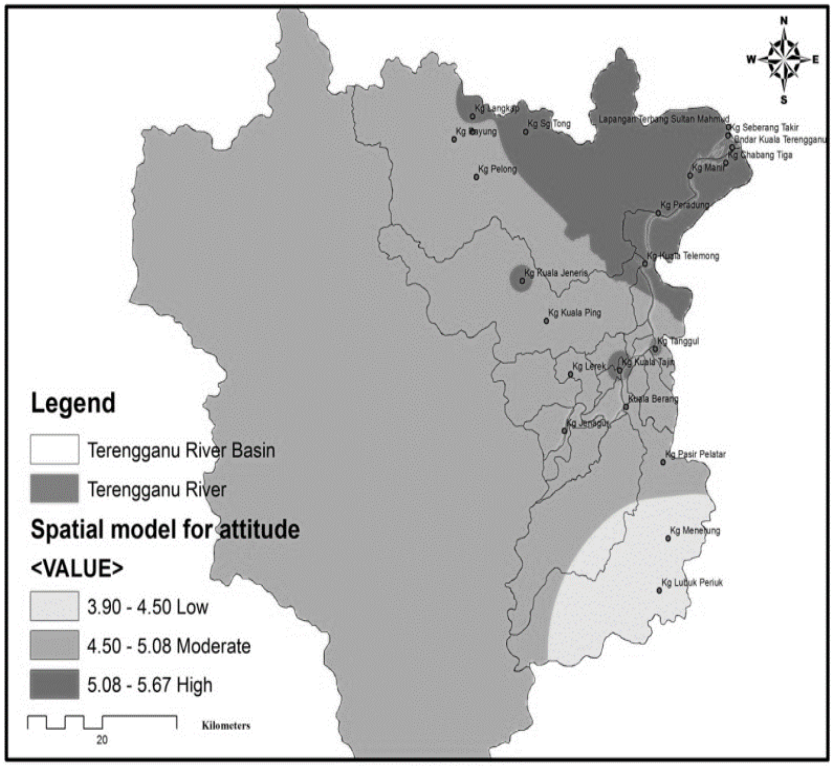


Figure 2: Spatial Model for Attitudes Toward River Pollution
Source: (Norshahida Akma Alias, 2020)

The study's findings show that the number of people living in Kampung Menerung and Kampung Lubuk Periuk is low, which parallels the studies conducted by (Jamilah Ahmad et al., 2011; Tamby Subahan Mohd Meerah, Lilia Halim, & Nadeson, 2010). The findings show the locations of the study were in the rural areas in Hulu Terengganu District. Environmental education can be an intervention that can change society to have environmental knowledge. Therefore, knowledge can help improve understanding, thus fostering awareness and changing people's attitudes toward a more sustainable life (Bakar, Osman, & Hitam, 2020).

The findings show that a moderate level of attitude was represented by people living in Kampung Pasir Pelatar, Kampung Jenagur, Kuala Berang, Kampung Lerek, Kampung Tanggul, Kampung Kuala Ping, Kampung Pelong, Kampung Payung and Kampung Merbau Menyusut. The findings parallel with studies conducted by (Abun & Aguot, 2017; Ali, 2015; Patial, 2016). The results show that people in this area were still sensitive toward river pollution issues.

According to Mahadi & Yusof (2003), people are more susceptible to environmental issues when the problem occurs in their environment. When they become aware of the problem, efforts to conserve the environment will be taken to prevent water quality, aquatic life, and human life. Therefore, environmental campaigns are one of the alternatives that can help people better understand river pollution. Thus, the government, non-governmental organizations and others should organize the campaign to educate and bring awareness to the community about the importance of river conservation.

Lastly, the findings show the high level of attitude is represented by people living in Kampung Langkap, Kampung Sungai Tong, Bandar Kuala Terengganu, Kampung Seberang Takir, Chabang Tiga, Lapangan Terbang Sultan Mahmud, Manir, Kampung Peradung, Kampung Kuala Jeneris, Kampung Kuala Tajin, and Kampung Kuala Telemong. The findings parallel with studies conducted by (Abun & Aguot, 2017; Arbaat, Norshariani, & Sharifah Intan Sharina, 2010; Bozoglu, Bilgic, Topuz, & Ardali, 2016; Majumder, 2019; Shahzadi, Hussain, Afzal, & Gillani, 2018; Sultana, Hossen, & Khatun, 2017). Community involvement is vital to those who have a direct impact on environmental issues. Community cooperation can address river pollution because commitment shown through community involvement can contribute to the formation of a positive attitude towards river pollution. Thus, the participation of various parties is essential in raising environmental concerns.

CONCLUSION

Residents who live near the river should be responsible for maintaining the river environment. Efforts to keep the river clean are not only focused on them but also on each individual's responsibility. The findings show that there were two areas with low levels of attitude. With the use of GIS technology combined with environmental elements, it should be highlighted that it can help stakeholders decide.

This result allows the Department of Environment (DOE), the Department of Irrigation and Drainage (DID), and the university needs to find a solution to improve awareness, especially for Kampung Menerung dan Kampung Lubuk Periuk. This study focuses on the elements of attitudes that can influence river pollution. Therefore, future studies need to focus on various variables, including environmental awareness, environmental concerns, environmental values, and environmental practices. They should also involve using GIS in solving environmental issues as these aspects are essential indicators that can contribute to the formation of environmental sustainability.

ACKNOWLEDGEMENTS

This article was supported by the Faculty of Applied Social Science, Universiti Sultan Zainal Abidin, Terengganu, Malaysia.

REFERENCES

Abdullah, M. F. (2004). Application Of Land Use Approaches In Controlling Industrial Wastewater Discharge Into Rivers. *Journal of The Malaysian Institute of Planners, 2*(1), 69-84. Doi:Https://Doi.Org/10.21837/Pm.V2i1.43

Abun, D., & Aguot, F. (2017). Environmental Attitude and Environmental Behavior of Senior High School Students of Divine Word Colleges in Region I, Philippines. *International Journal of Educational Research*, *1*(2), 33–69. https://doi.org/10.21522/TIJAR.2014.04.01.Art003

Ali, A. R. (2015). Environmental Awareness Level amongst Secondary School Students in Terengganu, Malaysia Based on Different Variables. *International Journal of Education and Research*, *3*(3), 135–152.

Arbaat, H., Norshariani, A. R., & Sharifah Intan Sharina, S. A. (2010). The level of environmental knowledge, awareness, attitudes and practices among UKM students. In *The 3rd Regional Conference on engineering education and Research in Higher Education*. Kucing, Sarawak, Malaysia.

Azinuddin, M., Som, A. P. M., Saufi, S. A. M., Zarhari, N. A. A., Amin, W. A. A. W. M., & Shariffuddin, N. S. M. (2022). Investigating overtourism impacts, perceived man-made risk and tourist revisit intention. *Planning Malaysia, 20*(3), 239-254.

Bakar, A. A., Osman, M. M., & Hitam, M. (2020). Attitudes And Pro Environmental Behaviors: Determining Factor Of Personality And Lifestyle. *Planning Malaysia Journal, 18*(11), 1-10. Doi: Https://Doi.Org/10.21837/Pm.V18i11.704

Bozoglu, M., Bilgic, A., Topuz, B. K., & Ardali, Y. (2016). Factor affecting the students' environmental awareness, attitudes and behaviors in Ondukuz Mayis University, Turkey. *Fresenius Environmental Buletin*, *25*(4), 1243–1257.

Dunlap, R. E., Liere, K. D. Van, Mertig, A. G., & Jones, R. E. (2000). Measuring Endorsement of the New Ecological Paradigm : A Revised NEP Scale. *Journal of Social Issues*, *56*(3), 425–442. https://doi.org/10.1111/0022-4537.00176

Hanafiah, M. M., Ghazali, N. F., Harun, S. N., Abdulaali, H. S., AbdulHasan, M. J., Kamarudin, M. K. A. (2019). Assessing water scarcity in Malaysia: a case study of rice production. *Desalination and water Treatment, 149*, 274-287.

Jaafar, O., Toriman, M. E., Sharifah Mastura, S. A., Gasim, M. B., Lan, P. I., Abdullah, P., Kamarudin, M. K. A., Abdul Aziz, N. A. (2010). Modeling the Impacts of Ringlet Reservoir on Downstream Hydraulic Capacity of Bertam River Using XPSWMM in Cameron Highlands, Malaysia. *Research Journal of Applied Sciences 5*(2), 47-53.

Jamilah Ahmad, Hasrina Mustafa, Hamidah Abd Hamid, & Juliana Abdul Wahan. (2011). Pengetahuan, sikap dan amalan masyarakat Malaysia terhadap isu alam sekitar. *Akademika*, *81*(3), 103–115.

Lundmark, C. (2007). The new ecological paradigm revisited: anchoring the NEP scale in environmental ethics. *Environmental Education Research*, *13*(3), 329–347. https://doi.org/10.1080/13504620701430448

Ma'arof, N., & Hua, A. K. (2015). Kualiti air Sungai UTM : Satu Penilaian Awal Berpandukan Enam Parameter Indeks Kualiti Air. *Malaysia Journal of Society and Space*, *11*(1), 107–115.

Mahadi, Z., & Yusof, N. (2003). Kesedaran alam sekitar : tinjauan awal di kalangan pelajar Universiti Kebangsaan Malaysia. In *Prosiding Seminar Kebangsaan Pengurusan Persekitaran 2003*. Bangi, Universiti Kebangsaan Malaysia.

Majumder, S. (2019). Assessment of knowledge, attitude and practices against inhaled particulate matter among urban residents in Dhaka, Bangladesh. *Journal of Health Research*, *33*(6), 460–468. https://doi.org/10.1108/JHR-12-2018-0168

McIntyre, A., & Milfont, T. L. (2015). Who Cares ? Measuring Environmental Attitudes. In R. Gifford (Ed.), *Research Methods for Environmental Psychology* (1 edition, pp. 93–114). Milton, QLD, Australia: Wiley-Blackwell.

Mohd, F. A., Abdul Maulud, K. N., Karim, O. A., Begum, R. A., Awang, N. A., Ahmad, A., Wan Mohamed Azhary, W. A. H., Kamarudin, M. K. A., Jaafar, M., Wan Mohtar, W. H. M. (2019). Comprehensive coastal vulnerability assessment and adaptation for Cherating Pekan coast, Pahang, Malaysia. *Ocean & Coastal Management, 182*, 104948.

Mohd Khairul Amri Kamarudin, Mohd Ekhwan Toriman, Mohd Hafiz Rosli, Hafizan Juahir, Nor Azlina Abdul Aziz, Azman Azid, … Wan Nor Azmin Sulaiman. (2015). Analysis of meander evolution studies on effect from land use and climate change at the upstream reach of the Pahang River, Malaysia. *Mitig Adapt Strateg Glob Change*, *20*, 1319–1334.

Mostafa, M. M. (2007). Gender differences in Egyptian consumers' green purchase behaviour : the effects of environmental knowledge , concern and attitude. *International Journal of Consumer Studies*, *31*(3), 220–229.

Nalado, A. M., Kamarudin, M. K. A., Wahab, N. A., Rosli, M. H., & Saudi, A. S. M. (2017). Assessment of individual water quality index parameter in Terengganu River, Malaysia. *Journal of Fundamental and Applied Sciences ISSN*, *9*(2S), 430–442.

Norshahida Akma Alias. (2020). Pembangunan Model Reruang Bagi Pengetahuan, Sikap dan Tingkah Laku Penduduk di Lembangan Sungai Terengganu. *Master Dissertation*. Universiti Sultan Zainal Abidin.

Nur Usani Anuar, Anisha Emilia Redzuan, Nur Nadia Hani Rosnan, Nur Salsabila Mohamed, Fadhillah Afiqah Rosli, & Wan Mohd Yusof Wan Chik. (2019). Pemuliharaan Sungai Menurut Islam Dan Aplikasinya Dalam Konteks Sungai Terengganu. In *Proceedings of the International Conference on Islamic Civilization and Technology Management 23-24 November 2019* (pp. 158–167). Research Institute for Islamic Product and Malay Civilization (INSPIRE) Universiti Sultan Zainal Abidin (UniSZA).

Patial, B. S. (2016). Environmental Awareness Level amongst Secondary School Students in Kangra District Based on Different Variables Baljeet Singh Patial. *Journal of Environmental Science, Toxicology and Food Technology*, *10*(12), 20–25.

Petty, R. E., & Brinol, P. (2010). Attitude Structure and Change Implications for Implisit Measures. In *Handbook of Implicit Social Cognition: Measurement, Theory, and Applications* (pp. 335–352). https://doi.org/10.1017/CBO9781107415324.004

Rasdi, A. L. M., Som, A. P. M., Azinuddin, M., Nasir, M. N. M., & Khan, N. F. A. H. (2022). Local community perspective on responsible tourism and destination sustainability. *Planning Malaysia, 20*(3), 255-269.

Sahrir, S., Ponrahono, Z., & Sharaai, A. H. (2022). Modelling the community adaptive behaviour towards air pollution: A confirmatory factor analysis with pls-sem. Planning Malaysia, 20.

Shahzadi, A., Hussain, M., Afzal, M., & Gillani, S. A. (2018). Determination the Level of Knowledge, Attitude, and Practices Regarding Household Waste Disposal among People in Rural Community of Lahore. *International Journal of Social Sciences and Management*, *5*(3), 219–224.

Siti Haslina, M. S., Mastura, M., Suzani, M., Nor Lita Fadilah, R., Mohd Khairi, I., Ahmad Farez, M., & Ramdzani, A. (2018). Influence of Population On Urban Air Pollution In Klang Valley Using Geographic Information System (GIS). In *The 2nd International Conference On Social And Economic Development (ICSED-UMT 2018)* (pp. 1–13).

Sultana, N., Hossen, M. S., & Khatun, R. (2017). Assessment of Environmental Knowledge and Attitude of Secondary Level Students of Tangail, Bangladesh. *International Journal of Research in Environmental Science*, *3*(2), 41–46.

Suratman, S., Sailan, I., Hee, Y. Y., & Latif, M. T. (2015). A Preliminary Study of Water Quality Index in Terengganu River Basin , A Preliminary Study of Water Quality Index in Terengganu River Basin , Malaysia. *Sains Malaysiana*, *44*(1), 67–73.

Tamby Subahan Mohd Meerah, Lilia Halim, & Nadeson, T. (2010). Environmental citizenship: What level of knowledge, attitude, skill and participation the students own? *Procedia - Social and Behavioral Sciences*, *2*, 5715–5719.

Utusan. (2019, July). Makin gusar, sungai kian tercemar. Hulu Langat.

Wahab, N. A., Kamarudin, M. K. A, Toriman, M. E., Juahir, H., Saad, M. H. M., Ata, F.M., Ghazali, A., Hassan, A. R., Abdullah, H., Maulud, K. N., Hanafiah, M. M., Harith, H. (2019). Sedimentation and water quality deterioration problems at Terengganu River basin, Terengganu, Malaysia. *Desalination and water Treatment, 149,* 228-241.

Wan Nor Azilawanie Tun Ismail, & Aziz Amin. (2020a). Community concerns of river pollution in Terengganu, Malaysia. *Humanities & Social Sciences Reviews*, *8*(5), 246–257.

Wan Nor Azilawanie Tun Ismail, & Aziz Amin. (2020b). Examining the relationship between factors influencing environmental behavior among polluted river communities. *International Journal of Advanced Science and Technology*, *29*(7s), 479–487.

Yaakob, Z. A., & Moris, Z. (2012). Hak Asasi Manusia (Human Rights) dalam Menangani Krisis Alam Sekitar : Perspektif Seyyed Hossein Nasr. *International Journal of Islamic Thought*, *2*, 80–90.

Zareie, B., & Navimipour, N. J. (2016). The impact of electronic environmental Knowledge On The Environmental Behaviors Of People. *Computers In Human Behavior*, *59*, 1–8.

Received: 28th Feb 2023. Accepted: 31st March 2023

PLANNING MALAYSIA:
Journal of the Malaysian Institute of Planners
VOLUME 21 ISSUE 1 (2023), Page 58 – 71

ANALYSIS OF THE FLASH FLOOD EVENT AND RAINFALL DISTRIBUTION PATTERN ON RELAU RIVER BASIN DEVELOPMENT, PENANG, MALAYSIA

Muhammad Hafiz Md Saad[1], Mohd Khairul Amri Kamarudin[2], Mohd Ekhwan Toriman[3], Noorjima Abd Wahab[4], Frankie Marcus Ata[5], Mohd Armi Abu Samah[6], Ahmad Shakir Mohd Saudi[7], Sianturi Novdin Manoktong[8]

[1,4]*East Coast Environmental Research Institute,*
[2]*Faculty of Applied Social Sciences,*
UNIVERSITI SULTAN ZAINAL ABIDIN, MALAYSIA
[3,5]*Faculty of Social Sciences and Humanities,*
UNIVERSITI KEBANGSAAN MALAYSIA, MALAYSIA
[6]*Kulliyyah of Science,*
INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA
[7]*Institute of Medical Science Technology,*
UNIVERSITI KUALA LUMPUR, MALAYSIA
[8]*Faculty of Engineering,*
UNIVERSITAS SIMALUNGUN, NORTH SUMATRA, INDONESIA

Abstract

Typical disaster flooding and flash floods in Malaysia. Floods occur especially during the wet season within the geographical region area which is especially influenced by the northeast monsoon. So the sampling study was conducted in March 2019 in normal season. Cross-sectional measurements involving the measurement of river width, river depth and velocity were conducted at both sampling times. The main objective of this study was to identify the pattern of rainfall distribution and river discharge rate in the River Basin Relative when the flash flood event occurred. The average seasonal discharge value in the normal Relau River (Upstream) is 0.04 m^3s^{-1}, Relau River (Midstream) is 0.57 m^3s^{-1}, Relau River (Downstream) is 0.35 m^3s^{-1}. Whereas for Ara River (Midstream) is 0.78 m^3s^{-1}, Ara River (Downstream) is 0.19 m^3s^{-1}) and Kluang River (Upstream) is 0.18 m^3s^{-1}. The estimated value for flash flood shows that total water and sewer capacity that occurred during the flash floods was to increase the water level by five meters from the normal season water level with an estimated water velocity of $m^3s^{-1}$for this area. The reading shows the Relau River (Upstream) reading 5.18 m^3s^{-1}, the Relau River (Midstream) is m^3s^{-1} the Relau River (Downstream) is 18.20 m^3s^{-1}. While for Ara River (Midstream) is 24.53 m^3s^{-1}, Ara River (Downstream) is 25.35 m^3s^{-1}) and Kluang River (Upstream) is 26.22 m^3s^{-1}.

Keywords*:* Cross-section, flood, river basin development, river discharge, rainfall

[2] Lecturer at Universiti Sultan Zainal Abidin. Email: mkhairulamri@unisza.edu.my

INTRODUCTION

According to DID (2000), floods can be classified into two types, namely flash floods and monsoon floods. Hydrology, the main difference between the two categories of this flood is that it is taken for the level of expression to return to the normal level of flood discharge. Flash floods take a few hours to return to the normal level of expression compared to monsoon floods which can sometimes take up to a month to go to normal levels (Kamarudin et al., 2019a; Kamarudin et al., 2015a).

Floods became one in all the foremost frequent natural disasters worldwide. The rise in such a weather event (flood) is principally caused by global climate change (Hirabayashi et al., 2013). Floods have an enormous potential to wreck natural and man-made resources (Huang et al., 2008; Kamarudin, 2019a; Kamarudin et al., 2015b). Flood occurrences affect over 20,000 individuals annually worldwide (Sarhadi et al., 2012). Over 90% of property loss and distressed means of livelihood in Asia are caused by floods (Smith, 2013; Paul et al., 2019; Kamarudin, 2019b).

Otherwise, flash flooding is defined as a rapid and extreme flow of high water into a normally dry area, or a rapid water level rise during a stream or creek above a predetermined flood level within six hour of the causative event (NOAA 2012). Between 2015 and 2017, flash flooding has resulted in additional fatalities than lightning, hail, tornadoes, and straight-line wind damage from thunderstorms combined (NWS 2017). Between October 2015 and October 2016, there are approximately $19 billion in losses from flooding disasters over the contiguous U.S. (CONUS; Novak 2017).

Flash floods are the fast inundating of low-lying areas within the mountainous regions; they're induced either by the large rainfall within the short period, sudden failure of dam and levee or debris flow (Elkhrachy, 2015). Although entire mitigation of flash flood is impossible, a flash flood susceptibility map (FFSM) prepared through appropriate methods may be a standard tool useful for the reduction of the detrimental impacts of flash floods and associated risks (Huang et al., 2008).

Flash floods occur within catchments, where the latency of the catchment basin is brief. In line with the American Meteorological Society, flash flood events generally do not give advance warning and so, they cause significant risk and destruction thanks to their complex and dynamic environmental settings and nature (Georgakakos, 1986; Collier, 2007). Flash flood occurrence is affected by various watershed characteristics (type of basin and drainage), anthropogenic activities (land use, deforestation, and engineering science construction) and the environmental condition like amount, intensity, spatial distribution, and time of rainfall. Recently, global climate change is altering the environmental condition which can result in flash flood condition at one place and drought condition at

another place. Therefore, the past may not be a reliable guide to the long run. Thus, within the planning of flood management, especially of flash get urban areas (Wahab et al., 2019; Mohd et al., 2019). In Malaysia, most typical disaster flooding and flash floods. Floods occur especially during the wet season within the geographical region area which is especially influenced by the northeast monsoon (Saudi et al. 2015; Muhammad et al. 2016). In ongoing decades, the quantities of utmost climatic events like storms, flood, dry spells and heat waves have expanded around the world (Sungip et. al, 2019; Field et. al, 2012; Toriman et. al, 2009). The monitoring of river discharge is vital frequency for body of water resources direction, water residue rating at the basin scale, and flood purpose additionally as for the calibration and validation of hydrological models. Spada et al. (2017) stated that despite the most impact of discharge data on many environmental management takings, their evaluation nearly always relies on the employment of the so-called rating curves.

According to Chan (1997), the risk and vulnerability of urban communities to flash floods are increasing in Malaysia lately. This can be seen based on the increase in urban areas that consist of land use, not permeable water such as asphalt, cement and concrete surfaces. A clear flash flood disaster can lead to a loss to society and the environment. Losses suffered as a result of flood disasters can be categorized into two types, which are direct losses and indirect losses. Usually, the loss from flood disaster is very dependent on the socio-economic level of the population in the flood area (Rasdi et al., 2022; Azinuddin et al., 2022). According to Chan (2000), the impact of flood disaster was more felt by the residents of the lower income square areas compared to the medium and high income population. The main objective of this study was to identify the pattern of rainfall distribution and river discharge rate in the River Basin Relative when the flash flood event occurred. This is to see whether or not there is a correlation between these factors and the seasonal rate of discharge.

METHOD

This study was carried out in the River Basin Furnace at coordinates 5°19'26.2'N 100°16'50.9'E (Figure 1) consisting of the River, Ara River and Kluang Relau Rivers in Penang. The basin is located in the South western part of Penang. It can be said that almost every year the area is hit by lightning floods if it rains. Convective rain more than 60 mm in 2 to 4 hours duration may cause flash floods. However, monsoon rains are typical of long duration with intermittent heavy bursts and the intensity can occasionally exceed several hundred mm in 24 hours.

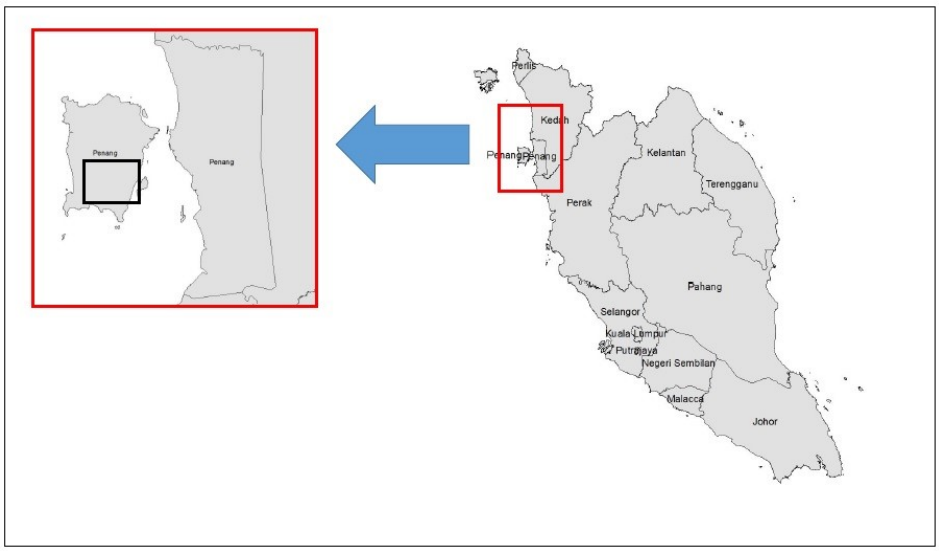


Figure 1: Location of Relau River Basin

There are seven main locations that are often hit by lightning bankers in this area such as the Sri Relau School area, Jalan Paya Terubong, the Relau Area, Sunshine Bayan Baru, Masjid Bayan Baru, Jalan Mahsuri, Persiaran Mahsuri and Jalan Tengah (Figure 3 and Table 2). These areas are often flooded because almost the whole area is covered with placement and the river is also not large and wide. This also caused the river to not be able to accommodate the amount of rain that fell in a long period. The situation will become worse if the occurrence of large tides in the sea that enter through the Kluang River as well as blocking the discharge of water from the land area.

Due to the low position of this area, namely the height at the mean sea level is 10 meters, often flood events will occur if river water levels increase due to heavy rain and abundant because the river is no longer able to accommodate excess water capacity. Due to the low altitude of this area, with a mean sea level of 10 meters, flood events often occur when river water levels rise due to heavy rainfall and floods because the river can no longer sustain excess water capacity such as the September 2017 flood event. In addition, flash floods have also been reported in November 2017, November 2018, September 2019. This situation continues to cause problems for residents as property damage occurs every time a flood occurs (Figure 2).

Figure 2: Flash flood events that have occurred in the study area

Due to the possibility that the problem will recur without inventory, a study sample has been carried out in the Relau River Basin (Figure 3 and Table 1). The status of the sampling system has been identified using the Digital Global Positioning System (DGPS) where the sampling has been carried out on Mac 2019. Mac month is chosen because at this time it is a normal season. This has made it easier for the work to be sampled because it is not exposed to the danger of flooding and so on if it is carried out in the rainy season.

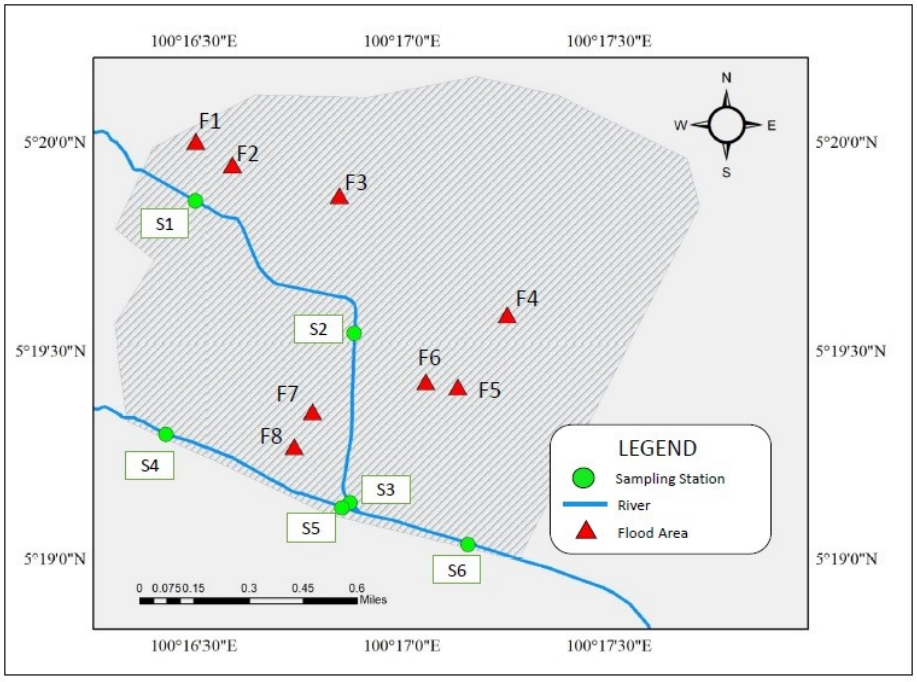


Figure 3: Map of sampling station and flood area

Table 1: Sampling station for the study areas

	Station	Latitude	Longitude
S1	Relau River (Upstream)	5°19'51.4"N	100°16'30.3"E
S2	Relau River (Midstream)	5°19'32.3"N	100°16'53.1"E
S3	Relau River (Downstream)	5°19'08.0"N	100°16'52.5"E
S4	Ara River (Midstream)	5°19'17.9"N	100°16'26.0"E
S5	Ara River (Downstream)	5°19'07.3"N	100°16'51.3"E
S6	Kluang River (Upstream)	5°19'01.9"N	100°17'09.6"E

Table 2: Flood hotspot area in Relau River Basin

No.	District	Flood Hotspot Area	City
F1	Timur Laut	Sekolah Sri Relau	Bayan Lepas
F2	Timur Laut	Jalan Paya Terubong	Bayan Lepas
F3	Timur Laut	Kawasan Relau	Bayan Lepas
F4	Barat Daya	Sunshine Bayan Baru	Bayan Baru
F5	Barat Daya	Masjid Bayan Baru	Bayan Baru
F6	Barat Daya	Jalan Mahsuri	Bayan Lepas
F7	Barat Daya	Persiaran Mahsuri	Bayan Lepas
F8	Barat Daya	Jalan Tengah	Bayan Lepas

Source: Penang State Government (2019)

a) Hydrographic calculation

Calculation Area (A):

The area of each section is obtained by taking into account the depth absorbed by the vertical boundary and multiplied by between the vertical boundaries (Kamarudin et al., 2015a).

$$A = b \times d \quad \text{..... [1]}$$

A = cross sectional area (m2)
b = distance between vertical boundaries (m)
d = water depth (m)

b) Calculation of river discharge (Q)

The cross-sectional area (A) and average velocity (v) are known, the slope (Q) can be calculated from Q = vA. Because the water depth and flow velocity are not uniform for the entire cross-section. Accurate discharge measurements are obtained by dividing the cross-section into several sub-sections called sections. Each section is limited by surface water, river bottom and 2 vertical lines, called vertical. Each vertical is a common dimension of two continuous sections and the depth of water and the velocity of the stream are set for observation. Adequate

velocity observations were made to obtain the average velocity at each vertical boundary (Figure 4). So, the average velocity of the section is:

$$V = (v0.2d \times v0.8d)/2 \text{ or } v0.6d \quad \text{..... [2]}$$

The result of the average and wide velocity of each section gives the cut-off.

$$Q = (bd)(v0.2d \times v0.8d)/2 \quad \text{..... [3]}$$
$$\text{or } Q = (bd)(v0.6d)$$

And the sum of all the cutoffs gives the sum of the sums.

$$Q = (Q0,1)+(Q1,2)+(Q2,3)...+(Qn,n+1) \quad \text{..... [4]}$$

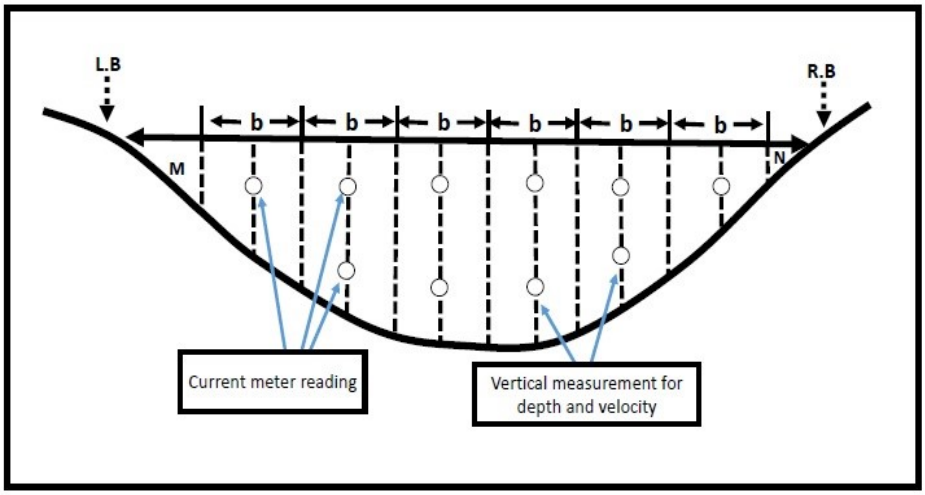


Figure 4: Discharge Measurement Theory
(Jamil et. al (2012)

c) Rainfall

An annual rainfall distribution is also available to see if there is any direct effect of the amount of rainfall and the occurrence of this flash flood. The average annual rainfall in 2013 to 2019 in Penang and the monthly rainfall in 2019 in Penang have been obtained from the Malaysian Meteorological Department.

RESULT AND DISCUSSION

Annual rainfall distribution is also available to see if there is any direct effect of the amount of rainfall and the occurrence of this flash flood. The average annual rainfall in 2013 to 2019 in Penang and the monthly rainfall in 2019 in Penang have been obtained from the Malaysian Meteorological Department.

Hydrological data results

a) River discharge

Calculations were performed using flow velocity data, widths and river depths to obtain the discharge rates and water capacity measured by the three rivers. The Relau River is a river that has been darkened. So, erosion and policy erosion is difficult here. The river is not too wide. Whereas the Ara River and Kluang River are common and relatively wide rivers. The discharge rates for these rivers have been recorded. Discharge rate is the amount of water that exceeds one cross section at a time (Gordon et al. 2004). The average seasonal discharge value in the normal Relau River (Upstream) is 0.04 m^3s^{-1}, Relau River (Midstream) is 0.57 m^3s^{-1}, Relau River (Downstream) is 0.35 m^3s^{-1}. Whereas for Ara River (Midstream) is 0.78 m^3s^{-1}, Ara River (Downstream) is 0.19 m^3s^{-1}) and Kluang River (Upstream) is 0.18 m^3s^{-1} (Table 3).

Table 3: Water discharges occur during flash floods

Station	Location	Width (m)	Discharge (m^3/s)		
			Normal	Maximum	Flash Flood
S1	Relau River (Upstream)	2.7	0.04	2.88	5.18
S2	Relau River (Midstream)	11.5	0.57	25.63	27.28
S3	Relau River (Downstream)	8.2	0.35	12.75	18.20
S4	Ara River (Midstream)	14	0.78	18.97	24.53
S5	Ara River (Downstream)	12	0.19	19.73	25.35
S6	Kluang River (Upstream)	14	0.18	24.25	26.22

The width and depth of the river are still able to accommodate a rather large quantity of water with rather high velocity values. For maximum discharge that can be accommodated by the sample area as well, Relau River (Upstream) recorded a reading of 2.88 m^3s^{-1}, Relau River (Midstream) was 25.63 m^3s^{-1}, Relau River (Downstream) was m^3s^{-1}. Whereas for Ara River (Midstream) is 18.97 m^3s^{-1}, Ara River (Downstream) is 19.73 m^3s^{-1}) and Kluang River (Upstream) is 24.25 m^3s^{-1}.

However, if continuous rain events occur, the river is no longer able to accommodate the capacity of rainwater. Coupled with pulping runoff surface water in the surrounding area, water capacity increases rapidly and causes the occurrence of flash flood events. The increase in water in this area usually breaks down 0.5 - 1 meter rather than the maximum face.

Therefore, the estimated total water and sewer capacity that occurred during the flash floods was to increase the water level by five meters from the normal season water level with an estimated water velocity of m^3s^{-1} for this area.

The reading shows the Relau River (Upstream) reading 5.18 m^3s^{-1}, the Relau River (Midstream) is m^3s^{-1} the Relau River (Downstream) is 18.20 m^3s^{-1}. While for Ara River (Midstream) is 24.53 m^3s^{-1}, Ara River (Downstream) is 25.35 m^3s^{-1}) and Kluang River (Upstream) is 26.22 m^3s^{-1}.

The recent increase in water levels and low water levels has caused this area to be hit by flash floods due to the low rainfall. This situation is also shown in Figure 5 which is the value of discharge rates that occur during normal seasons, maximum capacity as well as readings during flash floods.

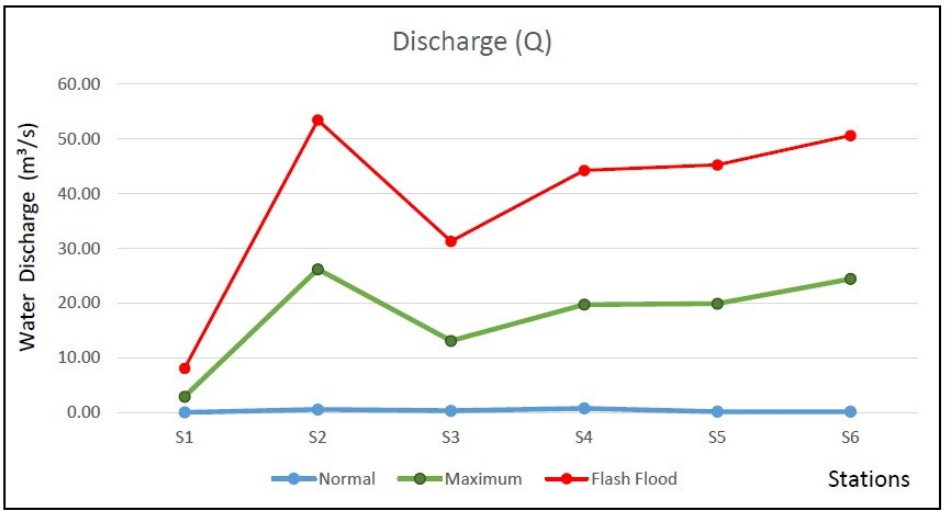


Figure 5: Rate of water discharge by station and season

b) Rainfall

Looking at the rainfall distributions as in Figure 6, the annual rainfall distributions show an increase from 2013 to 2017 which recorded average readings in 2013 of 2519mm, 2014 (2390mm), 2015 (2453mm), 2016 (2493mm), 2017 (2642mm), 2018 (2574mm) and 2019 (2530mm). Looking at this trend, 2017 recorded the highest figure of 2642mm. With heavy rainfall during that time, in September 2017, heavy flooding occurred in almost all areas of Penang with Georgetown becoming the worst affected area following Seberang Perai Central and Southwest. This incident was further aggravated by the high tide. Many property damages has occurred and many floodplain areas have been opened to cover flood victims.

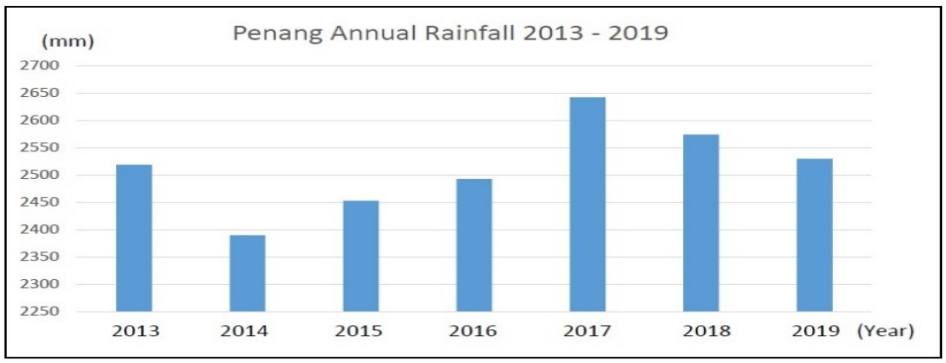


Figure 6: Annual rainfall 2013-2019
(Source: Malaysian Meteorological Department., 2019)

Following the incident, several drastic actions were taken by the Penang State Government, including accelerating the Flood Mitigation project and expected to be completed by October 2020. However, there are some constraints, particularly the size of some smaller rivers such as the Relau River that need to be deepened and was deployed to prevent such incidents from happening again. The initiative taken by the Penang State Government to address this problem is commendable because the effects of the flood can have devastating properties as well as the lives of residents.

During the duration of this project, flash floods were still occurring in some places especially in the River Basin Furnace but on a smaller scale and receding in a faster time. Figure 7 shows the monthly rainfall distribution for 2019 during which sampling is conducted. After 2017, a series of flash floods were recorded in the Relau River.

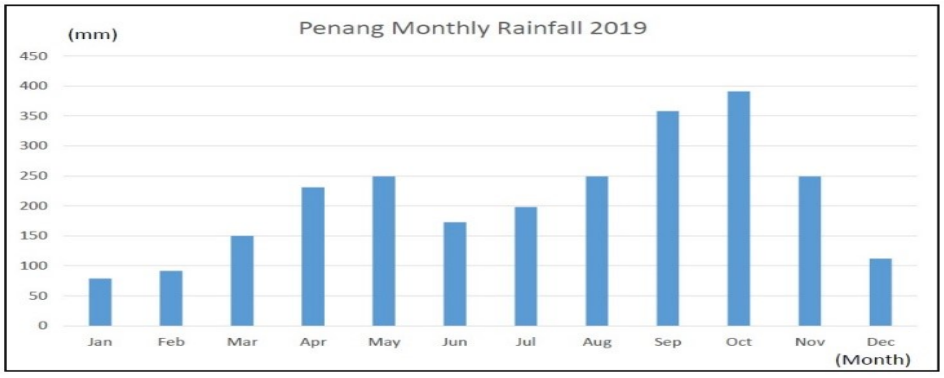


Figure 7: Monthly rainfall 2019
(Source: Malaysian Meteorological Department., 2019)

Rather than the data obtained, this situation shows that the amount of annual or monthly rain sprinkles gives a big impression in the occurrence of flash floods prevailing in the Relau River Basin. Although this situation is increasingly reduced, inventory measures still need to be taken while awaiting the flood reduction project is fully prepared.

CONCLUSION

This study shows that the discharge is directly proportional to the amount of rainfall. In addition, the occurrence of cliff erosion, dumping of rubbish into the river can also cause blocked water flow which in turn increases the level of the reservoir and the occurrence of flash floods. Hopefully, with the completion of the flood mitigation project in progress, this problem will be fully resolved in the future. This situation can serve as a role model for other places throughout Malaysia in particular and around the world to take appropriate steps in the event of such incidents.

ACKNOWLEDGEMENT

The authors would like to acknowledge UniSZA and MOHE for scholarship under research grants: (FRGS/1/2017/WAB05/UNISZA/01/1) - RR222.The authors would like to specially thank the Department of Irrigation and Drainage (DID) and Penang State Government for the secondary data and Universiti Sultan Zainal Abidin (UNISZA) who give permission to use research facilities and support in this research.

REFERENCES

Azinuddin, M., Som, A. P. M., Saufi, S. A. M., Zarhari, N. A. A., Amin, W. A. A. W. M., & Shariffuddin, N. S. M. (2022). Investigating overtourism impacts, perceived man-made risk and tourist revisit intention. *Planning Malaysia, 20*(3), 239-254.

Chan, N. W., & Parker, D. J. (1997). Aspek-aspek sosio-ekonomi berkaitan dengan bahaya dan bencana banjir di semenanjung Malaysia. *Proceedings of Persidangan Kebangsaan Kajian Sains Sosial,* 29-30.

Chan, N.W. (2000) Faktor paling signifikan terhadap keterukan subjektif impak banjir. Dlm Perbandaran dan perancangan persekitaran. Mohd Razali Agus & Fashbir Noor Sidin (pnyt). Kuala Lumpur: Utusan Pub. (ms. 249-261)

Collier, C. G. (2007). Flash flood forecasting: What are the limits of predictability?. *Quarterly Journal of the Royal Meteorological Society: A journal of the atmospheric sciences, applied meteorology and physical oceanography, 133*(622), 3-23.

Department of Irrigation and Drainage Malaysia (DID). (2000). Urban stormwater management manual for Malaysia.

Elkhrachy, I. (2015). Flash flood hazard mapping using satellite images and GIS tools: a case study of Najran City, Kingdom of Saudi Arabia (KSA). *The Egyptian Journal*

of Remote Sensing and Space Science, 18(2), 261-278.

Field, C. B., Barros, V., Stocker, T. F., & Dahe, Q. (Eds.). (2012). Managing the risks of extreme events and disasters to advance climate change adaptation: special report of the intergovernmental panel on climate change. Cambridge University Press.

Georgakakos, K. P. (1986). On the design of national, real-time warning systems with capability for site-specific, flash-flood forecasts. *Bulletin of the American Meteorological Society, 67(*10), 1233-1239.

Hirabayashi, Y., Mahendran, R., Koirala, S., Konoshima, L., Yamazaki, D., Watanabe, S., ... & Kanae, S. (2013). Global flood risk under climate change. *Nature Climate Change, 3*(9), 816-821.

Huang, X., Tan, H., Zhou, J., Yang, T., Benjamin, A., Wen, S. W., ... & Li, X. (2008). Flood hazard in Hunan province of China: an economic loss analysis. *Natural Hazards, 47*(1), 65-73.

Jamil, N. R., Toriman, M. E., Idris, M., & How, N. L. (2012). Analisis ciri-ciri luahan Sungai Chini dan Sungai Paya Merapuh Tasik Chini, Pahang bagi waktu normal, waktu basah dan selepas banjir. *e-Bangi, 9*(1), 34-47.

Kamarudin, M. K. A., Muhammad, N.S., Saad, M. H. M., Abd, N., Wahab, (2019a). Environmental Awareness Level Among University Students in Malaysia: A Review. *International Journal of Engineering & Technology, 7*(5S4), 509-511

Kamarudin, M. K. A., Nalado, A. M., Toriman, M. E., Juahir, H., Umar, R., Ismail, A., ... & Saudi, A. S. (2019b). Evolution of river geomorphology to water quality impact using remote sensing and GIS technique. *Desalination and Water Treatment, 149*, 258-273.

Kamarudin, M. K. A., Toriman, M. E., Juahir, H., Azid, A., Gasim, M. B., Saudi, A. S. M., Umar, R., Sulaiman, N. H., Ata, F. M., Mustafa, A. D., Amran, M. A., Yusoff, W. A., Azaman, F. (2015b). Assessment of river plan change using RS and GIS technique. *Jurnal Teknologi, 76*(1), 31-38.

Kamarudin, M. K. A., Toriman, M. E., Rosli, M. H., Juahir, H., Aziz, N. A. A., Azid, A., ... & Sulaiman, W. N. A. (2015a). Analysis of meander evolution studies on effect from land use and climate change at the upstream reach of the Pahang River, Malaysia. *Mitigation and Adaptation Strategies for Global Change, 20*(8), 1319-1334.

Malaysian Meteorological Department. (2019). Cuaca di Pulau Pinang. Retrieved from https://weather.com/msMY/weather/monthly/l/b29f1c3fb5f58be7dde46f764e2da5354dee4e851f07516e50bbac763c092bd0

Malaysian Meteorological Department. (2019). Pencerapan Permukaan. Retrieved from http://www.met.gov.my/projection/rain

Mohamed A., Rahim S. A., Aitman D. A., Kamarudin M. K. A. (2016). Analysis of seasonal soil organic carbon content at Bukit Jeriau Forest, Fraser Hill, Pahang. *Malaysian Journal of Analytical Sciences, 20*(2), 452-460.

Mohd, F. A., Abdul Maulud, K. N., Karim, O. A., Begum, R. A., Awang, N. A., Ahmad, A., Wan Mohamed Azhary, W. A. H., Kamarudin, M. K. A., Jaafar, M., Wan Mohtar, W. H. M. (2019). Comprehensive coastal vulnerability assessment and adaptation for Cherating Pekan coast, Pahang, Malaysia. *Ocean & Coastal Management, 182,* 104948.

NOAA. (2012). Hydrologic Services Program, definitions and general terminology. National Weather Service Manual 10-950, 5 pp., https://www.nws.noaa.gov/directives/sym/

Novak, D. R. (2017). The $1 billion dollar flood disasters of 2016. Major Weather Impacts of 2016, Seattle, WA, Amer. Meteor. Soc., 2.2A, https://ams.confex.com/ams/97Annual/webprogram/ Paper317351.html.

NWS. (2017). Summary of Natural Hazard Statistics in the United States. NOAA, accessed 15 October 2018, http://www.nws.noaa.gov/os/hazstats/sum17.pdf.

Paul, G. C., Saha, S., & Hembram, T. K. (2019). Application of the GIS-Based Probabilistic Models for Mapping the Flood Susceptibility in Bansloi Sub-basin of Ganga-Bhagirathi River and Their Comparison. *Remote Sensing in Earth Systems Sciences, 2(*2-3), 120-146.

Penang State Government (2019, July 1). Penang Flood Hotspot Area. Retrieved from http://www.data.gov.my/data/ms_MY/dataset?organization=penang-state-government &_organization_limit=0&groups=alam-sekitar

Rasdi, A. L. M., Som, A. P. M., Azinuddin, M., Nasir, M. N. M., & Khan, N. F. A. H. (2022). Local community perspective on responsible tourism and destination sustainability. *Planning Malaysia, 20*(3), 255-269.

Recanatesi, F., Petroselli, A., Ripa, M. N., & Leone, A. (2017). Assessment of stormwater runoff management practices and BMPs under soil sealing: a study case in a peri-urban watershed of the metropolitan area of Rome (Italy). *Journal of environmental management, 201,* 6-18.

Sarhadi, A., Soltani, S., & Modarres, R. (2012). Probabilistic flood inundation mapping of ungauged rivers: Linking GIS techniques and frequency analysis. Journal *of Hydrology, 458*, 68-86.

Saudi, A. S. M., Azid, A., Juahir, H., Toriman, M. E., Amran, M. A., Mustafa, A. D., ... & Saudi, M. M. (2015). Flood risk pattern recognition using integrated chemometric method and artificial neural network: A case study in the Johor River Basin. *Jurnal Teknologi, 74*(1), 34-56.

Smith, K. (1997). Environmental hazards: assessing risk and reducing disaster. *Environment International, 3*(23), 422-432.

Spada, E., Sinagra, M., Tucciarelli, T., & Biondi, D. (2017). Unsteady State Water Level Analysis for Discharge Hydrograph Estimation in Rivers with Torrential Regime: The Case Study of the February 2016 Flood Event in the Crati River, South Italy. *Water, 9*(4), 288-290.

Sungip, F. N., Kamarudin, M. K. A., Saad, M. H. M., Abd, N., Wahab, A. P. M. S., Umar, R., & Harith, H. (2018). The Impact of Monsoon Flood Phenomenon on Tourism Sector in Kelantan, Malaysia: A Review. *International Journal of Engineering & Technology, 7*(4.34), 37-40.

Szewrański, S., Kazak, J., Szkaradkiewicz, M., & Sasik, J. (2015). Flood risk factors in suburban area in the context of climate change adaptation policies–Case study of Wroclaw, Poland. *Journal of Ecological Engineering, 16*(2), 1-15.

Toriman, M. E., Kamarudin, M. K. A., SA, S. M., Idris, M. H., Jamil, N. R., & Gasim, M. B. (2009). Temporal variability on lowland river sediment properties and yield. *American Journal of Environmental Sciences, 5*(5), 657-663.

Wahab, N. A., Kamarudin, M. K. A, Toriman, M. E., Juahir, H., Saad, M. H. M., Ata, F.M., Ghazali, A., Hassan, A. R., Abdullah, H., Maulud, K. N., Hanafiah, M. M., Harith, H. (2019). Sedimentation and water quality deterioration problems at Terengganu River basin, Terengganu, Malaysia. *Desalination and water Treatment,* 149, 228-241.

Received: 28th Feb 2023. Accepted: 31st March 2023

PLANNING MALAYSIA:
Journal of the Malaysian Institute of Planners
VOLUME 21 ISSUE 1 (2023), Page 72 – 88

COMMUNITY-BASED TOURISM (CBT) MOVING FORWARD: PENTA HELIX DEVELOPMENT STRATEGY THROUGH COMMUNITY LOCAL WISDOM EMPOWERMENT

Hendri Azwar[1], Mohd Hafiz Hanafiah[2], Arni Abd Ghani[3], Muaz Azinuddin[4], Nur Shahirah Mior Shariffuddin[5]

[1]*Fakultas Pariwisata dan Perhotelan,*
UNIVERSITAS NEGERI PADANG, INDONESIA
[2,3]*Faculty of Hotel and Tourism Management,*
UNIVERSITI TEKNOLOGI MARA, MALAYSIA
[4,5]*Faculty of Applied Social Sciences,*
UNIVERSITI SULTAN ZAINAL ABIDIN, MALAYSIA

Abstract

This paper highlights the key stakeholders' influences on the local community's involvement in CBT development. Further, this paper explores the potential of Penta-Helix multi-stakeholders collaboration as a viable CBT development strategy. Through systematic content analysis, this paper explores the link between CBT, the Penta-Helix development model and how it intertwines with local community wisdom empowerment. This paper identifies three gaps in community-based tourism: i) Shortcomings from the top-down tourism development planning system, ii) the need for more collaboration between the community and the tourism stakeholders and iii) the lack of community local wisdom empowerment. This paper reflects on the nexus between tourism and local community wisdom inclusiveness, particularly in the CBT sustainability realm. This paper highlighted how the Penta-Helix cooperation could be achieved through optimising the community's local wisdom role through collaborative actions by the academics, business, government, and media as tourism core stakeholders.

***Keywords**:* Penta helix, Community-based tourism (CBT), community local wisdom

[2] Senior Researcher at Universiti Teknologi MARA Email: hafizhanafiah@uitm.edu.my

INTRODUCTION

The relevance of community involvement in tourism has been well-recognised among academia and practitioners worldwide. Most researchers claim that the local community is a significant tourism stakeholder; hence their involvement and collaboration are vital for sustainable community-based tourism (CBT) development (Diana & Setiawan, 2021; Widhianthini., 2017; Rodrigues & Prideaux, 2018; Mohd Rasdi et al., 2022; Salleh et al., 2016). As a result, CBT has been widely promoted as a means of rural tourism development whereby local communities' social, environmental and economic needs are met by offering tourism products and services to visitors. Researchers claimed active community participation could provide development benefits, especially for economic, socio-cultural, and environmental well-being (Nurulwahida et al., 2020). However, other researchers claimed that uncontrolled development would erode local cultural wisdom values if not preserved (Ernawati et al., 2019; Putra, 2019; Singh et al., 2021).

Most existing CBT literature research focuses on CBT stakeholders' tasks and responsibilities. The Penta-Helix collaboration in supporting CBT development offers rigorous economic growth and job creation for the community (Giampiccoli & Saayman, 2018; Nagarjuna, 2015). However, the tourism stakeholder's collaborative efforts in question are the role of Penta-Helix in supporting community-based tourism (CBT) development (Diamantis, 2018). A study by Ernawati et al. (2019) focusing on community-based tourism (CBT) found that the role of each stakeholder in managing CBT is divided into two, namely the internal and external stakeholders, based on the power, legitimacy, and urgency attributes. Apart from external stakeholders, numerous studies highlighted the importance of host community participation in affecting the external stakeholders' relationships (Giampiccoli & Saayman, 2018).

By integrating the Penta-Helix concept within the CBT development realm, this paper discusses the key stakeholders' influences on the local community's involvement in CBT development. Further, this paper highlights the need for tourism policymakers and businesses to understand the broader context of the potential of Penta-Helix multi-stakeholders collaboration as a viable CBT development strategy. Collaboration, community involvement, and support issues have yet to be thoroughly studied, especially among developing destinations (Hadijah, 2019; Singh et al., 2021). Such information would help determine the essential components of successful CBT and produce guidelines for successfully implementing CBT development with Penta-helix cooperative model. Avoiding overlapping stakeholder responsibilities (through the Penta-Helix) in CBT development would increase the knowledge and understanding of CBT and the distribution of direct and direct benefits to the community.

LITERATURE REVIEW

Community-based Tourism

CBT is a unique type of tourism, characterised differently from mass tourism which integrates the general concept of sustainable development (Tou et al., 2020). The concept of CBT depends on the unique products available in the area (Ismail et al., 2016), and the local community must back the whole development of tourism (Giampiccoli & Saayman, 2018). Notably, CBT emphasised giving local developing control and directly feeling the economic impact. Second, the local community must be involved in the planning and management process to participate in decision-making. Third, benefits must be distributed justly and equally to the community hosts and guests directly interacting. Lastly, CBT emphasises local involvement and control of tourism development, from managing, implementing, and evaluating to distributing the benefits and collaborating with related stakeholders. Table 1 show distinct CBT definitions and concept.

Table 1: Definitions and Concepts of CBT

Sources	Definitions
Nagy and Segui (2020)	The CBT grows as a reaction from local communities or organisations working on behalf of local communities.
Phuong et al. (2020)	In the process, CBT has been a tourism form where the main objective is to develop sustainable tourism and economic welfare.
Curcija et al. (2019)	CBT is considered a tourism alternative in developing, creating and maximising chances and advantages for the locals.
Mayaka et al. (2018)	CBT may enable community development through the enactment of control over local tourism.
Giampiccoli and Saayman (2018)	CBT is regarding community empowerment, development, social justice, equity in sharing benefits, sector ownership of tourism, and redistribution measures.
Putra (2015)	CBT is a tourism design that lets locals control, develop, and manage tourism. Besides, the design is meant that more benefit stays within the community.
Salazar (2012)	CBT emphasises that tourism programs and outputs focus on the heritage of culture and nature.
Stone and Stone (2011)	CBT aims to ensure that local people possess robust control of activities in their area and gain many economic benefits.
Lapeyre (2010)	CBT is a concept that creates beneficial economic activities and other vast advantages, and locals benefit decision-makers for communities.
Pongponrat and Pongquan (2007)	The development of CBT was meant to create tourism that can develop self-reliant communities, involve locals as decision-makers, support human rights and raise locals' income and living standards.

Source: Researcher findings

CBT has been recognised widely for helping the community survive economically and socially and preserve natural resources in developing countries (Strydom et al., 2019). However, in order to be successful, CBT's development must include several objectives such as economic, socio-cultural, environmental (Giampiccoli & Mtapuri, 2020), and political. The contribution of CBT to community development and sustainability is essential to the local economy (Lee & Jan, 2019). In addition to increasing local incomes and employment, CBT is believed to have the potential to develop capacities and empower the local people (Imbaya et al., 2019). Notably, CBT creates sustainable job vacancies that benefit internal and external community members (Nagy & Segui, 2020).

From a social perspective, CBT can improve the quality of life, increase independence, and share roles fairly in community management organisations (Ikhtiagung & Radyanto, 2020). Then on the cultural aspect, the conservation of local traditions and values of locals can be initiated through CBT activities (Hidayat et al., 2017). The development of the community conserves the sustainable environment, education, and resource of nature. Ultimately, politics pushes decision-making, autonomy, local participation, sovereignty, and community control over initial and regulating development schemes. To conclude, CBT is meant to develop community by integrating the attributes of economic, cultural, social, environmental, and political. The CBT development concepts can be viewed in Figure 1 below. Implementing these concepts during the CBT development programs is vital to advocate sustainable tourism to develop the environment further and sustain the environment simultaneously (Sutresna et al., 2019).

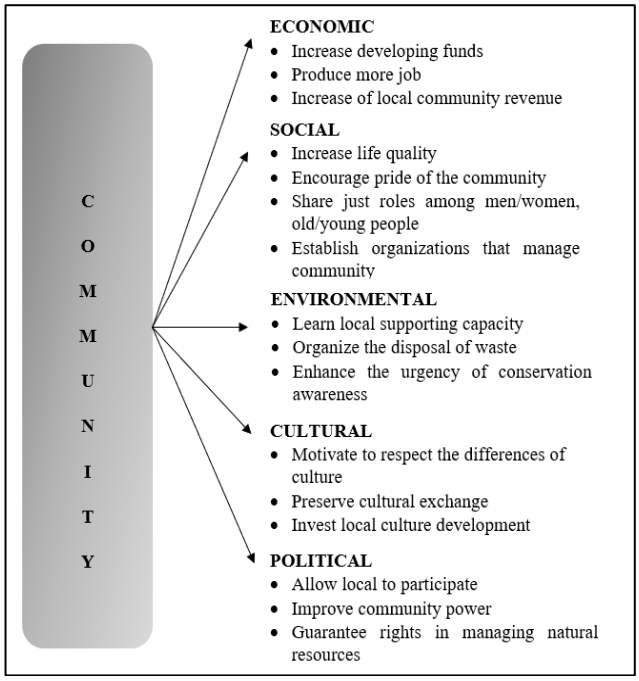


Figure 1: The concept of CBT development

It is important to note that there are noticeable barriers to CBT success. Based on the literature (Curcija et al., 2019; Diana & Setiawan, 2021; Ullah & Kim, 2020), barriers to local community participation include: i) low level of education and lack of knowledge about tourism; ii) financial and living conditions are still low; iii) lack of time to participate in tourism because of a busy daily routine; iv) tourism perception of the local community about low income periodically business; and v) power distinction, institutional obstacle, and local's disbelief in authorities.

Most studies showed the community's low satisfaction with CBT activities, creating conflict (Curcija et al., 2019) and suppressing dynamic stakeholder collaboration (Muhyi et al., 2017). This is more pertinent in developing countries, where the challenge often faced is the heterogeneity of local communities and the need to equalise perceptions in looking at tourism as a way to enhance the local communities (Sutresna et al., 2019). Furthermore, the locals needed more tourism impact awareness, causing their minimal motivation to participate (Diana & Setiawan, 2021) actively. Besides, as most of the decisions were made by the higher-level government to the local government, the communities have no say in the planning and execution of tourism development, thus creating tension between parties (Ullah & Kim, 2020). This caused dissent within the community and caused a lack of collaboration between the local

governments and the community (Nurhasanah & Persada, 2018). As community awareness is still shallow, it certainly requires cooperation among the local wisdom (Sudiana et al., 2020).

Some efforts have been made to recognise the essential elements of thriving CBT in one country in collaboration with investors like the government, magnates (private), media, scholars, and the community (Nurulwahida et al., 2020). Specifically, the concept of CBT depends on the unique natural products available in a particular area (Giampiccoli & Saayman, 2018) and the community's local wisdom in supporting the overall tourism activities. Notably, excellent collaboration and interaction between external stakeholders and the community by respecting the community's local wisdom are essential for CBT's success (Curcija et al., 2019; Zielinski et al., 2020).

Penta-Helix Tourism Development Strategy

Community sustainability in tourism development is vital to enhance the destination's socio-economic and locals' livelihoods, especially in rural destinations. Hence, efforts have been made to recognise the essential elements in successful CBT development. Particularly, excellent collaboration and interaction between stakeholders are critical for CBT's success (Nurulwahida et al., 2020). Their dynamic participation allows them to benefit from tourism activities and indirectly enhance their community values and livelihood. The such effect would only come from active stakeholder deliberation and consensus, noting its impact on the community, based on a healthy environment and ecology principles, and in line with the local's values in social, culture, tradition, and religion (Cabrera-Flores et al., 2020). However, besides different geographical locations, the livelihood assets' impact may differ from that faced by the local community due to the internal and external stakeholders' support. Hence, the Penta-Helix model is poised as the best way to promote competitiveness and sustainability for synergistic activities between tourism destinations and their stakeholders (Ikhtiagung & Radyanto, 2020; Sudiana et al., 2020).

Notably, the Penta-Helix model promotes developing synergy among agencies to optimise tourism development goals (Nainggolan et al., 2020; Sedarmayanti, 2014). The model enables the local community to engage in policy-changing processes with stakeholders in building a partnership driven by the community for the community. Moreover, the Penta-Helix model combines multiple actors in tourism development, including the academic, business, community, government, and media elements (Bagus, 2019; Rodrigues & Prideaux, 2018). The Penta-Helix cooperation was assumed to orchestrate and ensures the quality of activities, facilities and services, creating experiences and value of tourism benefits to benefit the community and the environment (Sudiana et al., 2020; Yudha et al., 2019). The Penta-Helix model (Figure 2) includes actors

such as the Academic (Academy), Business (Commercial), Government (Public Sector), Community (Citizens) and Media (Commercial).

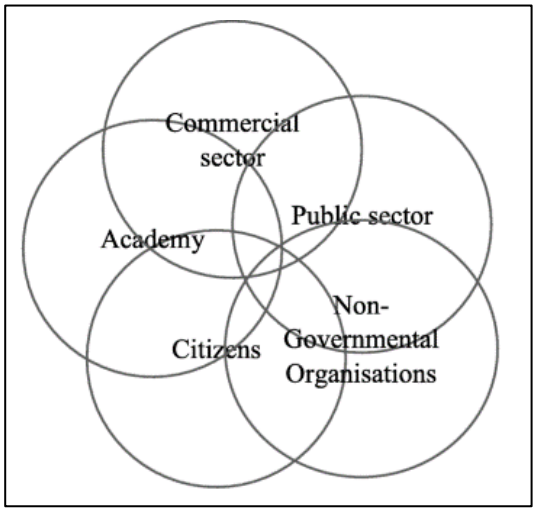


Figure 2: Penta-Helix Model

Academic

Human resource development is the principal contribution of academics, such as producing the best graduates and supplying skilled workers in the field of tourism. They play an essential role in innovating new products and businesses practising knowledge (Carayannis & Campbell, 2010). Academics possessing knowledge and expertise in tourism offer value to tourism stakeholders. The role of the academics in the model is to offer standardised processes regarding the activities and certify skills and human resources (Ikhtiagung & Radyanto, 2020; Nainggolan et al., 2020). Besides, they possess business development concepts and theories to get competitive benefit sustainability (Muhyi et al., 2017), encouraging and enabling the dissemination of ideas and implementation of innovation and entrepreneurship traits (Sudiana et al., 2020).

Within the Penta-Helix model realm, the academic members would offer views and analyses from accurate data and theories. They would consider the current situation in the area before deciding on the strategic formula to develop tourism, especially to encourage growth in the community's economy (Nurulwahida et al., 2020). The main contribution of academic research in supporting the development of CBT is to assist the community in developing an understanding of CBT, preparing various components of products, human resource development, marketing, and management of tourism products and services (Ernawati et al., 2019).

Business

The Penta-Helix model highlights the importance of investor and private enterprise collaboration (see Azinuddin et al., 2022a, 2022b). They encourage startup innovation, including capital support, networking, and business cooperation (Putra, 2019; Nurulwahida et al., 2020). They also promote and grow tourism value through continuous funding and development of this sector (Sudiana et al., 2020). During the initial planning of tourism, the businesses invest in tourism development, provide motivation, and promote and provide feedback on developing new and innovative tourism products and attractions (Nurulwahida et al., 2020). Besides, they act as complementary tourism product providers, offering travel agencies, accommodation, and food and beverages services (Amerta, 2017). However, they must work with local communities and the government to manage and control tourism (Putra, 2019). The Penta-Helix model concept is the tourism investor or businessman, travel agents, tour agencies, Small and Medium Enterprises (SMEs), and others.

Government

The role of government in CBT development is crucial to fortify communities around tourist destination areas. The government is one of the stakeholders that regulates the tourism business (Muhyi et al., 2017). Besides, it also facilitates and operates tourism development, which follows the destination's unique character, and then creates a guide through policies and regulations for all parties in the area. They also planned to develop tourism and environmentally friendly management patterns (Nainggolan et al., 2020). Hence, the government must adapt to determine the best innovative activities to endorse governance arrangements linked to transparency, all-inclusiveness, equality, lawfulness, incorporation, competence, and responsibility in tourism development (Cabrera-Flores et al., 2020; Ikhtiagung & Radyanto, 2020).

Besides, funding is also a significant issue requiring government involvement in tourism development (Putra, 2019). The government supports tourism development through public investment, conducts research, develops knowledge infrastructure and policies, and supports innovation by partnering or networking with private institutions (Mior Shariffuddin et al., 2020; Nurhidayati, 2015). Consequently, they must optimise collaboration with stakeholders to provide ample space for local communities to enjoy the economic benefits of developing CBT (Widowati et al., 2019). The Penta-Helix model includes the central government, regional government, sub-regional government, local government, village authority, etc.

Community

Communities have the same interests and are relevant to growing businesses and developing a facility for businesses to develop and strengthen business entities (Muhyi et al., 2017). They are also development actors willing to be involved in tourism by planning, running, supervising and sharing benefits from developing tourism. Moreover, the community is a tourism stakeholder that has a role in planning and developing tourism by utilising the potential of local wisdom, small scale, and environmentally friendly to deliver aid to the community, both economically, socially, and culturally (Amerta, 2017; Ismail et al., 2016; Nainggolan et al., 2020). Developing tourism is the most crucial objective in enhancing people's prosperity. Community members can gain advantages by participating in different tourism roles (Awaluddin et al., 2016; Sonjai et al., 2018). This includes organisations or associations in the community, youth Organisations, local communities, customary experts (Adat), etc.

Media

The media acts as a promoter for the available tourist attractions as they are primarily involved in tourism marketing (Widowati et al., 2019). Specifically, media play a vital part in promoting the business, and it shares related and critical information to grow the business (Ikhtiagung & Radyanto, 2020). Media, either conventional - newspapers, magazines, television or online via internet platforms, plays a role in communicating and promoting tourism by providing a platform for the CBT and their markets to interact and contribute to CBT performance (Ernawati et al., 2019). The indicator of media support can be seen from the aspect of publicity that media does for startups and their products, the extent to which they get ideas, information regarding tourists' voices and choices, and other helpful information channelled via media (Nainggolan et al., 2020). Media elements include media owners, journalists, social media influencers and others.

COMMUNITY LOCAL WISDOM

Community local wisdom is seen as life values passed down in generations, and it can be religion, culture, or customs, and it is passed orally in a social system. It reflects the custom of hereditary or practical knowledge adopted by the community. As the local community is the leading CBT development actor (Hanafiah et al., 2013), empowering the community by restoring traditional values such as culture, tradition, knowledge, and local consciousness, primarily via local wisdom, is much needed. In addition, CBT should be developed with local knowledge and wisdom, aligning with the concept of self-reliance and self-sufficiency. Their involvement and active participation based on the practised local wisdom are necessary to guarantee tourism sustainability (Jones, 2016; Pujo et al., 2018). As a result, CBT will be operated in harmony with the local

environment, society, and local cultural wisdom (Bagus, 2019; Rodrigues & Prideaux, 2018).

The urgent role of community participation in tourism development is a widely known phenomenon. The process of community participation is carried out through social, psychological, political, and economic empowerment, which drives sustainable tourism development (Giampiccoli & Saayman, 2018; Nurhasanah & Persada, 2018). At the same time, Arnstein (2019) advocated for community participation as it redistributes power to the marginalised community, such as undocumented citizens or marginalised communities from political and economic views. Notably, community participation is necessary to improve the quality of tourism's contribution to national economic development (Sonjai et al., 2018).

As the community's cultural development is related to local wisdom transferred from generation to generation by the community leaders, local community wisdom should be treated as the main element in tourism planning. Besides, various researchers claim that well-planned CBT must involve every aspect of the communities based on their local community wisdom and way of life (Ollivaud & Haxton, 2019). As tourism stakeholders vary, CBT must be supported by proper planning and should be all-inclusive (Ollivaud & Haxton, 2019). By understanding the local way of life, the proposed tourism development would create a balanced benefit for the destination communities and their natural ecosystem (Dahles et al., 2020). Hence, local wisdom should be utilised to cultivate inter-reliance in the relationships between community experts and other tourism stakeholders.

Through community participation, their local wisdom is useful for holistic socio-economic development. As a result, many argue that community participation is essential during drafting policymaking, tourism planning, monitoring, and managing tourism activities (Nugroho & Numata, 2020; Pyke et al., 2018). It becomes essential during collaboration with stakeholders. Hence, a high level of community participation is a crucial element in CBT which revolves around bottom-up planning, multi-stakeholder engagement and capacity building (Amertaa et al., 2018; Phuong et al., 2020). As a result, CBT is now seen as the alternative to old-style tourist destinations, particularly in developing destinations (Pyke et al., 2018). Table 2 depicts the ladder of citizen participation.

Table 2: Ladder of Citizen Participation

Levels of participation		**Characteristics**
Non-participation	Manipulation	Community members are involved in CP mainly for "educating" them, encouraging them to follow the plan, and applying them to be a public relations tool.
	Therapy	Community participation initiatives are played to

		appease community members' irritation and frustration, but they are not used to address the actual problems or reflect their perspectives.
Degrees of tokenism	Informing	It is usually conducted in one-way communication by informing participants of pertinent issues regarding the development project, generally lacking actual influence.
	Consultation	Participants are requested to give feedback, but they are uncertain whether their opinions will be acknowledged or measured.
	Placation	Residents possess direct contact in the planning process, and residents have a place to offer advice or come up with other plans. However, authority representatives would still be the ones who decide the recommendations.
Degrees of citizen power	Partnership	Locals are given some planning and decision-making responsibilities, often during the process of negotiation and compromise among community members and power holders. Authority typically share authority to appease citizens who are agitated by false expectations set up by the authority
	Delegated power	This is the fundamental transformation of t influence as community members have substantial control during the decision-making process and have the power to see the suitability of the plan.
	Citizen control	Citizens can authorise and govern a plan and are entirely in charge during the process of policymaking, executing, and managing the program.

Source: Researcher findings

Community participation happens in several stages. According to Arnstein (2019), the degrees of citizen participation include (a) manipulation, (b) therapy, (c) informing, (d) consultation, (e) placation, (f) partnership, (g) delegated power, and (h) citizen control. There was no community involvement in steps one and two; thus, they are not participatory at these levels. Levels Three to Five show the degree of tokenism and consultation is the most critical factor in ensuring legitimate community participation. At the top, the local population acts as the active agent of change or citizen power degrees.

One of the main issues with the sustainable development concept is using the word 'sustainable' in numerous activities. Everyone assumes that the term sustainable symbolises similar ideology and philosophical implications. Sustainable tourism development demands participation from related stakeholders, especially the

local community, to ensure vast participation and building agreement. Community participation should be the critical mechanism to assist tourism development, where community involvement is significantly correlated with perceived benefits and support for tourism development (Giampiccoli & Saayman, 2018; Mayaka et al., 2018; Nagarjuna, 2015; Zamfir & Corbos, 2015). Besides, community-based development is seen as a decentralisation form because authority is devolved into the hand of the local community. One way to raise community participation is by engaging the local community with wisdom and experts.

The community-based approach is currently a highly supportive development direction in tourism development. In other words, the local community should be brought together to directly or indirectly impact their local wisdom (Dahles et al., 2020; Putra, 2019; Tseng et al., 2019). As the community's participation is fundamental in increasing tourism advantages and reducing negative impacts, we should maximise the utilisation of local community wisdom in the collaboration among related stakeholders with community participation. When control and involvement are given to the local community by acknowledging their local wisdom, the generated tourism benefits will be felt by the community themselves.

CONCLUSION

This paper identifies three gaps within the CBT realm. First is the need for more community local wisdom adoption in tourism planning and development. The second is the top-down tourism development planning system shortcoming, and the third is the need for more collaboration between the community and the other Penta-Helix stakeholders. Notably, the barriers to developing CBT are unequal participation in the community, lack of understanding and limited community local wisdom adoption, lack of CBT development tools and weak coordination among tourism stakeholders.

Moreover, barriers to resident participation during the CBT planning and development process include: i) low level of education and lack of knowledge about tourism; ii) financial and living conditions are still low; iii) lack of time to participate in tourism because of a busy daily routine; iv) tourism perception of the local community about low income periodically business; and v) power distinction, institutional obstacle, and local's disbelief in authorities. These problems have significant potential to create conflict, which disturbs CBT in giving full advantage to the community and needs more collaboration between stakeholders. Thus, utilising the local community wisdom is deemed appropriate to avoid conflict in the future.

Most tourism communities still lack tourism impact awareness, which causes little motivation to participate in tourism activities. This caused dissent and conflict within the community. Subsequently, it leads to a lack of collaboration between the governments and the local community. Within developing nations, the challenge often faced is the heterogeneity of local communities and the need to

equalise perceptions in looking at tourism as a way to enhance the local communities. However, as most of the decision was made by the higher-level government to the local government, the communities have no say in the tourism development planning and execution, thus creating tension between both parties.

As community awareness and participation are still shallow among the developing nations, developing CBT requires Penta-Helix model integration to elevate the stakeholder's cooperation by integrating the local community wisdom in tourism policy making and development. Nonetheless, Penta-Helix cooperation can only be achieved by optimising the role of the community and academics, business, government, and media holistically through sustainable interactions.

ACKNOWLEDGEMENT

Universiti Teknologi MARA supports the research work under the 600-UITMSEL (PI. 5/4) (100/2022). The author wishes to express his gratitude to the Universiti Teknologi MARA for awarding the fundamental research grant, which facilitated the development of this manuscript.

REFERENCES

Amerta, I. M. S. (2017). The role of tourism stakeholders at Jasri tourism village development, Karangasem regency. *International Journal of Social Sciences and Humanities, 1*(2), 20–28. https://doi.org/10.29332/ijssh.v1n2.32

Amertaa, I. M. S., Sara, I. M., & Bagiada, K. (2018). Sustainable tourism development. *International Research Journal of Management, IT & Social Sciences, 5*(2), 248–254. https://doi.org/10.37040/geografie2001106030178

Arnstein, S. R. (2019). A Ladder of Citizen Participation. *Journal of the American Planning Association, 85*(1), 24–34. https://doi.org/10.1080/01944363.2018.1559388

Azinuddin, M., Mior Shariffuddin, N. S., Hanafiah, M. H., Mat Som, A. P., & Wan Mohd Zain, W. M. A. (2022a). A systematic literature review on tourism networks, knowledge transfer, absorptive capacity, and performance. *Asia-Pacific Journal of Innovation in Hospitality and Tourism, 11*(1), 179-218.

Azinuddin, M., Mat Som, A. P., Mohd Saufi, S. A., Zarhari, N. A. A., Amin, A., & Mior Shariffuddin, N. S. M. (2022b). Investigating overtourism impacts, perceived man-made risk and tourist revisit intention. *Planning Malaysia, 20*(3), 239-254.

Bagus, S. I. (2019). Community Based Tourism as Sustainable Tourism Support. *Russian Journal of Agricultural and Socio-Economic Sciences, 94*(10), 70–78. https://doi.org/10.18551/rjoas.2019-10.09

Bittar Rodrigues, C., & Prideaux, B. (2018). A management model to assist local communities developing community-based tourism ventures: a case study from the Brazilian Amazon. *Journal of Ecotourism*, *17*(1), 1-19.

Cabrera-Flores, M., López-Leyva, J., Peris-Ortiz, M., Orozco-Moreno, A., Francisco-Sánchez, J., & Meza-Arballo, O. (2020). A framework of penta-helix model to improve the sustainable competitiveness of the wine industry in Baja California

based on innovative natural resource management. *E3S Web of Conferences,* 167, 06005. https://doi.org/10.1051/e3sconf/202016706005

Carayannis, E. G., & Campbell, D. F. J. (2010). Triple helix, Quadruple helix and Quintuple helix and how do Knowledge, Innovation and the environment relate to Each other? a proposed framework for a trans-disciplinary analysis of sustainable development and social ecology. *International Journal of Social Ecology and Sustainable Development, 1*(1), 41–69. https://doi.org/10.4018/jsesd.2010010105

Curcija, M., Breakey, N., & Driml, S. (2019). Development of a conflict management model as a tool for improved project outcomes in community based tourism. *Tourism Management, 70*(August 2018), 341–354. https://doi.org/10.1016/j.tourman.2018.08.016

Curcija, M., Breakey, N., & Driml, S. (2019). Development of a conflict management model as a tool for improved project outcomes in community based tourism. *Tourism Management*, *70*, 341-354.

Curcija, M., Breakey, N., & Driml, S. (2019). Development of a conflict management model as a tool for improved project outcomes in community based tourism. *Tourism Management*, *70*, 341-354.

Dahles, H., Khieng, S., Verver, M., & Manders, I. (2020). Social entrepreneurship and tourism in Cambodia: advancing community engagement. *Journal of Sustainable Tourism, 28*(6), 816–833. https://doi.org/10.1080/09669582.2019.1706544

Diamantis, D. (2018) Stakeholder ecotourism management: exchanges, coordination's and adaptations, *Journal of Ecotourism, 17*(3), 203-205 doi: 10.1080/14724049.2018.1502122

Diana, & Setiawan, A. B. (2021). Evaluasi Penerapan Community Based Tourism (CBT). EFFICIENT: *Indonesian Journal of Development Economics, 4*(1), 1044–1065. https://doi.org/10.15294/efficient.v4i1.42541

Diana, D., & Setiawan, A. B. (2021). Evaluasi Penerapan Community Based Tourism (CBT). *Efficient: Indonesian Journal of Development Economics*, *4*(1), 1044-1065.

Dolezal, C., & Novelli, M. (2020). Power in community-based tourism: empowerment and partnership in Bali. *Journal of Sustainable Tourism*, 1-19.

Ernawati, N. M., Arjana, I. W. B., & Sukmawati, N. M. R. (2019). Managing Community-based Tourism: A Stakeholder Approach in Bali, Indonesia. *Advances in Social Science, Education and Humanities Research, 354*(iCASTSS), 72–75. https://doi.org/10.2991/icastss-19.2019.16

Giampiccoli, A., & Mtapuri, O. (2020). Towards a coalescence of the community-based tourism and "albergo difusso" tourism models for sustainable local economic development. *African Journal of Hospitality, Tourism and Leisure, 9*(1), 1–20.

Giampiccoli, A., & Saayman, M. (2018). Community-based tourism development model and community participation. *African Journal of Hospitality, Tourism and Leisure, 7*(4), 1–27. https://www.researchgate.net/publication/328281946_Community-based_tourism_development_model_and_community_participation

Hadijah, L. (2019). Local Wisdom in Minangkabau Cultural Tradition of Randai. *KnE Social Sciences, 2019*, 399–411. https://doi.org/10.18502/kss.v3i19.4871

Hanafiah, M. H., Jamaluddin, M. R., & Zulkifly, M. I. (2013). Local Community Attitude and Support towards Tourism Development in Tioman Island, Malaysia. *Procedia - Social and Behavioral Sciences, 105*, 792–800. https://doi.org/10.1016/j.sbspro.2013.11.082

Ikhtiagung, G. N., & Radyanto, M. R. (2020). New Model for Development of Tourism Based on Sustainable Development. *IOP Conference Series: Earth and Environmental Science, 448*(1). https://doi.org/10.1088/1755-1315/448/1/012072

Imbaya, B. O., Nthiga, R. W., Sitati, N. W., & Lenaiyasa, P. (2019). Capacity building for inclusive growth in community-based tourism initiatives in Kenya. *Tourism Management Perspectives*, *30*, 11-18.

Ismail, M. N. I., Hanafiah, M. H., Aminuddin, N., & Mustafa, N. (2016). Community-based Homestay Service Quality, Visitor Satisfaction, and Behavioral Intention. *Procedia - Social and Behavioral Sciences, 222*, 398–405. https://doi.org/10.1016/j.sbspro.2016.05.192

Jones, B. O. B. (2016). *Community-based tourism: An exploratory study of Barbados* (Doctoral dissertation, Walden University).

Kim, K. H., & Park, D. B. (2017). Relationships among perceived value, satisfaction, and loyalty: Community-based ecotourism in Korea. *Journal of Travel & Tourism Marketing*, *34*(2), 171-191.

Lapeyre, R. (2010). Community-based tourism as a sustainable solution to maximise impacts locally? The Tsiseb Conservancy case, Namibia. *Development Southern Africa*, *27*(5), 757-772.

Lee, T. H., & Jan, F. H. (2019). Market segmentation based on the environmentally responsible behaviors of community-based tourists: Evidence from Taiwan's community-based destinations. *International Journal of Tourism Research*, *21*(3), 400-411.

Mayaka, M., Croy, W. G., & Cox, J. W. (2018). Participation as motif in community-based tourism: a practice perspective. *Journal of Sustainable Tourism, 26*(3), 416–432. https://doi.org/10.1080/09669582.2017.1359278

Mayaka, M., Croy, W. G., & Cox, J. W. (2018). Participation as motif in community-based tourism: a practice perspective. *Journal of Sustainable Tourism*, *26*(3), 416-432.

Mior Shariffuddin, N. S., Wan Mohd Zain, W. M. A., & Azinuddin, M. (2020). Collaborative challenges among stakeholders on destination competitiveness. *International Journal of Innovation, Creativity and Change, 13*(1), 456–466.

Mohd Rasdi, A. L., Mat Som, A. P., Azinuddin, M., Nasir, M. N. M., & Khan, N. F. A. H. (2022). Local community perspective on responsible tourism and destination sustainability. *Planning Malaysia, 20*(3), 255-269.

Muhyi, H. A., Chan, A., Sukoco, I., & Herawaty, T. (2017). The Penta Helix Collaboration Model in Developing Centers of Flagship Industry in Bandung City. *Review of Integrative Business and Economics Research, 6*(1), 412.

Nagy, K. X. H., & Segui, A. E. (2020). Experiences of community-based tourism in Romania: chances and challenges. *Revista de Analisis Turistico*, *27*(2), 143-163.

Nainggolan, M., Ardika, I. W., Ardhana, I. K., & Setiawan, I. K. (2020). Pentahelix model application for tourism development strategy. *International Journal of Linguistics, Literature and Culture, 6*(2), 12–18. https://doi.org/10.21744/ijllc.v6n2.864

Nugroho, P., & Numata, S. (2020). Resident support of community-based tourism development: Evidence from Gunung Ciremai National Park, Indonesia. *Journal of Sustainable Tourism*, 1-16.

Nurhasanah, I. S., & Persada, C. (2018). Identifying Local Community ' s Empowerment in Developing Sustainable Tourism in Pahawang Island , Pesawaran Regency , Lampung Province. *Jounal of Science and Applivative Technology, 1*(1). https://doi.org/https://doi.org/10.35472/281458

Nurhidayati, S. E. (2015). Studi evaluasi penerapan Community Based Tourism (CBT) sebagai pendukung agrowisata berkelanjutan. *Masyarakat, Kebudayaan Dan Politik, 28*(1), 1. https://doi.org/10.20473/mkp.v28i12015.1-11

Ollivaud, P., & Haxton, P. (2019). Making the Most of Tourism in Indonesia to Promote Sustainable Regional Development. *Organisation for Economic Co-Operation and Development (OECD), 1535*, 1–41.

Phuong, N. T. M., Song, N. Van, & Quang, T. X. (2020). Factors Affecting Community-Based Tourism Development and Environmental Protection: Practical Study in Vietnam. *Journal of Environmental Protection, 11*(02), 124–151. https://doi.org/10.4236/jep.2020.112009

Phuong, N. T. M., Van Song, N., & Quang, T. X. (2020). Factors affecting community-based tourism development and Environmental protection: Practical study in Vietnam. *Journal of Environmental Protection*, *11*(02), 124.

Pongponrat, K., & Pongquan, S. (2007). Community participation in a local tourism planning process: A case study of Nathon community on Samui Island, Thailand. *Asia-Pacific Journal of Rural Development*, *17*(2), 27-46.

Pujo, P., Sofhani, T. F., Gunawan, B., & Syamsudin, T. S. (2018). Community capacity building in social forestry development: A review. *Journal of Regional and City Planning, 29*(2), 113-126.

Putra, T. (2019). A Review on Penta Helix Actors in Village Tourism Development and Management. *Journal of Business on Hospitality and Tourism, 5*(1), 63. https://doi.org/10.22334/jbhost.v5i1.150

Pyke, J., Law, A., Jiang, M., & de Lacy, T. (2018). Learning from the locals: the role of stakeholder engagement in building tourism and community resilience. *Journal of Ecotourism*, *17*(3), 206-219.

Salazar, N. B. (2012). Community-based cultural tourism: issues, threats and opportunities. *Journal of Sustainable Tourism*, *20*(1), 9-22.

Salleh, N. H. M., Shukor, M. S., Othman, R., Samsudin, M., & Hajar, S. (2016). Factors of Local Community Participation in Tourism-Related Business: Case of Langkawi Island. *International Journal of Social Science and Humanity, 6*(8), 565–571. https://doi.org/10.7763/ijssh.2016.v6.712

Singh, R., Sibi, P. S., & Sharma, P. (2021). Journal of ecotourism: a bibliometric analysis. *Journal of Ecotourism*, 1-17.

Sonjai, N., Bushell, R., Hawkins, M., & Staiff, R. (2018). Community-based ecotourism: beyond authenticity and the commodification of local people. *Journal of Ecotourism*, *17*(3), 252-267.

Stone, M. T., & Stone, L. S. (2020). Challenges of community-based tourism in Botswana: a review of literature. *Transactions of the Royal Society of South Africa*, *75*(2), 181-193.

Strydom, A. J., Mangope, D., & Henama, U. S. (2019). Making community-based tourism sustainable: Evidence from the Free State province, South Africa. *Geo Journal of Tourism and Geosites*, *24*(1), 7-18.

Sudiana, K., Sule, E. T., Soemaryani, I., & Yunizar, Y. (2020). The development and validation of the penta helix construct. *Business: Theory and Practice, 21*(1), 136–145. https://doi.org/10.3846/btp.2020.11231

Sutresna, I. B. M., Saskara, I. A. N., Utama, I. M. S., & Setyari, N. P. W. (2021). Prospective analysis in determining community-based sustainable tourism development policies in Penglipuran Tourism Village, Bali. *Academy of Strategic Management Journal*, *20*, 1-13.

Tou, H. J., Noer, M., Helmi, & Lenggogeni, S. (2020). Spatial Planning with Local Wisdom for Rural Tourism Development. *IOP Conference Series: Earth and Environmental Science*, *556*(1). https://doi.org/10.1088/1755-1315/556/1/012007

Tseng, M. L., Lin, C., Remen Lin, C. W., Wu, K. J., & Sriphon, T. (2019). Ecotourism development in Thailand: Community participation leads to the value of attractions using linguistic preferences. *Journal of Cleaner Production, 231*, 1319–1329. https://doi.org/10.1016/j.jclepro.2019.05.305

Ullah, I., & Kim, D. Y. (2020). A model of collaborative governance for community-based trophy-hunting programs in developing countries. *Perspectives in Ecology and Conservation*, *18*(3), 145-160.

Wahida, S. N., Syafrieyana, Y., & Sukmana, O. (2020). Collaboration with Pentahelix Model in Developing Kajoetangan Heritage Tourism in Malang City. *Journal of Local Government Issues (LOGOS)*, *3*(1), 1-17.

Widhianthini. (2017). A dynamic model for sustainable tourism village planning based on local institutions. *Journal of Regional and City Planning, 28*(1), 1-15.

Widowati, S., Ginaya, G., & Triyuni, N. N. (2019). Penta helix model to develop ecotourism. *International Journal of Social Sciences and Humanities, 3*(2), 31–46. https://doi.org/10.29332/ijssh.v3n2.288

Yudha, P., Radyan, D. O., & Akbar, F. A. (2019). Urban Tourism Based on Social Capital Development Model. Eurasia. *Economics & Business, 19*(1), 37–42. https://doi.org/10.18551/econeurasia.2019-01.05

Zamfir, A., & Corbos, R. A. (2015). Towards sustainable tourism development in urban areas: Case study on Bucharest as tourist destination. *Sustainability, 7*(9), 12709–12722. https://doi.org/10.3390/su70912709

Zielinski, S., Kim, S. il, Botero, C., & Yanes, A. (2020). Factors that facilitate and inhibit community-based tourism initiatives in developing countries. *Current Issues in Tourism, 23*(6), 723–739. https://doi.org/10.1080/13683500.2018.1543254

Received: 28th Feb 2023. Accepted: 31st March 2023

PLANNING MALAYSIA:
Journal of the Malaysian Institute of Planners
VOLUME 21 ISSUE 1 (2023), Page 89 – 100

COMMUNITY CONCERNS OF RIVER POLLUTION SPATIAL MODEL USING GEOGRAPHIC INFORMATION SYSTEM (GIS) IN IBAI RIVER, TERENGGANU

Wan Nor Azilawanie Tun Ismail[1], Aziz Amin[2], Mohd Khairul Amri Kamarudin[3], Asmawi Ibrahim[4] & Nik Sarina Nik Md Salleh[5]

[1,2,3,4] *Faculty of Applied Social Sciences,*
UNIVERSITI SULTAN ZAINAL ABIDIN, MALAYSIA
[5]*Faculty of Business and Management,*
UNIVERSITI TEKNOLOGI MARA CAWANGAN KELANTAN, MALAYSIA

Abstract

Our nation has recently become quite concerned about the issue of environmental pollution, especially with the deterioration of river quality. The Department of Environment's monitoring efforts has revealed significant declines in the nation's river water quality. Focusing on all-encompassing and well-coordinated initiatives to improve the quality of life is essential for raising public awareness and fostering a sense of shared responsibility for the environment. The main objective of this study is to develop a spatial model using a Geographic Information System (GIS) for determining the level of knowledge, attitude, and behavior among Kampung Laut respondents toward the conservation of the Ibai River in Terengganu, Malaysia. This study applied a quantitative methodology and collected its data through a survey method. By using clustered sampling, 78 respondents in all were chosen. The study was conducted in the Ibai rivers, which Terengganu had classified as contaminated. The statistical package for social science (SPSS) version 21 was used to analyze the data descriptively and inferentially, while GIS was employed for the spatial model. The data were gathered via a questionnaire. The findings show that the level of knowledge was high and attitude was at a moderate level. Meanwhile, the findings depict that respondents' behavior in river conservation is low. The findings also show that knowledge and attitude did not correlate with environmental behavior. This study is critical and significant in ensuring the sustainability of the river. The stakeholders are also involved in this study's policy-making and efforts to address the problems of river pollution. The general public, regardless of age, can contribute to the ecosystem's well-being by teaching the next generation to cherish the environment, especially the rivers.

Keywords: Environmental Knowledge, Environmental attitude, Environmental behavior, River pollution, Geographic Information System (GIS)

[1] Lecturer at Universiti Sultan Zainal Abidin Email: azilawanieismail@unisza.edu.my

INTRODUCTION

Water is a very important gift of God to all living things on earth. In addition to meeting human needs, water is also an important basic resource for social and economic activities such as industrial activities, transportation, agriculture, and power generation.

However, various river pollution problems have existed in recent times as a result of human activities. This is also evident from the studies that have been conducted which show that various problems of water pollution cases have existed in recent times (Xu et al., 2022; Tirgar et al., 2020; Hua, 2019; Tuan Fauzan Tuan Omar et al., 2019; Kozaki et al., 2019; Md. Sadek Uddin Chowdhury et al., 2018; Ling et al., 2017; Lee et al., 2017; Poon et al., 2016). One of the most contentious cases involved the Kim Kim River in Johor, where reckless parties dumped chemicals into the river, affecting the health of more than 2000 people and forcing the closure of 111 schools (Yap et al., 2019; Rohman, 2019), and the Selangor River, where diesel oil contamination resulted in 1133 areas experiencing water disruption as a result of the incident (Khazi, 2019). The latest case is the pollution of the Petani River in Kedah which has lasted for the past 20 years and is now claimed to be more serious when the water turns black and smells bad. The activity of dumping rubbish and discharging the waste into ditches and rivers here is found to be intensifying (Zaid Mohd Noor, 2021).

This water crisis has made us aware of how serious the problem of water pollution is in our country. It also teaches us the value of protecting and conserving water supply sources, particularly rivers. Therefore, we can no longer treat it lightly, and all parties must begin acting seriously and efficiently to prevent a repeat of the same incident.

However, according to a report on environmental quality, river water quality as measured by the Water Quality Index has improved in 2020. The proportion of rivers that are considered to be clean has significantly improved to 66% in 2020 from 61% in 2019. By 2020, only 5% of rivers will be considered to be contaminated, down from 9% in 2019. (Department of Environment Malaysia, 2020). The improvement in river water quality is due to the closure of business premises such as workshops, restaurants, and commercial centers during the period of the Movement Control Order which helps rivers across the state to return clean.

This demonstrates unequivocally that human action, whether directly or indirectly, contributes to environmental concerns. The need to create a more environmentally conscious society is especially vital given that the impact of the environment on humans is global and that the preservation and care of ecosystems are essential to the quality of life of both the present and future generations (Sahrir et al., 2022). Accordingly, it is an obligation to conserve water resources in terms of quality and quantity before they are destroyed.

Therefore, the issue of river pollution must be given serious attention and controlled to a minimum. This is due to the fact that water is a source of life, and if this supply becomes so contaminated that humans are unable to use it, this indirectly reduces the source of human existence. Day by day, if the pollution situation of this river worsens, then humans consciously or unconsciously have poisoned themselves. Thus, the important points emphasized in this study are in terms of knowledge, attitudes, and behavior of the local community in addressing the issue of river pollution to ensure the more holistic well-being of the community.

LITERATURE REVIEW

Environmental Knowledge

According to Mohammad Affendy Omardin & Nazirah Zainul Abidin (2014), acquiring environmental knowledge is a lifelong learning process to foster environmental awareness at all societal levels as well as knowledge, skills, and a commitment to making decisions that have an impact on the environment either directly or indirectly. Applying environmental knowledge in society is crucial since it is the basis for sustainability (Tucker & Izadpanahi, 2017; Noor Azizah Samsudin & Zanaton H. Iksan, 2015 and Ainul Marziana M. Mahidin & Suhardi Maulan, 2012).

Theoretically, as one's knowledge of the environment increases, this will influence a positive attitude toward the environment. The ability to create good practices in how community members interact with the environment depends on the information being accompanied by a high level of awareness (Nor Kalsum Mohd Isa, 2016 & Gifford, 2014). Therefore, knowledge and awareness must be applied together especially in the younger generation through formal or informal education.

Environmental Attitude

In the environmental balance crisis, individual attitudes are crucial. Individuals who are positive toward the environment will apply such attitudes in daily life (Paco & Lavrador, 2017). Some negative attitudes such as greed, selfishness, and materialism are basic human weaknesses towards destroying the environment arbitrarily. Greed is the biggest enemy of the environment. In the fervor for financial gain, laws are disregarded, legal loopholes are exploited, and risks are not considered (Ibrahim Kamoo, 2000). They will also be willing to toss things away or contaminate the environment without feeling guilty or embarrassed due to their negligent attitude toward keeping cleanliness in the environment. Numerous environmental problems need to be addressed at the individual level where an individual is required to develop attitudes that will guide them to pro-environmental behaviors (Asmawati Desa et al., 2011). A person should be given

knowledge and information about ecological problems that require fast action in order to improve one's attitude (Paco & Lavrador, 2017).

Environmental Behavior

Any action taken by a person to assist or enhance the benefit of others is referred to as behavior (Sahrir et al., 2022; Morren & Grinstein, 2016). Past studies on behavior have shown differences in findings on the level of awareness and practice of the environment. A study conducted by Siti Mazwin Kamaruddin et al. (2016) showed that the community is aware of various problems related to the environment. However, their level of involvement is low. Similarly, in a study conducted by Mohammad Affendy Omardin & Nazirah Zainul Abidin (2014) where more than 75% of respondents indicated that they have a high level of concern for the environment but, the level of environmental practice is moderate. The findings are in line with the study conducted by Noor Azizah Samsudin & Zanaton H. Iksan (2015) where society is beginning to be aware and more sensitive to environmental issues. However, the awareness to be involved in overcoming the problem is still too low. Fatma Sadik and Semra Sadik (2014) claim that having awareness and knowledge does not always entail acting on what one knows. Evidence suggests that knowledge does not always convert into action.

According to Laurens (2012), a person's behavior toward the environment should be influenced by their feelings and beliefs about the environment as well as their pro-environmental acts. According to Laily Hj. Paim et al. (2013), it's critical to first pinpoint the precise behaviors that need to be altered in order to better shape behavior. This makes it simpler to carry it out, more effective, and makes it simpler to evaluate the success of the change program. For these specified behaviors to change from being just instructed to becoming habits, constant attention must be given to them. This is because repetition and reinforcement strategies can create habits.

In conclusion, raising people's awareness of and affection for the environment is one of the crucial measures for ensuring that it is protected by all parties. Additionally, action must be consistently encouraged because it is human behavior that determines how society affects the environment, and increased awareness will result in a change in activity.

RESEARCH DESIGN

This study uses a cross-sectional survey study design where the survey data is collected only once from the respondents. Survey research is the most popular and most widely used research design in the social sciences. To accomplish the study's goals, this research used a quantitative research methodology.

Questionnaires are the tool used to test environmental knowledge, environmental attitude, and environmental behavior. All three of the study's constructs were intended to be measured by the structured self-administered questionnaire. The communities in the Terengganu state river area that are considered to be contaminated are the subject of this study. The community that has been chosen is Kampung Laut, which is close to the Ibai River. Cluster sampling was used to randomly choose 78 respondents overall. This study focuses on local communities living near rivers because the destruction of ecosystems in river areas is often associated with those that are usually from waste disposal activities in the form of solids, liquids, and sewage. Data is analyzed descriptively and inferentially using the Statistical Package for Social Sciences (SPSS) version 21 while the spatial model used GIS. A geographic Information System is defined as a system for capturing, storing, examining, integrating, manipulating, analyzing, and displaying space-related data guided to the earth (Ang, 2015). The development of spatial model was developed to identify the level of knowledge, attitude, and behavior of the local community in Kampung Laut towards the conservation of the Ibai River whether high or otherwise.

ANALYSIS AND DISCUSSION

Environmental Knowledge Spatial Model

The spatial model showed the pattern of the mean values of the level of environmental knowledge in Kampung Laut. The areas are covered with the 3 colors representing the level of knowledge at a low (red), moderate (yellow), and high level (green). The minimal mean score value is below 2.999, which is categorized as a low level in Table 2 and Figure 1. Afterward, the intermediate level with a mean score value ranging from 3.001 to 5.999. Additionally, high level with a mean value of 6.000. With a percentage of 51.3%, respondents' overall understanding of topics relating to river conservation is quite strong. A moderate level of expertise is possessed by the remaining 48.7% of respondents.

Table 2: Distribution of Determination Mean Score of Knowledge Level

Mean value	Level	Percentage (%)
≤ 2.999	Low	0
3.000 – 5.999	Moderate	48.7
≥ 6.000	High	51.3

Figure 1: The Level of Environmental Knowledge Spatial Model in Kampung Laut, Terengganu, Malaysia

The result shows that the respondents have good knowledge and understanding related to river conservation issues to ensure river sustainability. This may be due to the development of information technology (IT) nowadays making respondents IT literate and can access information and knowledge about the environment anytime and anywhere. In addition, sources of information and knowledge on the environment are easily available coupled with the role of the mass media which provides extensive coverage of environmental issues.

A high level of knowledge will typically motivate respondents to act appropriately (Paco & Lavrador, 2017). An understanding of environmental care is important because it can help maintain environmental sustainability. This is because the aspect of knowledge is a guide to society in making decisions.

Environmental Attitude Spatial Model

The spatial model showed the pattern of the mean values of the level of environmental attitude in Kampung Laut. The areas are covered with the 3 colors representing the level of attitude at a low (red), moderate (orange), and high level (yellow). Based on Table 3 and Figure 2, the minimum mean score value is below 2.999 classified as a low level. Afterward, the intermediate level with a mean score value ranging from 3.001 to 5.999. Additionally, high level with a mean value of 6.000. With a percentage of 57.7%, respondents' attitudes toward concerns of river protection are generally at a moderate level. The remaining

48.7% of respondents have a moderate level of knowledge. The results also showed that 39.7% of respondents had attitudes at a high level while 2.6% of respondents had attitudes at a low level.

Table 3: Distribution of Determination Mean Score of Attitude Level

Mean value	Level	Percentage (%)
≤ 2.999	Low	2.6
3.000 – 5.999	Moderate	57.7
≥ 6.000	High	39.7

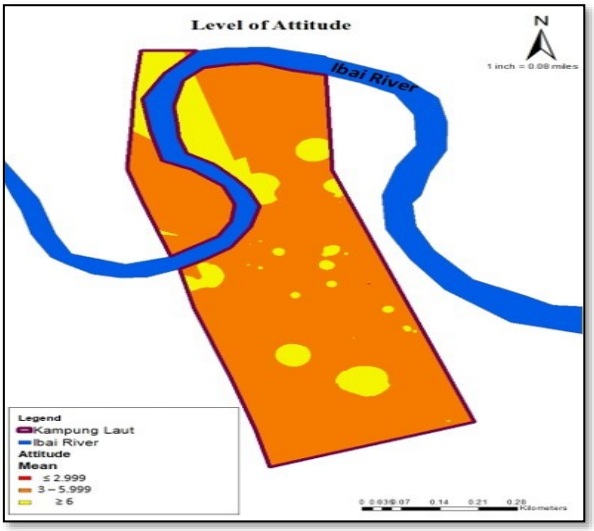


Figure 2: The Level of Environmental Attitude Spatial Model in Kampung Laut, Terengganu, Malaysia

This indicates that respondents exhibit less good attitudes or behaviors toward river conservation. The indifference of the community such as dumping garbage evenly is the main cause of river pollution. The attitude of the respondents on issues related to the conservation of the river and its care is important to know so that the strategy adopted will get to generate maximum involvement of all parties. In turn, responsible societal attitudes will have a positive impact on the environment and quality of life (Tucker & Izadpanahi, 2017).

Environmental Behavior Spatial Model

The spatial model showed the pattern of the mean values of the level of environmental behavior in Kampung Laut. The areas are covered with the 3

colors representing the level of knowledge at a low (red), moderate (yellow), and high level (green). The minimal mean score value is below 2.999, which is categorized as a low level in Table 4 and Figure 3. Afterward, the intermediate level with a mean score value ranging from 3.001 to 5.999. Additionally, high level with a mean value of 6.000. According to the data as a whole, 65.4% of respondents' behavior toward river conservation is at a low level. 34.6% of respondents, according to the findings, exhibited moderate behavior.

Table 4: Distribution of Determination Mean Score of Behavior Level

Mean value	Level	Percentage (%)
≤ 2.999	Low	65.4
3.000 – 5.999	Moderate	34.6
≥ 6.000	High	0

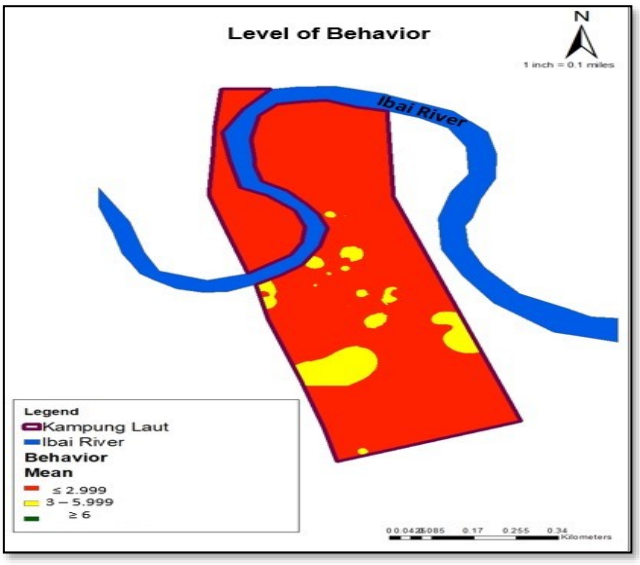


Figure 3: The Level of Environmental Behavior Spatial Model in Kampung Laut, Terengganu, Malaysia

The results of these findings show that respondents do not behave well in river conservation. Detailed analysis showed that respondents lacked support in terms of making financial contributions to river conservation. The analysis also showed that respondents did not show interest and lacked awareness in discussing issues related to river conservation. In addition, respondents also do not tend to be involved in organizing activities to address the issue of river pollution.

This indicates that the various approaches and efforts to preserve and conserve the environment held at present have not been able to foster consistent behavior in environmental care. Many believe that river pollution should not have happened, yet their actions are not in line with their thinking. They do not try to make something to symbolize their appreciation for the environment.

The Relationship of Knowledge and Attitudes Towards Environmental Behavior

Correlation tests were conducted to determine the relationship between the two variables. It aims to obtain a significant correlation between the two variables. Table 5 shows the results of the analysis of the relationship between knowledge and attitudes toward respondents' behavior on river conservation. Knowledge and attitude showed did not correlate with environmental behavior because the p-value was above the alpha value of 0.05. This result shows that knowledge and attitudes are seen as unable to influence the way a person behaves. This is because individuals will act as if they know about things that need to be done. It can be concluded that the high level of knowledge within the local community does not have a strong impact on river conservation behavior. This means that even if they have a high level of knowledge about environmental conservation, they will not necessarily adopt environmentally friendly behaviors in their daily lives (Ismail & Amin, 2020).

Table 5: Correlation Between Knowledge and Attitude with Environmental Behavior

	Environmental Behavior	
Variables	**Pearson Correlation (r)**	**p**
Environmental Knowledge	-.149	.194
Environmental Attitude	.106	.356

CONCLUSION

The destruction and manipulation of the environment due to irresponsible human activities seem to be difficult to curb. Human activities have been recognized to have a significant impact on the environment, especially in terms of pollution. One of the problems with environmental change that is directly tied to daily life and health is the issue of reducing river water quality. Humans should understand that some ecological environments are fragile and vulnerable. Man's attitude that changes the environment dominantly to affect the balance of nature is one of the factors that exacerbate the disaster. A sustainable river ecosystem depends on the community's knowledge, attitude, involvement, and comprehension of the negative impacts of one person's actions. Thus, understanding ecosystems needs to be widely promoted. It is time for the community to put the importance of the

environment, especially the river as the main agenda in their lives and strive to save this invaluable property from further destruction. Individuals play a role in raising public awareness that these ecosystems function in interconnectedness. The well-being of the river can only be achieved if all levels of society play their respective roles responsibly.

REFERENCES

Ainul Marziana M. Mahidin, & Suhardi Maulan. (2012). Understanding children preferences of natural environment as a start for environmental sustainability. *Procedia - Social and Behavioral Sciences*, 38, 324–333.

Asmawati Desa, Nor Ba'yah Abd Kadir, & Fatimah Yusooff. (2011). A study on the knowledge, attitudes, awareness status and behaviour concerning solid waste management. *Procedia - Social and Behavioral Sciences*, 18, 643–648.

Department of Environment Malaysia. (2020). Environmental Quality Report. Retrieved from https://enviro2.doe.gov.my/ekmc/digital-content/laporan-kualiti-alam-sekeliling-environmental-quality-report-2020/

Fatma Sadik, & Semra Sadik. (2014). A study on environmental knowledge and attitudes of teacher candidates. *Procedia - Social and Behavioral Sciences*, 116, 2379–2385.

Gifford, R. (2014). Environmental psychology matters. *Annual Review of Psychology, 65*(17), 541–79.

Hua, A. K. (2019). Applied structural equation model in sustainable development of water resources management. *Journal of Water and Land Development, 42*(VII–IX), 83–90.

Ibrahim Kamoo. (2000). Antara tuntutan pembangunan dan pemuliharaan alam sekitar: Suatu pertentangan? In Abu Bakar Abdul Majeed & Abu Bakar Yang (Eds.), Pengurusan Bijak Alam Sekitar (pp. 43–66). Kuala Lumpur: Institut Kefahaman Islam Malaysia.

Ismail, W. N. A. T., & Amin, A. (2020). Examining the relationship between factors influencing environmental behavior among polluted river communities. *International Journal of Advanced Science and Technology, 29*(7s), 479–487.

Khazi, H. (2019). Pencemaran sumber air: LUAS terus pantau situasi di Sungai Selangor. Berita Harian Online. Retrieved from https://www.bharian.com.my/berita/kes/2019/07/587897/pencemaran-sumber-air-luas-terus-pantau-situasi-di-sungai-selangor

Kozaki, D., Norhasmira Idayu Harun, Chong, C. H., Murni Hayati Esraruddin, Nor Atiah Yunus, Aini Syazana Derahman, Mashitah M. Yusoff. (2019). Identification of polluted sites in four major rivers in Kuantan , Malaysia based on water chemistry estimates of aquatic microbial activity. *Sustainability (Switzerland), 11*(3813), 1–19.

Laily Hj. Paim, Mumtazah Othman, Ahmad Hariza Hashim, Sharifah Azizah Haron, Syuhaily Osman, & Jariah Masud. (2013). Membudayakan penggunaan lestari. Selangor: Persatuan Ekonomi Pengguna dan Keluarga Malaysia (MACFEA).

Laurens, J. M. (2012). Changing Behavior and Environment in a Community-Based Program of the Riverside Community. *Procedia - Social and Behavioral Sciences*, 36, 372–382.

Lee, I., Hwang, H., Lee, J., Yu, N., Yun, J., & Kim, H. (2017). Modeling approach to evaluation of environmental impacts on river water quality: A case study with Galing River, Kuantan, Pahang, Malaysia. *Ecological Modelling*, 353, 167–173.

Ling, T. Y., Soo, C. L., Phan, T. P., Nyanti, L., Sim, S. F., & Grinang, J. (2017). Assessment of water quality of Batang Rajang at Pelagus area, Sarawak, Malaysia. *Sains Malaysiana, 46*(3), 401–411.

Md. Sadek Uddin Chowdhury, Faridah Othman, Wan Zurina Wan Jaafar, Nuzaima Che Mood, & Md. Ibrahim Adham. (2018). Assessment of pollution and improvement measure of water quality parameters using scenarios modeling for Sungai Selangor Basin. *Sains Malaysiana, 47*(3), 457–469.

Mohammad Affendy Omardin, & Nazirah Zainul Abidin. (2014). Konsep dan amalan kesedaran terhadap isu-isu alam sekitar di peringkat awalan projek pembinaan melalui fasa pengurusan nilai. In Social Sciences Postgraduate International Seminar (SSPIS) 2014 (pp. 173–194).

Morren, M., & Grinstein, A. (2016). Explaining environmental behavior across borders: A meta-analysis. *Journal of Environmental Psychology*, 1–55.

Noor Azizah Samsudin & Zanaton H. Iksan. (2015). Kesedaran Alam Sekitar Melalui Aplikasi Kendiri Alam Sekitar (KAKAS). *Jurnal Personalia Pelajar, 18*(2), 31–44.

Nor Kalsum Mohd Isa. (2016). Pengetahuan, sikap dan tingkah laku pelajar UPSI terhadap prinsip-prinsip kampus lestari. *Jurnal Perspektif, 8*(1), 29–41.

Paco, A., & Lavrador, T. (2017). Environmental knowledge and attitudes and behaviours towards energy consumption. *Journal of Environmental Management*, 197, 384–392.

Poon, W. C., Herath, G., Sarker, A., Masuda, T., & Kada, R. (2016). River and fish pollution in Malaysia: A green ergonomics perspective. *Applied Ergonomics*, 57, 80–93.

Rohman, M. A. P. (2019). Semua 111 sekolah di Pasir Gudang diarah tutup. Berita Harian. Retrieved from https://www.bharian.com.my/berita/nasional/2019/03/540647/semua-111-sekolah-di-pasir-gudang-diarah-tutup

Sahrir, S., Ponrahono, Z., & Sharaai, A. H. (2022). Modelling the community adaptive behaviour towards air pollution: A confirmatory factor analysis with pls-sem. *Planning Malaysia*, 20.

Sahrir, S., Yalçınkaya, N. M., & Say, N. (2022). Exploring risk perception and intention to improve the air quality. *Planning Malaysia*, 20.

Siti Mazwin Kamaruddin, Puziah Ahmad, & Norsyamira Alwee. (2016). Community awareness on environmental management through Local Agenda 21 (LA21). *Procedia - Social and Behavioral Sciences*, 222, 729–737.

Tirgar, A., Aghalari, Z., Sillanpää, M. et al. (2020). A glance at one decade of water pollution research in Iranian environmental health journals. *International Journal of Food Contamination 7(*2).

Tuan Fauzan Tuan Omar, Ahmad Zaharin Aris, Fatimah Md. Yusoff, & Shuhaimi Mustafa. (2019). Occurrence and level of emerging organic contaminant in fish and mollusk from Klang River estuary, Malaysia and assessment on human health risk. Environmental Pollution, 763–773.

Tucker, R., & Izadpanahi, P. (2017). Live green, think green: Sustainable school architecture and children's environmental attitudes and behaviors. Journal of Environmental Psychology, 51, 209–216.

Xu, H., Qiang Gao, & Yuan, B. (2022). Analysis and identification of pollution sources of comprehensive river water quality: Evidence from two river basins in China. Ecological Indicators, 135, 1–13.

Zaid Mohd Noor. (2021, May 10). Pencemaran Sungai Petani semakin serius. Utusan Malaysia Online. Retrieved from https://www.utusan.com.my/nasional/2021/05/pencemaran-sungai-petani-semakin-serius/

Received: 28th Feb 2023. Accepted: 31st March 2023

PLANNING MALAYSIA:
Journal of the Malaysian Institute of Planners
VOLUME 21 ISSUE 1 (2023), Page 101 – 115

PUBLIC PARTICIPATION IN ENVIRONMENTAL IMPACT ASSESSMENT (EIA) LAW IN MALAYSIA: A CRITICAL ANALYSIS

Loh Ing Hoe[1], Mohd Khairul Amri Kamarudin[2], Chong Ju Lian[3], Roslan Umar[4] & Ling Chen Yii[5]

[1]*School of Business and Management,*
RMIT UNIVERSITY, HỒ CHÍ MINH, VIETNAM
[2]*Faculty of Applied Social Sciences,*
[4]*East Coast Environmental Research,*
UNIVERSITI SULTAN ZAINAL ABIDIN, MALAYSIA
[3]*Faculty of Science and Marine Environment & Institute of Tropical, Biodiversity and Sustainable Development,*
UNIVERSITI MALAYSIA TERENGGANU, MALAYSIA
[5]*Faculty of Business,*
CURTIN UNIVERSITY MALAYSIA, SARAWAK, MALAYSIA

Abstract

Public participation in environmental impact assessment has been recognized under Principle 10 of the Rio Declaration on Environment and Development. According to Principle 10, the public shall have right to access to information, participate in decision making process and their voice shall be heard. Malaysia has implemented environmental impact assessment under Article 34 of Environmental Quality Act 1973, Article 12 of Sabah Environment Protection Enactment 2002 and Section 11A of Sarawak's Natural Resources and Environment Ordinance 1993. This paper will look into the public participation in environmental impact assessment in Malaysia, Sabah and Sarawak. Qualitative methodology with analytical, historical and comparative approaches was used in this study. Result indicates that public participation has been mentioned in all three legislations. However, there is no guideline as to the level of participation by the public and how the information shall be delivered to the public.

***Keywords**:* Public, participation, environmental, impact, assessment

[1] Lecturer at RMIT University. Email: loh.inghoe@rmit.edu.vn

INTRODUCTION

Principle 10 of the Rio Declaration on Environment and Development states: -
"Environmental issues are best handled with participation of all concerned citizens, at the relevant levels… at the national level, each individual shall have appropriate access to information concerning the environment held by public authorities… and the opportunity to participate in the decision-making process. States shall facilitate and encourage public awareness and participation by making information widely available. Effective access to judicial and administrative proceedings, including redress and remedy, shall be provided."

Principle 10 emphasises that the people should have access to information on the environment held by public authorities, defined as the ability of citizens to obtain environmental information in possession of public authorities. Environmental information" includes information about air and water quality and information about whether any hazardous chemicals are stored at a nearby factory. States should facilitate and encourage public awareness and participation by making information widely available. There should be participation by the people in decision-making processes where participation refers to informed, timely and meaningful input and influence affecting decisions on general policies, strategies, and plans at various levels and on individual projects that have environmental impacts (Rasdi et al., 2022; Azinuddin et al., 2022). There shall be access to judicial and administrative proceedings including redress and remedy. This includes the ability of a citizen to turn to impartial and independent arbiters to resolve disputes over access to information and participation in decisions that affect the environment or to correct environmental harm (Mohd et al., 2019; Wahab et al., 2019). Such impartial arbiters include mediators, administrative tribunals, and courts of law, among others (Janice, 2013).

Malaysia has consented to the context of the Rio Declaration. However, Rio Declaration on Environment and Development is a non-binding document which encourages its members to follow the principles listed down in its document and has no binding effect on its members. Even though Rio Declaration on Environment and Development has no binding effect on its members and is considered a soft law, its role to develop an environmental impact assessment law nationally still proves to be necessary. Malaysia has developed its environmental impact assessment law in compliance with Principle 10 of the Rio Declaration on Environment and Development. Therefore, further research has been done to analyse the public participation in environmental impact assessment in Malaysia.

Public participation in environmental impact assessment has been emphasised in Penisular Malaysia, Sabah and Sarawak. However, guidelines have yet to be introduced regarding the methods of information to be delivered, the level of participation of the public in the decision-making process, the method to enhance public awareness, and how the public can be involved in judicial and

administrative proceedings. The research objective was to compare public participation in environmental impact assessment in Malaysia, Sabah and Sarawak. This study will be essential to improve the legislation related to public participation in environmental impact assessment in Malaysia.

LITERATURE REVIEW

In his article, namely, Principle 10, the Aarhus Convention and Status of Public Participation in Environmental matters in the Malaysia Law with Special Reference to EIAs, Professor Abdul Hasseb Ansari has stated that the scope of EIAs has further been widened by associating it with social impact assessment, where proposed activities might leave adverse social economic or cultural impact, especially where due to such activities, a sizable number of people will have to displaced or will otherwise be affected presently or in future. 'Social impacts' include all social and cultural consequences immediate or in the past to the human population of any public or private actions that alter the ways in which people live, work, play, relate to one another, organise to meet their needs, and generally cope as members of the society. Cultural impacts involve a change to the norms, values and beliefs of individuals that guide and rationalise the cognition of themselves and their societies. They, thus, have the potential to positively contribute to planning processes and developmental activities in a positive way in 2009.

Public participation in environmental impact assessment is rather essential. According to Jeremy Water (1996), public participation is crucial in the decision-making for proper enforcement of the law and bringing justice to door steps of a class of people who might, directly or indirectly, be affected by the proposed activity and remain silent sufferers. Projects must sometimes be abandoned because of the strong public opinion against them. For achieving these objectives, public awareness has to be a priority endeavour in matters essential concerning the condition of the environment vis-à-vis developmental activities and strategies required for abatement and control of environmental degradation.

Generally, public participation is considered a relationship between the public and the decision-maker that ranges from the provision of information sharing and reaching consensus on the form and modality of the proposed development planning or developmental project through various forms of interactive consultations. This is because for various reasons, direct public control in the decision-making on all kinds of EIAs, is crucial. Notable among them are: infusing into them the basic idea of environmental democracy as it brings all stakeholders, the proponent, the government authorities and the public, together; linking environmental rights and human rights; ensuring environmental justice. It also provides opportunity to large group of people to think about the possible adverse impact of proposed projects on the environment and society, which will invariably bring in a sense of confidence about development projects and will

suggest certain measures to be taken that were not anticipated by proponents or the experts at the Department of Environment (Abdul, 2009).

According to Glasson, Therival and Chadwick (1999), public participation in decision-making in an EIA process brings together developers, government authorities and the public that helps to clear up misunderstanding and hatches a better understanding of relevant issues, meets public needs, enhances access to environmental information, leads to better development decisions and results in fewer court cases because areas of controversy are identified and most of them are hammered out at the early stage of the development or planning process, minimizes public frustration and anger, potentially enhances public trust of government decision-making, and strengthens credibility of the EIA regime.

According to Paul Stookies (2003), public participation at the initial stage of a project saves both time and money. It was held in the case of Berkley v. Secretary of State for Environment that in a decision-making pertaining to an EIA, the public should be properly involved. Lord Hoffman stressed that the directly enforceable right of the citizen under the UK Directive on EIA was not merely a right to a fully informed decision on the substantive issue. It must have been adopted on an appropriate asis and that required the inclusive and democratic procedure prescribed by the Directive in which the public, whoever misguided or wrongheaded its views, would have been given opportunity to express its opinion on the environmental issues.

Professor Lye Lin-Heng, director of Asia-Pacific Centre for Environmental Law stressed that government should consult the public, some of whom may have very specialized knowledge, to make well informed decisions (The Straits Times, 2014). However, implementation of EIAs especially in term of public participation in decision-making has its obstacles. According to Ahmad and Sammy (1984), various perceived issues and problems associated with environmental impact assessment, such as tile delays, costs increases, lack of expertise, obstruction to development progress, possible negative effects on economic growth and public participation implications. In their paper namely Environmental assessment in Singapore: an enigma wrapped up in a mystery, Clive Briffett and Jamie Mackee (2002) stated that it has been shown through experience, particularly in the East Asia region, that the fears of adverse effects on economic growth are generally unfounded and if long-term issues are accounted for even the economic benefits of using environmental impact assessment far exceed the drawbacks. At the same time, due to the cost hikes and delay of projects, in many cases, proponents are in a hurry and want the projects started soonest possible. In some cases, authorities also want to start certain projects without any delay, and sometimes prefer developments on environment or people.

These cases happened often in Singapore where Joseph Chun (2005) has discussed the tension that arise from inadequacies in Singapore's 'aw,

particularly the lack of a mandatory environmental impact assessment law and the lack of institutionalized avenue for public participation, which have enabled the government to acquire sensitive nature and heritage sites for development.

From the discussion, it can be concluded that public participation in early stage of proposal a project is necessary to minimize the impact of the development to environment as well as the public. For the research design, the qualitative methodology with analytical, historical and comparative approaches was used in this research.

RESULT AND DISCUSSION

Specific Legal Provisions for Environmental Impact Assessment (EIA) (Environmental Legislation)

Malaysia is a federation. The country practices federalism whereby the power to govern the country is divided between two levels of government, namely the federal government and the state governments. Each state has the power to govern themselves and make their own law and policy. The non-interference principle is applicable between the federation and the states whereby the federal government cannot interfere with subject matters of the state, and the state cannot interfere with the subject matter of the federal government.

The territorial jurisdiction of laws made by the state governments and federal government are stated in Article 73 which provided that:- "In exercising the legislative powers conferred on it by this Constitution, (a) Parliament may make law for the whole or any part of the federation and law having effect outside as well as within the federation; and (b) the legislature of a state may make laws for the whole or any part of that state."

The Parliament makes law for the federal government and legislative assemblies of the states make law for their respective states. The subject matter of legislative jurisdiction for state governments and federal government is based on Article 74 which shall be read together with the 9th Schedule of the Malaysia Federal Constitution. Article 74 which namely 'Subject matter of federal and state law' states that Parliament may make laws with respect to any of the matters enumerated in the Federal List (First List of the Ninth Schedule) or the Concurrent List (Third List of Ninth Schedule) and 'the Legislature of a state may make laws with respect to any of the matters enumerated in the State List (Second List of Ninth Schedule) or the Concurrent List.'

Additionally, Article 77 of the Federal Constitution states 'the Legislature of a state shall have power to make laws with respect to any matter not enumerated in any of the List set out in the Ninth Schedule, not being a matter in respect of which Parliament has power to make laws.'

In addition to the matter mentioned in the State List and Concurrent List, Article 95 (1) states that, in the case of the states of Sabah and Sarawak: (a) the supplement to List II set out in the Ninth Schedule shall be deemed to form

part of the State List, and the matters enumerated therein shall be deemed not to be included in the Federal List or Concurrent List and (b) the supplement to List III set out in the Ninth Schedule shall, subject to the Sate List, be deemed not to be included in the Federal List (but not so as to affect the construction of the State List, where it refers to Federal List).

Based on Second List (State List), land which including land tenure, land improvement and soil conservation (2(a)), permits and licenses for prospecting for mines; mining leases and certificates (2(c)), and forest (3(b)) are under the jurisdiction of state and federal intervention is prohibited. However, if the matter is under the First List, the EQA 1974 will be applicable in Malaysia, Sabah and Sarawak.

(a)Federal Legislation for EIA

The Environmental Quality Act (EQA) was formulated in 1974 to prevent, abate, and control pollution and to enhance the environmental quality in Malaysia. Regulations and Orders have been made under the EQA to control and manage various environmental aspects. The administration of the EQA is entrusted to the Department of Environment (DOE) Malaysia. The DOE, an agency of the Ministry of Natural Resources and the Environment, is the authority established under the EQA and plays a key role in the enforcement of the provisions of the Act and its subsidiary regulations. (DOE, 2016).

Environmental Impact Assessment (EIA) is a statutory requirement for activities which have been prescribed under Section 34A of the EQA. Section 34A(2) of the Act stipulates that any person intending to carry out any of the prescribed activities shall, before any approval for the carrying out of such activity is granted by the relevant approving authority, submit a report to the Director General.

The report shall be in accordance with the guidelines prescribed by the Director General and shall contain an assessment of the impact such activity will have or is likely to have on the environment and the proposed measures that shall be undertaken to prevent, reduce or control the adverse impact on the environment. The main highlights of EIA provisions in the EQA 1974 are summarized in Table 1.

Table 1: EIA provisions in the EQA 1974

Section	Description
34 A (1)	The Minister may prescribe any activity which have significant environmental impacts as prescribed activity.
34A (2)	Appointment of qualified person to conduct EIA
34 (2)(A)	Director General shall maintain a list of qualifies persons
34A (2)(B)	Qualified person shall be responsible for the EIA
34A (2)(C)	EIA report shall be in accordance with the guidelines

34A (3)	Director General can approve the EIA report with conditions and inform relevant approving authority
34A (4)	Director General may not approve the EIA report if not consistent with physical plan or fulfil the guidelines
34A (5)	Director General can require the submission of additional reports other than the EIA report
34A (6)	Activity is not to be carried out until EIA report is approved
34A (7)	Responsibility of the proponent to provide proof of compliance with conditions of approval
34A (8)	Fine not exceeding five hundred thousand or imprisonment for contravening section 34A
34AA	Director General may issue prohibition or stop work order

(b)State Legislation

The states of Sabah and Sarawak enacted their own environmental legislations requiring Environmental Impact Assessment for activities which fall within the state jurisdiction. These include activities associated with the exploitation, development and use of land and natural resources including water, soils, minerals, forest, and other resources.

(i)Sabah Environment Protection Enactment 2002

Section 12 of the Enactment provides for the Minister to prescribe any development activities which is likely to have an adverse effect on the environment to be a Prescribed Activity for which an EIA or a proposal for mitigation measures is required to be submitted to the Director of the Environment Protection Department (EPD) for approval.

The Enactment provides powers the Director to not approve environmental impact assessment report or the proposal for mitigation measures if he is of the opinion such report or proposal does not provided for the protection of the environment (Section 12(6)). Two subsidiary Orders have since been established to bring into effect the provisions of this Enactment.

The Environment Protection (Prescribed Activities) Order 2005 spells out the 12 groups of prescribed activities. The Order further categorizes the prescribed activities into First and Second Scheduled which differ in the type of EIA Report submission required to be made to the Director of the EPD. Prescribed activities under First Schedule are required to submit a proposal for mitigating measures while prescribed activities under Second Schedule are required to prepare and submit an EIA Report. The Director of the EPD may by a notice in writing to the project proponent to cease a prescribed activity in the event of non-compliance with the conditions of approval issued for the prescribed activity.

(ii) Sarawak's Natural Resources and Environment Ordinance 1994

The Natural Resources and Environment (Prescribed Activities) Order, 1994 (Sarawak) made under the Natural Resources and Environment Ordinance 1993 stipulates the types of activities which are subjected to an environmental impact assessment. Activities prescribed under the Ordinance are related to the development of natural resources of the State.

The provision of this Ordinance is quite similar to that of the EQA and the Environmental Protection Enactment in Sabah. Section 11A of the Ordinance confers power to the Natural Resources and Environment Board (NREB) by Order, to require any person undertaking a prescribed activity to submit a report on the impact of such activities on the natural resources and environment to the Board for its approval. A unique feature of the Ordinance is the provision for early commencement of preparatory work for the activity or part of it (such as earthworks) prior to the approval of the EIA Report. (DOE, 2016).

Legal provisions address the issues raised in Principle 10 of the Rio Declaration

Principle 10 of the Rio Declaration states, "Environmental issues are best handled with participation of all concerned citizens, at the relevant levels… at the national level, each individual shall have appropriate access to information concerning the environment that is held by public authorities… and the opportunity to participate in the decision-making process. States shall facilitate and encourage public awareness and participation by making information widely available. Effective access to judicial and administrative proceedings, including redress and remedy, shall be provided."

This principle, thus, has four pillars: appropriate access to information; opportunity to participate in the decision-making process; enhancing public awareness; and effective access to judicial and administrative proceedings.

(a)Federal Environmental Impact Assessment Guideline

In Malaysia, EIA Reports for activities falling under the First Schedule are to be submitted to the respective DOE state offices, while those falling under the Second Schedule are to be submitted to the DOE Headquarters. If a project is located on a site involving two or more states, the Report shall be submitted to the DOE Headquarters. The EIA Report Submission Requirements are summarized in Table 2.

Table 2: EIA Report Submission Requirements

Item	First Schedule Activities	Second Schedule Activities
Submission of EIA Report	DOE State* (*For prescribed activity that traverses across states, the EIA	DOE Headquarters

	report shall be submitted to the DOE Headquarters)	
No. of EIA Report	Five (5) weeks procedure ● Minimum twelve (12) hard copies and 1 soft copy to State DOE ● Minimum one (1) hard copy and 1 soft copy to DOE HQ	Minimum thirty fives (35) hard copies and one (1) soft copy

During submission stage of EIA Report, several individuals and organizations play important and specific roles and shoulder different responsibilities in the EIA procedure. The roles and responsibilities are briefly described.

(i)The Project Proponent
The Project Proponent (PP) is an individual or organization that is proposing to undertake the development of a prescribed activity. The PP may be from the public or the private sector and he may be represented by a consultant. He may delegate the task of conducting the environmental impact assessment of the project to his project consultant or to another organization but he remains ultimately responsible for the content of the EIA Report on hid project.

(ii)The EIA Consultant
The EIA team leader who may work for an EIA consulting firm and the subject matter experts shall be DOE-registered consultants who shall maintain professionalism in conducting a comprehensive EIA study and produce a quality EIA Report that is useful for decision-making purposes.

(iii)The Environmental Related Agencies and Experts
Environmental related agencies and individuals who have vast technical expertise and experience in specific areas have an important role to play in providing relevant inputs on environmental impacts, impact study techniques, and pollution prevention and mitigation measures. The Inputs from these agencies and individuals may be sought by the DOE whenever deemed necessary.

(iv)The Public
Public participation is an essential and integral part of project development to provide an avenue for the public to channel their views on the proposed project. Public engagement is a direct method of obtaining information on the concerns of the impacted community resulting from the project implementation. Some form of public participation to obtain their inputs to the EIA study shall be

implemented which may include public engagement and public display of EIA Reports.

(v)The Technical Review Committee

The review of the EIA Reports is carried out by a committee known as the EIA Technical Review Committee (EIATRC) established both at the DOE state office and at the DOE Headquarters. The EIATRC at the DOE state office reviews the EIA Reports of activities under the First Schedule while the EIATRC at the DOE Headquarters Reviews Reports of activities under the Second Schedule. Members of both EIATRC are the TRC members, representatives from relevant government agencies (GAS), and individuals appointed (Als) from within or outside of the DOE, who have vast technical experiences in the relevant areas related to the proposed project. The technical areas may include potential project environmental impacts, impact study methodologies, and applicable pollution prevention and mitigation measures. Additionally, Non-Governmental Organisations (NGOs) may also be invited to sit on the committees as general representatives or as Appointed Individuals (Als). In the case of the EIATRC at the DOE state offices which reviews EIA Reports of the First Schedule activities, Als will only be appointed when needed on a case to case basis, as described earlier (DOE, 2016). The general requirements on EIA Report review are summarized in Table 3 while the committees involved in the review process are summarized in Table 4.

Table 3: General Requirements on EIA Report Review

Components of EIA Review Process	First Schedule Activities	Second Schedule Activities
Submission of EIA Report	Submit to DOE State Office	Submit to DOE HQ
Public Participation in EIA study	No required	**Required**
Public display of EIA Report	Not required	Required
Web display of EIA Report	Required. Submit softcopy of the EIA Report to DOE State Office	Required. Submit softcopy of the EIA Report to DOE HQ
Advertisement of EIA Report	Not required	Required. Advertise in two major newspapers.

Table 4: Summary of Committees involved in EIA Report Review Process

Details of Review Committee	First Schedule Activities	Second Schedule Activities
Name of Review Committee	DOE State Office	DOE Headquarters

	EIA Technical Review Committee (EIATRC)	EIA Technical Review Committee (EIATRC)
Chairperson of Review Committee	Director of DOE State Office	Director General of Environment
Members of Review Committee	DOE State officers, appointer individuals (Als) – in certain circumstances, representatives from Government Agencies (GAs) and NGOs	DOE Head Office officers, appointed individuals (Als), representatives from Government Agencies (Gas) and NGOs, if required

(b)State Guideline on Environmental Impact Assessment

(i)Environment Protection (Prescribed Activities) (Environmental Impact Assessment) Order 2005

First Schedule of the Environment Protection (Prescribed Activities) (Environmental Impact Assessment) Order 2005 listed down the Prescribed Activities Requiring Proposal for Mitigation Measures Report without requiring environmental impact assessment report while Second Schedule listed down the Prescribed Activities Requiring Impact Assessment Report. Based on the Handbook on Environmental Impact Assessment in Sabah 2005 (Environment Protection Department, 2005), environmental impact assessment studies for the prescribed activities listed in the Second Schedule of the Order are classified into two types, namely Normal-EIA and Special-EIA. Normal-EIAs are usually conducted for projects where the environmental impacts are localized, and the local sensitivities are not significantly affected. Special-EIAs are conducted for projects having special magnitude and sensitivity regarding the environmental impacts which may extend beyond the geographical boundaries of the project site and/or can adversely affect the welfare of local communities. A comprehensive and detailed assessment of the primary and key environmental issues and impacts are required to evaluate mitigation measures and monitoring programme.

The main criteria used to determine the type of environmental impact assessment studies including extent of focus of primary issues of concern; environmental sensitivity of location, magnitude of potential impacts; geographical extent of potential impacts; significance to government policies and guidelines; and local sensitivities such as aesthetic or cultural concern. Public hearing shall be conducted for Special-EIAs. This provides a two-stage opportunity for the public to submit views and comments. In Stage 1 (Term of Reference for special-EIA), a period of 14-dayss or such period as determined by the director shall be given to the public to submit their views and comments on any pertinent environmental issues and concerns that should be addressed in the EIA study. In Stage 2 (Review of Special-EIA Reports), a period of 30-days or such period as determined by the Director shall be given to the public to comment

on the validity and relevance of the assessment, proposed mitigation measures and monitoring programme.

The public hearing shall be announced in the major local newspapers in at least two major languages, namely Malay and English. The project proponent shall bear the cost for the public announcement. A minimum size of ¼ page is required for the notification. Specific guidelines on the format of the notification can be obtained from the Department. Copies of the Term of Reference and the Special-EIA reports shall be made available at the Department's office and homepage; main branches of the state library; and the environmental consultant office. Written responses to the views and comments by the public shall be made available at the Department's office and home page.

(ii)Sarawak Natural Resources and Environment Ordinance 1993, The Natural Resources and Environment (Prescribed Activities) Order, 1997

Article 2 of the Natural Resources and Environment Ordinance 1993 defines "Board" as the Natural Resources and Environment Board, "Controller" as the Controller of Environmental Quality, appointed by the Board under section 3(9) of the Ordinance, "Ordinance" as the natural Resources and Environment Ordinance, and "Prescribed activities" as any of the activities specified in the First Schedule.

Under Article 3(1) of the Natural Resources and Environment Ordinance 1993, any person who intends to undertake any of the prescribed activities shall submit to the Board a report, which is to be prepared by such expert or authority as may be approved by the Board.

Article 3(2) states that before preparing a report for submission to the Board as required under paragraph (1), the person or authority who undertakes to prepare the report shall consult the controller on the scope and depth of coverage of such report which cover on the impact of such activities on the environment and on the sustainable utilization, preservation and management of natural resources of Sarawak; and on the measures being preventive, mitigating or abatement to be taken for the protection and enhancement of the environment.

Such report shall be submitted to the Board, through the Controller and shall be in the Form prescribed in the Second Schedule hereto, which may be used with such modification as may be required, depending upon the circumstances of each particular case. Some of the important chapters under the Form of Report are listed in Table 5.

Table 5: Main Chapter under Form of Report

Chapter 3	3.3 Social-Economic and Population Characteristics - Settlement and Population - Economic Characteristic - Level of Education

	- Living Standards
	- Public Health
	- *People Acceptance of Project*
Chapter 4	4.1 Impacts During Preparation and Construction
	4.2 Impacts During Operation and Maintenance
Chapter 5	5.5 Mitigation Measures
	5.2 Environmental Management Plan and Monitoring
Chapter 6	6.1 Identification of Residual Impacts
	6.2 Recommendation for Management

Critical Analysis on the Implementation of Principle 10 of the Rio Declaration into Malaysia Legislation

Principle 10 of the Rio Declaration has four pillars: appropriate access to information; opportunity to participate in the decision-making process; enhancing public awareness; and effective access to judicial and administrative proceedings. How far does Malaysia legislation fulfil the requirement under Principle 10?

Under the Federal Environmental Impact Assessment Guideline, public participation is to be conducted in the Second Schedule Activities. However, under the Guideline, method of conducting public hearing and process of gathering comments and opinions have not been mentioned. The Second Schedule, Form of Report of the Sarawak Natural Resources and Environmental (Prescribed Activities) Order, 1994 has indicated the element of people acceptance of project. Impliedly, public participation is one of the elements which have to be indicated in the Form of Report.

However, no further guideline can be found as to the way to conduct public participation in Sarawak. Therefore, the method to conduct public participation in environmental impact assessment vary from case to case basis. Reference should be made to the Handbook on Environmental Impact Assessment in Sabah because of its comprehensiveness in outlining the process of gathering public views and comments. However, further study on public participation shall be conducted and a guideline on public participation in environmental impact assessment shall be introduced in future.

CONCLUSION

Although Malaysia's environmental impact assessment guideline is quite comprehensive and public participation in decision making has been outlined, the appropriate access to information; opportunity to participate in the decision-making process; enhancing public awareness; and effective access to judicial and administrative proceedings are still blurred. No guideline or handbook has been introduced which should include methods information to be delivered, level of participation of public in decision making process, method to enhance public

awareness, and how the public can involve in judicial and administrative proceeding.

Therefore, one standard guideline shall be introduced in order to make sure every public has equal opportunity to access to the information and their opinions, comments and voices to be heard.

REFERENCES

2004. The Natural Resources and Environment (Prescribed Activities) Order, 1997. State Attorney-General's Chambers, Sarawak.

2005. Handbook on Environmental Impact Assessment in Sabah 2005. Environment Protection Department, Sabah-Malaysia.

2006. Environmental Quality Act 1974, The Commissioner of Law Revision, Malaysia.

2008. Natural Resources and Environment Ordinance 1993. State Attorney-General's Chambers, Sarawak.

2010. Federal Constitution. The Commissioner of Law Revision, Malaysia.

2014. Demand for environment impact studies grows. Available at http://www.asiaone.com/singapore/demand-environment-impact-studies-grows

2016. Environmental Impact Assessment Guideline 2016. Department of Environment.

Abdul, H.A. (2009). Principle 10, the Aarhus Convention and status of public participation in environmental matters in the Malaysian laws with special reference to EIAs. *International Islamic University Malaysia Journal, 17,* 57-97.

Ahmad, Y. J. & Sammy, G.K. (1984) "Exploding myths", Guidelines to Environmental Impact Assessment in Developing Countries. Hodder and Stoughton.

Azinuddin, M., Som, A. P. M., Saufi, S. A. M., Zarhari, N. A. A., Amin, W. A. A. W. M., & Shariffuddin, N. S. M. (2022). Investigating overtourism impacts, perceived man-made risk and tourist revisit intention. *Planning Malaysia, 20*(3), 239-254.

Berkley v. Secretary of State for Environment [2000]3 WLR 420.

Clive, B. & Jamie, M. (2002). Environmental assessment in Singapore: an enigma wrapped up in a mystery! Impact Assessment and Project Appraisal 20(2) 113-125.

Environment Protection (Prescribed Activities) (Environmental Impact Assessment) Order 2005. Available at http://ww2.sabah.gov.my/jpas/laws/default.htm

Environment Protection Enactment 2002. Available at http://ww2.sabah.gov.my/jpas/laws/EPE/EPE02.pdf

Glasson, J., Therival, R. & Chadwick, A. (1999) Introduction to Environmenta; Impact Assessment. London: Spon.

Janice, M. (2013) Implementation of principle 10 of the Rio Declaration of the United Nations Conference on Environment and Development. Available at https://www.cepal.org/rio20/noticias/paginas/5/48925/2.-Janice_Miller.pdf

Jeremy, W. (1996) Access to environmental information and public participation in environmental decision-making: UN ECE guidelines- from theory to practice. Brussels. European Environmental Bureau.

Joseph, C. (2005). Reclaiming the Public Trust in Singapore. *Singapore Academic of Law Journal, 17*, 717-746

Mohd, F. A., Abdul Maulud, K. N., Karim, O. A., Begum, R. A., Awang, N. A., Ahmad,

A., Wan Mohamed Azhary, W. A. H., Kamarudin, M. K. A., Jaafar, M., Wan Mohtar, W. H. M. (2019). Comprehensive coastal vulnerability assessment and adaptation for Cherating Pekan coast, Pahang, Malaysia. *Ocean & Coastal Management, 182,* 104948.

Rasdi, A. L. M., Som, A. P. M., Azinuddin, M., Nasir, M. N. M., & Khan, N. F. A. H. (2022). Local community perspective on responsible tourism and destination sustainability. *Planning Malaysia, 20*(3), 255-269.

The Strait Times (2014). Demand for environment impact studies grows. Available at http://www.asiaone.com/singapore/demand-environment-impact-studies-grows.

Wahab, N. A., Kamarudin, M. K. A, Toriman, M. E., Juahir, H., Saad, M. H. M., Ata, F.M., Ghazali, A., Hassan, A. R., Abdullah, H., Maulud, K. N., Hanafiah, M. M., Harith, H. (2019). Sedimentation and water quality deterioration problems at Terengganu River basin, Terengganu, Malaysia. *Desalination and water Treatment, 149*, 228-241.

Received: 28th Feb 2023. Accepted: 31st March 2023

PLANNING MALAYSIA:
Journal of the Malaysian Institute of Planners
VOLUME 21 ISSUE 1 (2023), Page 116 – 133

IMPACT OF SUSPENDED SEDIMENT ON PAHANG RIVER DEVELOPMENT USING GEOGRAPHIC INFORMATION SYSTEM

Hasmida Mustaffa[1], Mohd Khairul Amri Kamarudin[2], Mohd Ekhwan Toriman[3], Mohd Hafz Rosli[4] & Sunardi Sunardi[5]

[1]*East Coast Environmental Research Institute,*
[2]*Faculty of Applied Social Sciences,*
UNIVERSITI SULTAN ZAINAL ABIDIN, TERENGGANU, MALAYSIA
[3]*Faculty of Social Sciences and Humanities,*
UNIVERSITI KEBANGSAAN MALAYSIA, SELANGOR, MALAYSIA
[4]*Institute of Tropical Agriculture and Food Security,*
UNIVERSITI PUTRA MALAYSIA, SELANGOR, MALAYSIA
[5]*Graduate Program on Environmental Studies,*
UNIVERSITAS PADJADJARAN, BANDUNG, INDONESIA

Abstract

The measurement of different characteristics of a stream, including integrated water resource management, is dependent on sediment transport mechanisms. On the Pahang River, studies explored the spatial interpolation pattern of suspended sediment (SS) and water resource management. Sedimentation issues in the Pahang River have a significant impact on water resource management in the Pahang River basin. Furthermore, it may have an impact on local water consumption, recreational activities, and other factors, causing the river to become shallow and finally flood. This study was conducted to determine the SS pattern in the Pahang River with the approach of the Geographic Information System (GIS) technique and its significant colour based on spatial analysis. In addition, this study also evaluates the factors and effects of sedimentation through water source management. Three sampling stations from the Department of Irrigation and Drainage (DID) for three years (2000, 2004 and 2008) were selected along the Pahang River, where the parameter measured was suspended sediment (ton/year). The results obtained showed that the Pahang River receives a high amount of SS each year, where the higher amount was at the upper station (Sg. Yap), with an amount of 1876575 ton/year (2000), 613850.1 ton/year (2004) and 3458097 ton/year where it may be affected by sediment re-suspension and runoff from two outlets. Meanwhile, the downstream station (Lubuk Paku) received the least amount of SS, while the midstream station (Temerloh) received the most. The transit's speed and current may have an impact. This study's findings are critical in river and water resource management, especially of water resources for domestic use, ecotourism, river biodiversity, and hydrology.

Keywords: Suspended sediment (SS), sedimentation pollutions, geographic information system (GIS), pollution management, Pahang River

[2] Lecturer at Universiti Sultan Zainal Abidin. Email: mkhairulamri@unisza.edu.my

INTRODUCTION

Water is a primary source of livelihood on this earth, especially for humans, the economic sector, food, and the environment (Rasdi et al., 2022; Azinuddin et al., 2022; Kamarudin et al., 2017). However, water quality degradation is impacted by development, agriculture, land use activities, industrial production, and inappropriate use of fertilizer and pesticide, which have a negative effect on the river's sedimentation status (Wahab et al., 2019). Industrial areas, sewage, agriculture activities, and animal husbandry are three of the most prevalent anthropogenic activities that pollute river water (Lee Goi, 2020; Toriman et al., 2012). Thus, it contributed to sediment, which is the process of solid materials that have been transported and deposited in a new area. Contamination occurs in many rivers because of sediment including silt and clay elements, as well as chemical and microbial components. In addition, suspended sediment (SS) in inland water was undertaken to track sediment discharge, erosion, deposition, and biological process impacts (Peterson et al., 2018). It was an important factor in determining the quality of water. As a result, monitoring the geographical distribution of SS in rivers is critical for assessing the impact of human activities and natural disasters as well as ensuring river sedimentation status quantity for river quality preservation.

Sedimentation is the process of transporting eroded materials by water, wind, or glacier (Kamarudin et al., 2017). Sediment movement is a major contributor to a variety of issues relating to river management and care. Monitoring the effects of environmental management on suspended sediment components is indispensable (Duan et al., 2013). Sedimentation in river is an important problem to be considered in water resource planning. Meanwhile, through the suspension movement in the flow, suspended sediment can transport a variety of contaminants with varying concentrations (Al-Mulkhtar, 2019). Suspended sediment plays an important function in water quality regulation, and it can result in a significant loss in stream capacity to handle flood tides (Nguyen et al., 2020). The uneven plate form of small and large suspended sediment, as well as considerable size differences in water suspensions, characterize the small and large suspended sediment. According to the Wang et al., (2019) study on suspended sediment using image J software, where the average of particle diameter of small and large suspended sediment from scanning electron microscope (SEM) image was 10.9 ± 1.2 and 125.4 ± 5.2 μm, respectively. Sediment concentration can contribute to river quality problems that cause turbidity in the body of water and emit unpleasant odors. River usually transports the high volume of suspended sediment which also alters the colour, smell, and quality of the water. Supported by Lim et al., (2020) where the high presence of suspended solids would impact the surface water's turbidity value, turning the water milky or muddy in appearance. This occurrence may have a negative impact on human health as well as aquatic life.

The degradation of river sedimentation status is linked to land use issues such as housing developments, the opening of industrial zones, trade, the building of infrastructural facilities, agriculture, and other activities. Land use land cover (LULC) is defined as the human use of land for economic, residential, conservation, recreational, and government purposes (Camara et al., 2019; Razali et al., 2018). Disposal of industrial waste causes significant changes to the sediment quantity in rivers. Nearly 60% of Malaysia's rivers are controlled for household, farming, and agricultural, industrial sectors, residential, sewage disposal, and urbanization, which are the principal pollution causes affecting the river's balance (Kamarudin et al., 2017). This pollution can also be classified into two, namely point source (PS) pollution and non-point source (NPS) pollution. In general, point source pollution is caused by a source that flows directly into the body of water through a channel that can be seen and detected clearly. Among them are those from sewage and industrial effluent. Meanwhile, NPS pollution is caused by large-scale land use activities, including logging, agricultural, and so on. Where, the cause of the pollution cannot be traced and seen clearly. Among the pollution emitted by the NPS is waste from the agricultural sector, including fertilizer (Liu et al., 2013), herbicides and insecticides (Enciso et al., 2014). Aside from that, soil erosion is the most common and severe non-point source of pollution (Sun et al., 2020). Saby et al., (2021), was supported with an example of NPS contamination from agricultural runoff, urban storm water, and atmospheric deposition, such as nutrients, sediments, and toxins.

Monitoring pollution-induced sedimentation requires an understanding of its movement and information of its destiny in the river. Traditional water quality monitoring needs in situ sampling, which has a time constraint (Saberioon et al., 2020), as well as time-consuming and expensive laboratory work that can only be done for particular regions of water body. to monitor sedimentation pollution, numerous current models are utilized. One of these models is Geographic information system (GIS) and remote sensing. Geographic information systems (GIS) are the most popular technology in monitoring sediment in large area. This is because GIS technology provides suitable information in the spatial and temporal domain and intricate database, which are important for natural resource management (Madloom et al., 2018; Kamarudin et al., 2015). There have several studies that using GIS technology in monitoring the quality of water in a wide area with variable parameter. In the Ganga River, Panwar et al., (2015) used the spatial interpolation and the inverse distance weighted (IDW) methods GIS to forecast the value of the primary parameter quality of water. Many of the primary parameters do not meet the drinking water quality criteria, according to the findings. To estimate average annual soil erosion in terms of geographical distribution and sediment deposition in the Lancang-Mekong River, (Chuenchum et al., 2020) used a revised universal soil loss equation using a GIS approach. The findings point to significant sediment erosion

along the mainstream's flow path, which runs from the upper Mekong River to the Mekong Delta. Bashir et al., (2020), used spatial interpolation method through IDW approach in the Lower Jhelum Canal in Pakistan for assess the water quality index. The result indicates most of the water is in the suitable parameter for irrigation purpose and needs a treatment for the drinking purpose. Usali et al., (2010) explore how remote sensing and geographic information systems may be used to monitor water quality measures such as suspended matter, phytoplankton, turbidity, and dissolved organic matter. As summaries, remote sensing, and GIS techniques, in combination with computer modelling, are useful tools for future water resource planning and management, particularly for water quality control plans.

Pahang River is Peninsular Malaysia's longest river, stretching 459 Kilometres from the Tahan mountain range to the South China Sea (DID, 2009) and act as main water sources to the Pahang state. In this study according to (JPS,2022), the stations that involve are located in Pahang state at Lubuk Paku, Sg. Yap and Temerloh. The Pahang River Basin's communities are mostly reliant on agriculture (Mahsuri et al., 2019; Azid et al., 2015; Jaafar et al., 2010) and small businesses. As know, Malaysia had two type of monsoon which is Northeast monsoon and Southeast monsoon (Mohd et al., 2019; Wahab et al., 2019; Hanafiah et al., 2019). Pahang River was placed in the Northeast area where it will be impact toward the Northeast monsoon which happen between Novembers to January (wet seasons) and face a dry season in Jun to July (MET,2022). Due to climate change, it contributes to heavy rains and floods where the amount of suspended sediment also increases due to the changing flow of water currents. Pahang often experiences flood disasters due to high rainfall and extensive land use activities. According to the Lim et al., (2020) study on flood in Pahang River in 2014, where the outcome of suspended solids concentration in the water column rising was likely due to significant rainfalls, which were nearly three times more than the same month in the 2013 flooding seasons. These solids include sediment, silt, and sand as well as plankton and algae that are drifting or floating in the water. However, collecting SS data on a wide range is time consuming and costly. As a result, this study begins with a preliminary investigation to establish the SS pattern in the Pahang River using a Geographic Information System (GIS) method and its significant colour based on spatial analysis. In addition, this study also evaluates the factor and effects of sedimentation through water source management.

METHOD

Pahang river or known as Sungai Pahang in Malay was the largest river basin in peninsular Malaysia with the length 459 kilometres, located at longitude 101° 30' E to 103° 30'E and latitude 3° 00'N to 4° 45' N. it was the major river system in Pahang state, where it started from the Titiwangsa mountain range to the south

China sea. The Pahang River is separated to the Tembeling and Jelai rivers, which meet in Kuala Tembeling, it is 300 kilometers from the Pahang river's estuary. The climate of Pahang basin typically hot and humid, with an annual rainfall ranging from 2,000 mm to 3,000 mm on average. Station that involves in this was located alongside the Pahang River, Sungai Yap station, Temerloh station and Lubuk Paku station. The parameter that has been used in this analysis are suspended sediment (ton/year).

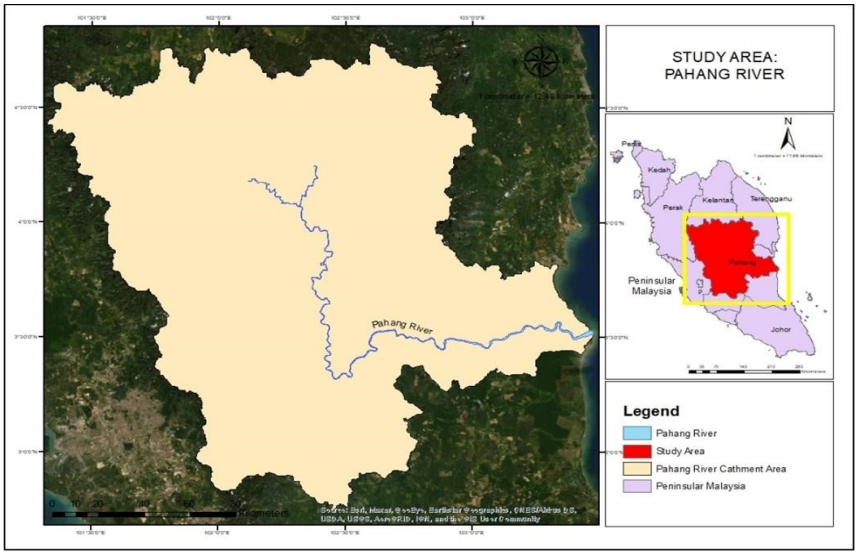


Figure 1: Study area of Pahang River in the state of Pahang

Data Set

The secondary data utilized in this study came from three DID Malaysia stations that were set up to monitor the sediment concentration of the Pahang River. However according to the Hishaam et al., (2016) because of gauge error, inaccuracy in data gathering, and sediment recorders, secondary data has both pros and downsides. Suspended sediment data for three stations at Pahang River was used to evaluate the pattern of suspended sediment in Pahang River, which is Sungai Yap station (upper station), Temerloh Station (middle station) and Lubuk Paku Station (Downstream station). The data used was in the years 2000, 2004 and 2008 for each station. The data that has been used was the current data from Department of Irrigation Malaysia.

Image Classification Technique

The application of Geographic Information System (GIS) method was used to examine the differentiation of Suspended Sediment for Pahang River during this year. Traditional water quality monitoring method can be replaced with the GIS

observation because one of its major advantages where they can provide both spatial and temporal information on surface water characteristic, simple and widely used, as a result, it performs well when dealing with large volumes of data (Madhloom et al., 2018). Data processing involves a variety of task, including data preparation, data management, topological mapping, and quality management. The resulting data was analyzed in excel and path of river suspended sediment was modelling by using GIS ArcMap 10.7, analysis tools, and interpolating a raster surface from the point using inverse weighted (IDW) technique. Previous research has shown that IDW has indisputable advantages for data estimation in rivers due to its high accuracy, and it is commonly used in pollution modelling by some authors. Spatial interpolation had been used widely for climatology, physical geography, and geological application, and also in human and economic geography (Lam et al., 2009), and it suitable applied for pollution problem (De Mesnard, 2013), where it easy to understand, easy to used and flexible which make it more popular and commonly used.

Concept of Inverse Distance Weighted (IDW) Interpolation Method

In geostatistical information, IDW is a deterministic spatial interpolation process. This approach uses a linearly weighted combination of sample points to calculate cell values. It's a precise approach that ensures that a point's approximate value is influenced more by close known points than by those further away. All predicted values are inside the range of the known points maximum and minimum values, which is a significant parameter of IDW interpolation. The IDW formula is used to estimate the unknown of the monitoring station value Zˆ(S0) in site S0, using the observed Z values at the sampled locations, where the number of monitoring stations. The formula use in this study are following: -

Where:

$$Z\hat{}(S_0) = \sum_{i=1}^{n} \quad WiZ(Si) \quad (1)$$

$$Wi = doi^{-\alpha} / \sum_{i}^{n} \quad doi^{-\alpha} \quad (2)$$

$$\sum_{i}^{n} \quad wi = 1 \quad (3)$$

Each measurement is multiplied by the inverse of the distance $doi \geq 0$ from the station o to the station i with the exponent α. Then each product is divided by the sum of the term $1/doi^{-\alpha}$ over all the stations i so that the sum of all Wi's for an ensample station will be unity (Equation (3)). Depending on the interpolated variable, the power of the distance must be chosen accordingly (Madhloom et al., 2018).

RESULT AND DISCUSSION

Suspended Sediment by Month

Figure 3 until Figure 5 shows the graph of suspended sediment by month each year (2000, 2004 and 2008) at Sungai Yap station, Temerloh station, and Lubuk

Paku station. Climate change is also one of the impacts of SS concentration becoming higher in the Pahang River basin. As you know, Malaysia has two types of monsoons, which are the Northeast monsoon and the Southeast monsoon. The Pahang River was placed in the Northeast area where it will have an impact on the Northeast monsoon, which happens between November and January (wet seasons) and faces a dry season from June to July (MET, 2022). Due to climate change, it contributes to heavy rains and floods where the suspended sediment amount also increases due to the changing flow of water currents. The trend of suspended sediment graph for the year 2000 (figure 2.0) shows that the higher amount of SS was in January, among other months for Sungai Yap station. This may be because of northeast monsoon phenomena that happen every year and lead to the high transportation of sediment into the river. In the year 2000, the Temerloh and Lubuk Paku station graph pattern was horizontal, indicating that they received less than 10,000 tons per month for each month.

Human and environmental stressors also contribute to the high amount of SS in the river, threatening the quality of the fresh water and the entire ecological system. In the year 2004, the trend of the SS graph for Sungai Yap decreased from February until March. However, it increased from May until December. When compared to decades ago, the impacts of a natural disaster have also increased, with the impacts on humans and the environment more likely to be worse, owing to environmental degradation such as deforestation and increasing population, which causes an increase in land use for development. For Temerloh station, trend of the SS graph decreased from January until December. This may be due to the depletion of sediment that has been reduced. However, at Lubuk Paku station, the trend of the SS graph is still the same as in 2000, which is a horizontal trend. In the year 2008, trend of SS for Sungai Yap station is different from the years 2000 and 2004 because in January the amount of SS was lower than 20,000 tons per month, which led to the increasing pattern for this year until December. Meanwhile, Temerloh and Lubuk Paku stations received less than 10,000 tons of SS per year from January to December of 2008. For the last three years, Sungai Yap has received the highest monthly SS payments. The factors may be due to the receiving sediment from two outlets (Jelai River and Tembeling River), sediment re-suspension, development, and human behaviors. As is well known, the Jelai River carries the output from the highland area, which is Cameron Highland, which is undergoing rapid development because of tourism factors and land opening because of agriculture factors. Furthermore, in many cases of land removal for land use development purposes, droplets have been exposed to the ground surface area (Sisun et al., 2015). Moreover, heavy rainfall also led to a higher amount of SS in the river. Where the rainfall also contributed to the landslide in the high areas such as the Cameron Highlands, Genting Highlands, and Fraser Hills (Samy et al., 2014). The landslide event can contribute to higher SS in the river via rainfall droplets rather than water flow.

Therefore, development and land opening should be considered as they were the main factors for the highest amount of sediment in the river.

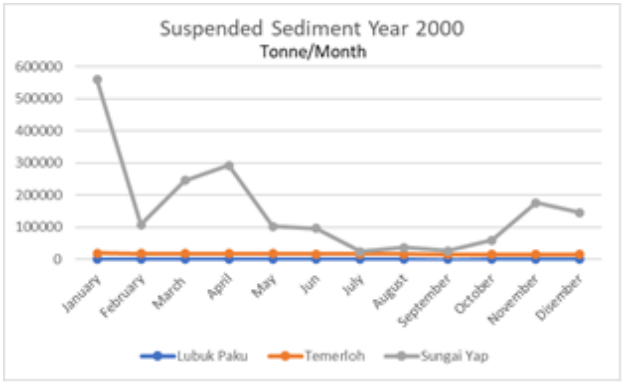


Figure 2: graph of suspended sediment by month in year 2000

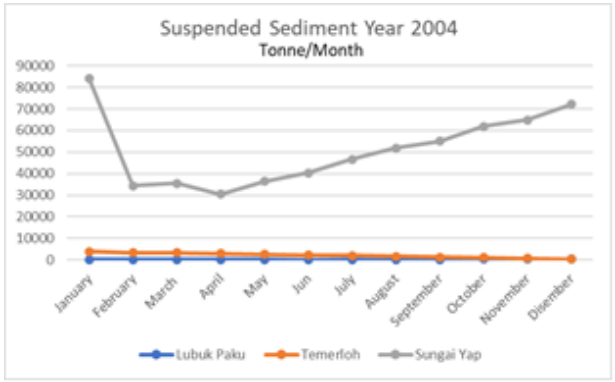


Figure 3: graph of suspended sediment by month in year 2004

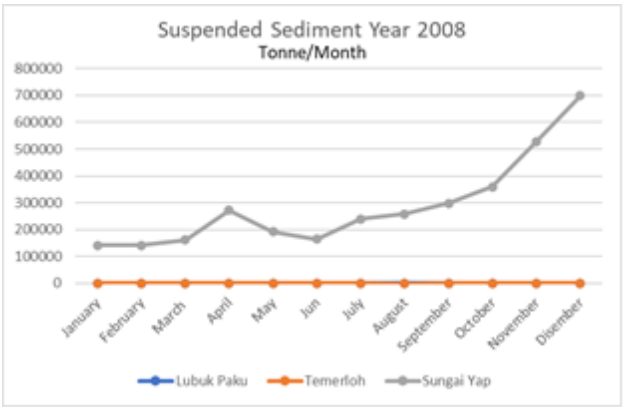


Figure 4: graph of suspended sediment by month in year 2008

Spatial analysis Suspended Sediment by Year

Three year of suspended sediment data (2000, 2004 and 2008) had been plotted and analysed. The table below showed the total of SS values (ton/years) in Pahang River at three stations for year 2000, 2004 and 2008. Total of SS values for these three years show that, the highest was in year 2008, where 3458097 ton/year at the upstream (Sg. Yap station) and the lowest is 1730.48 ton/year at the downstream (Lubuk Paku Station) in year 2004 (Table 1). Upstream shows a high value may be mainly affected by receiving output flow from two outlet, sediment re-suspension, development, and human behaviours.

Table 1: Total Value of SS concentration in Pahang River by years in three stations

Years	Total values of Suspended Sediment (Tons/Year)		
Stations	**2000**	**2004**	**2008**
Sungai Yap (Upper stream)	1876575	613850.1	3458097
Temerloh (middle stream)	206001	25460.7	3320.9
Lubuk Paku (Downstream)	2966.6	1730.48	5930.77

The sorting and analysis results from three stations for three years were imported and process in GIS using spatial analysis technique which is inverse distance weighted interpolation method. Finally, the digital map of SS was produced for three years as shown in figure 5 until figure 7. Three different years of Pahang River SS was mapped using interpolation method for three station which is Sungai Yap (upper stream), Temerloh (middle stream) and Lubuk Paku (downstream) to determine the values of SS along the Pahang River. Pahang river is the longest river in Peninsular Malaysia and receive 1,600 mm/year rate of annual rainfall, the average humidity of 85% and mean temperature between 25°C to 27°C. Historically, largest flood had recorded happen at Pahang in year 1926 and 2014 which submerged and devastated approximately 1800km2 of lowland area (Lim et al., 2020).

Figure 5, figure 6 and figure 7 was showing the spatial distribution analysis of SS during year 2000, 2004 and 2008 where the blue colour represents for the lowest amount and red colour represent the highest amount during that year. Meanwhile, the light green colour represents for the moderate volume of SS. In year 2000, 2004 and 2008, Sungai Yap station receive a high amount of SS which is 1876575 ton/year, 613850.1 ton/year and 3458097 ton/year, respectively. It may be due to the receiving output flow from two outlet, sediment re-suspension, development, and human behaviours where the red colour was appeared in the spatial distribution analysis map. Meanwhile, the blue colour (lowest amount) appears at the Temerloh and Lubuk Paku station for three year

of 2000, 2004 and 2008. The amount of SS for Temerloh station for year 2000, 2004 and 2008 was 206002 ton/year, 25460.7 ton/year and 3320.9 ton/year, respectively. Where in Lubuk Paku station the amount of SS for year 2000 was 2966.6 ton/year, year 2004 was 1730.48 ton/year and year 2008 5930.77 ton/years.

Pahang River experienced major flood disaster in November 1994, December until January 1999, and December 2007 (Hishaam et al., 2016). The change of appearance colour in spatial distribution analysis in each year may be due to the major flood disaster a year before which is in year 2007 at Pahang. Where contributed to various impact toward community and river itself as example high sedimentation at downstream area, destruction of properties and so on (Kamarudin et al., 2015). The northeast and southwest monsoons, as well as significant rainfalls, can impact the trend of stream flow and water level in the Pahang River, either indirectly or directly. According to the Lun et al., (2011); Othman et al., (2017) the amount of extreme rainfall is likely to cause overflow, trigger to the landslide events and increase the flood risk in Pahang River. Where this led to the destruction of the physical environment, economic, education sector, social structure, and towards health.

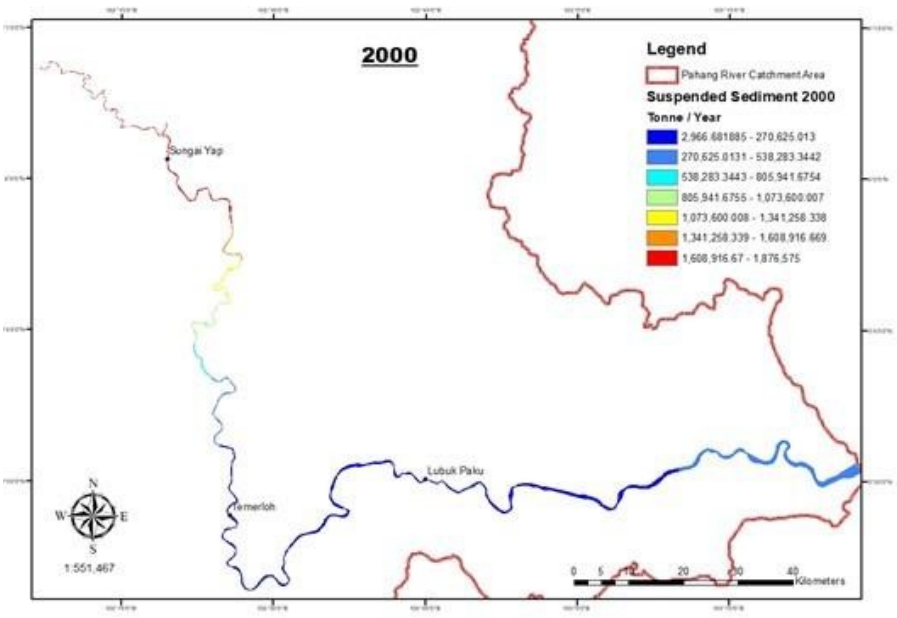


Figure 5: Map of Suspended Sediment year 2000 in Pahang River

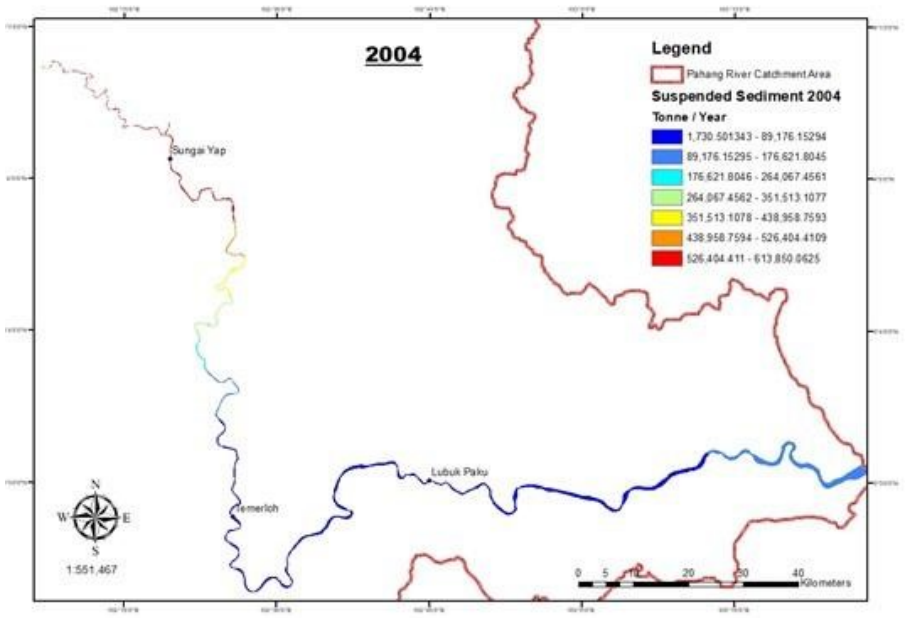


Figure 6: Map of Suspended Sediment year 2004 in Pahang River

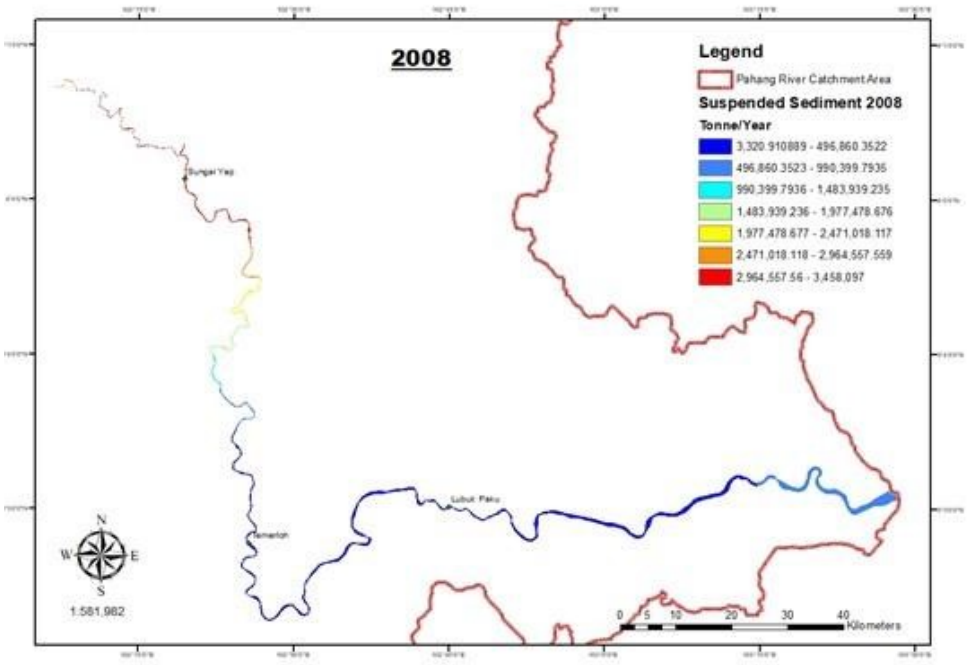


Figure 7: Map of Suspended Sediment year 2008 in Pahang River

Pattern of spatial analysis for the SS in Pahang River mostly the higher receiver of SS amount was Sungai Yap station, which were mainly affected by sediment re-suspension and the runoffs from the outlet of Tembeling river and Jelai river. Meanwhile for both Temerloh and Lubuk Paku station mostly receive low amount of SS. Sungai yap was located in Kampung Guai in Pahang and 62m above the sea water level. Even though it located in the rural area, it receives water from two sources, resulting in sediment dumping at the same time. According to the Lee et al., (2017), river water quality at the upstream was worse than downstream area because of the low inflows from small tributaries than the area downstream which close to the open ocean and directly affected by the tide. The flow of sediment into rivers comes in various forms, among them is the management of source and non-source resources that can cause the shallowness of the river and affect the quality of water resources. According to Toriman et al., (2012) shallow rivers and lakes can also occur due to the occurrence of large sedimentary reservoirs, which thus make it possible for the area to experience flooding. Therefore, efficient management of water resources in terms of water supply to humans and aquatic life must be adequate and meet the standards in terms of water quality and it is very important.

Point source management

The main cause of point source pollution can usually be seen clearly (Toriman et al., 2012). When harmful substances are pumped directly into a body of water, this is known as point source pollution. The "end of pipe" discharge from any known or identifiable sites throughout the water body indicates this. Through regular monitoring at specified river locations, point source pollution is extremely straightforward to analyses and reduce (Chen et al., 2014). For example, the construction site and livestock area, where the silt will be carried from the original location to the replacement line system, pollute the water. However, in China the basin, contamination from point sources such as industrial wastewater and municipal household wastewater has been effectively reduced (Sun et al., 2020). Point source pollution management is very important in ensuring the developer's compliance in implementing mitigation measures to reduce the quantity of sediment that enters the river.

This can disrupt economic, social activities, and human well -being in the long run, especially if it involves water treatment plant areas. However, many researchers suggested to implement and tightening the EIA application in order to achieve the effective water conservation and management. Some mitigations to tightening Environmental Impact Assessment (EIA) regulations, where developers may be restricted, such as creating buffer zones for development and deforestation, making major rivers restricted zones, prohibiting large-scale deforestation in the highlands, restricting mining in forest reserves and water bodies, and applying sediment management to all types of development, are

necessary to better cope with global change. The most efficient technique for forecasting and then limiting the effects of sediment is to use sediment management measures that have been stated in the EIA. Where the developers can receive guidance on how to reduce the sediment load entering the mainstream. As a result, policymakers and decision makers in the water resources management field must grasp the processes of sediment transport and yield, as well as their effects on sedimentation in reservoirs, shallow harbours, and channels (Choubin et al., 2018).

Non-point source (NPS) management

In general, non-point sources (NPS) are due to large-scale land use activities, which are difficult to specify the area of pollution waste production. NPS pollution was the most important source of water pollution where it mostly comes from agriculture (Enciso et al., 2014). Saby et al., (2021), also supported the finding of NPS pollution was from agriculture, meanwhile there has another factor that contribute to the NPS which is urban stormwater and atmospheric deposition. Another finding of NPS pollution factors by (Chen et al., 2014), was sporadic due to erratic climate conditions and human actions where it has the potential to significantly impair water resources. Rivers provide 98 percent of the water used, and the agricultural industry uses 70 percent of the water available (Lee, 2020). The growing tendency of converting land usage into agricultural land increases the amount of eroded soil that enters water basins. According to Liu et al., (2013) agricultural non-point source pollution is influenced by a variety of factors including land use, conservation tillage, cover crops, fertilization rate and timing, biocontrol, buffers strips, watershed management structures, grass rivers, and parallel terraces (ANSP). Pesticides and heavy metals from agricultural soil were washed into bodies of water during the soil erosion process. The research of open vegetable farming had the highest erosion rate, estimated at 82 t/ha/year, and the runoff, which delivered a substantial quantity of nutrient and heavy metals to the water bodies flow, was 69 percent by rainfall (Razali et al., 2018). Heavy rainfall releases energy sources that can erode the soil surface and flow into water bodies. Supported by Toriman et al., (2012) which is stated that the energy produced by raindrop impacts on the soil surface causes soil erosion.

Among the measures in the mitigation of non-point sources is the practice of Best Management Practices (BMPs) that have been used by most countries. BMPs are management measures, either structural or non-structural, that are aimed to decrease the negative impacts of agricultural operations on water quality, and it can regulate ASNP in a systematic manner. Where it also covers fertilization management and contour farming management, which will help in reducing ANSP. According to the Liu et al., (2013) when compared to straight tillage, conservation tillage and shape farming, can reduced the runoff by 15.99% and 9.16% respectively. Meanwhile, rehabilitation and management from the

aspect of forest management can also help in dealing with soil erosion, where a thick canopy cover can help in reducing the erosion energy produced by rainwater droplets on the soil surface. In addition, the grip of the tree roots on the soil can also help in reducing erosion and sediment flow into the water body. Supported by Kamarudin et al., (2015) which stated that tree roots and existing plants can control naturally the process of surface runoff. Mitigation through the replanting of grass on soil terraces can also help in reducing soil erosion.

CONCLUSION

Pahang is one of the places in Peninsular Malaysia that is affected by the Northeast monsoon every year. This study tries to understand and classify the SS of the Pahang River this year and the factors that contribute to the SS amount in the river flow. SS flow to the river was contributed by point source and non-point source pollution with different movements such as rainfall and velocity speed. Overall, based on this study, using the IDW spatial interpolation method, the upstream of the Pahang River receives a high amount of SS every year. It may be due to the effect of sediment re-suspension and the runoff from the outlet of the Tembeling river and Jelai river. It's difficult to entirely enhance the quality of water because of the combined effects of point source (PS) and nonpoint source (NPS) pollution on the environment.

Water resources are an important component to humans, so measuring and monitoring the quality of water are very important for further decision making and actions. However, Pahang River gets a very high concentration of SS, resulting in water contamination and contributing to the prevalence of health concerns among Pahang residents. Another way to avoid a high amount of sedimentation status is through the appropriate management and treatment of industrial and municipal wastewater.

REFERENCES

Al-Mukhtar, M. (2019). Random forest, support vector machine, and neural networks to modelling suspended sediment in Tigris River-Baghdad. *Environmental Monitoring and Assessment, 191*(11), 34-47.

Azid, A., Che Hasnam, C. N., Juahir, H., Amran, M. A., Toriman, M. E., Kamarudin, M. K. A., Mohd Saudi, A. S., Gasim, M. B., Mustafa, A. D. (2015). Coastal Erosion Measurement along Tanjung Lumpur to Cherok Paloh, Pahang during the Northeast Monsoon Season. *Jurnal Teknologi, 74*(1), 27–34.

Azinuddin, M., Som, A. P. M., Saufi, S. A. M., Zarhari, N. A. A., Amin, W. A. A. W. M., & Shariffuddin, N. S. M. (2022). Investigating overtourism impacts, perceived man-made risk and tourist revisit intention. *Planning Malaysia, 20*(3), 239-254.

Bashir, N., Saeed, R., Afzaal, M., Ahmad, A., Muhammad, N., Iqbal, J., Khan, A., Maqbool, Y., & Hameed, S. (2020). Water quality assessment of lower Jhelum canal in Pakistan by using geographic information system (GIS). Groundwater for Sustainable Development, 10. DOI: https://doi.org/10.1016/j.gsd.2020.100357

Camara, M., Jamil, N. R., & Abdullah, A. F. bin. (2019). Impact of land uses on water quality in Malaysia: a review. In Ecological Processes (Vol. 8, Issue 1). Springer Verlag. DOI: https://doi.org/10.1186/s13717-019-0164-x

Chen, L., Wei, G., Zhong, Y., Wang, G., & Shen, Z. (2014). Targeting priority management areas for multiple pollutants from non-point sources. *Journal of Hazardous Materials, 280*, 244–251.

Choubin, B., Darabi, H., Rahmati, O., Sajedi-Hosseini, F., & Kløve, B. (2018). River suspended sediment modelling using the CART model: A comparative study of machine learning techniques. *Science of the Total Environment, 615,* 272–281.

Chuenchum, P., Xu, M., & Tang, W. (2020). Estimation of soil erosion and sediment yield in the lancang-mekong river using the modified revised universal soil loss equation and GIS techniques. *Water, 12*(1), 87-94.

De Mesnard, L. (2013). Pollution models and inverse distance weighting: Some critical remarks. *Computers and Geosciences, 52,* 459–469.

Department of Irrigation and Drainage (DID). 2009. Annual Flooding Report of Pahang State 2008/2009. Department of Irrigation and Drainage Malaysia (DID Malaysia).

Duan, W., Takara, K., He, B., Luo, P., Nover, D., & Yamashiki, Y. (2013). Spatial and temporal trends in estimates of nutrient and suspended sediment loads in the Ishikari River, Japan, 1985 to 2010. *Science of the Total Environment, 461–462*, 499–508.

Enciso, J., Nelson, S. D., Perea, H., Uddameri, V., Kannan, N., & Gregory, A. (2014). Impact of residue management and subsurface drainage on non-point source pollution in the Arroyo Colorado. *Sustainability of Water Quality and Ecology, 3,* 25–32.

Hanafiah, M. M., Ghazali, N. F., Harun, S. N., Abdulaali, H. S., AbdulHasan, M. J., Kamarudin, M. K. A. (2019). Assessing water scarcity in Malaysia: a case study of rice production. *Desalination and water Treatment, 149*, 274-287.

Jaafar, o., Toriman, M. E., Sharifah Mastura, S. A., Gasim, M. B., Lan, P. I., Abdullah, P., Kamarudin, M. K. A., Abdul Aziz, N. A. (2010). Modeling the Impacts of Ringlet Reservoir on Downstream Hydraulic Capacity of Bertam River Using XPSWMM in Cameron Highlands, Malaysia. *Research Journal of Applied Sciences 5*(2), 47-53.

Jabatan Meteorologi Malaysia Kementerian Alam Sekitar dan Air. Retrieve January 18, 2022, from https://www.met.gov.my/pendidikan/iklim/iklimmalaysia

Jabatan Pengairan dan Saliran. Retrieve January 18, 2022, from http://h2o.water.gov.my/v2/fail/rhnc/index.html

Kamarudin, M. K. A., Toriman, M. E., Juahir, H., Azid, A., Gasim, M. B., Saudi, A. S. M., Umar, R., Sulaiman, N. H., Ata, F. M., Mustafa, A. D., Amran, M. A., Yusoff, W. A., Azaman, F. (2015). Assessment of river plan change using RS and GIS technique. *Jurnal Teknologi, 76*(1), 31-38.

Kamarudin, M. K. A., Toriman, M. E., Rosli, M. H., Juahir, H., Aziz, N. A. A., Azid, A., Zainuddin, S. F. M., & Sulaiman, W. N. A. (2015). Analysis of meander evolution studies on effect from land use and climate change at the upstream reach of the Pahang River, Malaysia. *Mitigation and Adaptation Strategies for Global Change, 20*(8), 1319–1334.

Kamarudin, M. K. A., Toriman, M. E., Wahab, N. A., Rosli, H., Ata, F. M., & Faudzi, M. N. M. (2017). Sedimentation study on upstream reach of selected rivers in Pahang River Basin, Malaysia. *International Journal on Advanced Science, Engineering and Information Technology, 7*(1), 35–41.

Khan, M. M. A., Shaari, N. A. B., Bahar, A. M. A., Baten, M. A., & Nazaruddin, D. B. (2014). Flood impact assessment in Kota Bharu, Malaysia: a statistical analysis. *World Applied Sciences Journal, 32*(4), 626-634.

Lam, N. S. N. (2009). Spatial Interpolation. In International Encyclopedia of Human Geography (Second Edition, Vol. 10). Elsevier. DOI: https://doi.org/10.1016/b978-0-08-102295-5.10427-5

Lee Goi, C. (2020). The river water quality before and during the Movement Control Order (MCO) in Malaysia. Case Studies in Chemical and Environmental Engineering, 2. DOI: https://doi.org/10.1016/j.cscee.2020.100027

Lee, I., Hwang, H., Lee, J., Yu, N., Yun, J., & Kim, H. (2017). Modeling approach to evaluation of environmental impacts on river water quality: A case study with Galing River, Kuantan, Pahang, Malaysia. *Ecological Modelling, 353,* 167–173.

Li, Y., Wang, X., Fu, W., Xia, X., Liu, C., Min, J., Zhang, W., & Crittenden, J. C. (2019). Interactions between nano/micro plastics and suspended sediment in water: Implications on aggregation and settling. *Water Research, 161,* 486–495.

Lim, K. Y., Zakaria, N. A., & Foo, K. Y. (2020). Water quality assessment of urban catchment after the large-scale flood event: The worst natural tragedy at Pahang River, Malaysia. *Desalination and Water Treatment, 175*, 32–42.

Liu, R., Zhang, P., Wang, X., Chen, Y., & Shen, Z. (2013). Assessment of effects of best management practices on agricultural non-point source pollution in Xiangxi River watershed. *Agricultural Water Management, 117,* 9–18.

Lun, P. I., Gasim, Muhd. B., Toriman, Mohd. E., Rahim, S. Abd., & Kamaruddin, K. A. (2011). Hydrological Pattern of Pahang River Basin and Their Relation. Jurnal E-Bangi, 6(1), 29–37.

Madhloom, H. M., Al-Ansari, N., Laue, J., & Chabuk, A. (2018). Modeling spatial distribution of some contamination within the lower reaches of Diyala river using IDW interpolation. In Sustainability (Switzerland) (Vol. 10, Issue 1). MDPI. DOI: https://doi.org/10.3390/su10010022

Mashuri, A., Adenan, N. H., & Hamid, N. Z. A. (2019). Determining the chaotic dynamics of hydrological data in flood-prone area. Civil Engineering and Architecture, 7(6), 71–76. DOI: https://doi.org/10.13189/cea.2019.071408

Mohd, F. A., Abdul Maulud, K. N., Karim, O. A., Begum, R. A., Awang, N. A., Ahmad, A., Wan Mohamed Azhary, W. A. H., Kamarudin, M. K. A., Jaafar, M., Wan Mohtar, W. H. M. (2019). Comprehensive coastal vulnerability assessment and adaptation for Cherating Pekan coast, Pahang, Malaysia. *Ocean & Coastal Management, 182,* 104948.

Nguyen, T. H. D., Phan, K. D., Nguyen, H. T. T., Tran, S. N., Tran, T. G., Tran, B. L., & Doan, T. N. (2020). Total Suspended Solid Distribution In Hau River Using Sentinel 2a Satellite Imagery. ISPRS Annals of the Photogrammetry, Remote Sensing and Spatial Information Sciences, 6(3/W1), 91–97. DOI: https://doi.org/10.5194/isprs-annals-VI-3-W1-2020-91-2020

Of, A., Of, T., Events, R., Mann, U., & Basins, K. R. (2016). Analysis of Trends of

Extreme Rainfall Events Using Mann Kendall Test: A Case Study in Pahang. *Jurnal Teknologi, 4*, 63–69.

Othman, Z., Wahid, M. A., Latib, F. W. M., Derahman, A., Muhamad, N. S., Khalid, K., & Rosli, S. H. (2017). Risk mapping on heavy metal and nutrients after flood event on Pahang River using interpolation distance weighted (IDW) approach. *ARPN Journal of Engineering and Applied Sciences, 12*(10), 3222-3227.

Panwar, A., Bartwal, S., Dangwal, S., Aswal, A., Bhandari, A., & Rawat, S. (2015). Water Quality Assessment of River Ganga using Remote Sensing and GIS Technique. In Cloud Publications International Journal of Advanced Remote Sensing and GIS (Vol. 4, Issue 1). DOI: http://technical.cloud-journals.com/index.php/IJARSG/article/view/Tech-442

Peterson, K. T., Sagan, V., Sidike, P., Cox, A. L., & Martinez, M. (2018). Suspended sediment concentration estimation from landsat imagery along the lower missouri and middle Mississippi Rivers using an extreme learning machine. Remote Sensing, 10(10). DOI: https://doi.org/10.3390/rs10101503

Rasdi, A. L. M., Som, A. P. M., Azinuddin, M., Nasir, M. N. M., & Khan, N. F. A. H. (2022). Local community perspective on responsible tourism and destination sustainability. *Planning Malaysia, 20*(3), 255-269.

Razali, A., Syed Ismail, S. N., Awang, S., Praveena, S. M., & Zainal Abidin, E. (2018). Land use change in highland area and its impact on river water quality: a review of case studies in Malaysia. In Ecological Processes (Vol. 7, Issue 1). Springer Verlag. DOI: https://doi.org/10.1186/s13717-018-0126-8

Saberioon, M., Brom, J., Nedbal, V., Souček, P., & Císař, P. (2020). Chlorophyll-a and total suspended solids retrieval and mapping using Sentinel-2A and machine learning for inland waters. Ecological Indicators, 113. DOI: https://doi.org/10.1016/j.ecolind.2020.106236

Saby, L., Nelson, J. D., Band, L. E., & Goodall, J. L. (2021). Nonpoint Source Water Quality Trading outcomes: Landscape-scale patterns and integration with watershed management priorities. Journal of Environmental Management, 294. DOI: https://doi.org/10.1016/j.jenvman.2021.112914

Samy, I. E., Marghany, M. M., & Mohamed, M. M. (2014). Landslide modelling and analysis using remote sensing and GIS: A case study of Cameron highland, Malaysia. *Journal of Geomatics, 8*(2), 44-56.

Sisun, A., Mohd Yusoff, M., & Osman Salleh, K. (2015). Kesan aktiviti pembangunan tanah terhadap kawasan punca pengambilan air di Cameron Highlands. *Malaysia Journal of Society and Space, 11*(6), 34-53.

Sun, S., Zhang, J., Cai, C., Cai, Z., Li, X., & Wang, R. (2020). Coupling of non-point source pollution and soil characteristics covered by Phyllostachys edulis stands in hilly water source area. *Journal of Environmental Management, 268*, 25-34.

Toriman, M. E., Khairul, M., Kamarudin, A., Azlina, N., Aziz, A., Din, H. M., Ata, F. M., Abdullah, N. M., Syazwani, N., Rani, A., Saad, M. H., Abdullah, N. W., Gasim, M. B., & Mokhtar, M. (2012). Pengurusan Sedimen Terhadap Sumber Air Bersepadu: Satu Kajian Kes Di Sungai Chini, *e-Bangi,7*(1), 23-45.

Usali, N., & Hasmadi Ismail, M. (2010). Use of Remote Sensing and GIS in Monitoring Water Quality. *Journal of Sustainable Development, 3*(3), 1-14.

Wahab, N. A., Kamarudin, M. K. A, Toriman, M. E., Juahir, H., Saad, M. H. M., Ata, F.M., Ghazali, A., Hassan, A. R., Abdullah, H., Maulud, K. N., Hanafiah, M. M., Harith, H. (2019). Sedimentation and water quality deterioration problems at Terengganu River basin, Terengganu, Malaysia. *Desalination and water Treatment, 149,* 228-241.

Received: 28th Feb 2023. Accepted: 31st March 2023

PLANNING MALAYSIA:
Journal of the Malaysian Institute of Planners
VOLUME 21 ISSUE 1 (2023), Page 134 – 145

LEVEL OF ISLAMIC ATTRIBUTES PRACTICES BY MUSLIM FRIENDLY HOTEL IN MALAYSIA

Myzatul Aini Ma'asor @ Mansor[1], Ahmad Puad Mat Som[2], Yusnita Yusof[3], Amer Al Qassem[4]

[1,2]*Faculty of Applied Social Sciences,*
[3]*Faculty of Business and Management,*
UNIVERSITI SULTAN ZAINAL ABIDIN, MALAYSIA
[4]*School of Business*
SKYLINE UNIVERSITY COLLEGE, UNITED ARAB EMIRATES

Abstract

Islamic tourism is an innovative tourism that promotes Islamic way of life. The service not only aims for Muslim travellers but also benefited to non-Muslim. One of the various strategies to promote Islamic tourism is to introduce Muslim-friendly hotels (MFHs), and Malaysia could lead the way in doing so. MFH characteristics are still unclear as many hoteliers were perplexed by this circumstance, which hampered hotels' efforts to implement it. So, this study objective to examine level of Islamic attributes practices by the MFH in Malaysia. A total of 380 respondents were selected using a convenient sampling method and data was analyzed using descriptive statistic. The result shown that "Placement of Qibla stickers /direction (Qibla stickers/direction point towards Mecca city)" in hotel's room most likely favourite variable during guest's stay in MFH. As an important variable was pointed out, it helps hotel management to market their products and services in proper way. Also, support government to boost up market of halal hotel in future as an effort for branding Malaysia as halal hub globally, in the same time, to help Malaysia's authorities to determine Islamic attributes that may satisfy the guests' needs.

Keywords: Muslim Friendly Hotel, Islamic attributes, Islamic Tourism, mean

[1] Student at Universiti Sultan Zainal Abidin. Email: myzatulaini@gmail.com

INTRODUCTION

The attributes of an accommodation provider play a vital role in attracting business (Torres, Fu, & Lehto, 2014). Customers consider the range of features and amenities a lodging provider offers when selecting a place to stay when travelling (Caber & Albayrak, 2014). Since repeat guests are a hotel's richest source of revenue and profit, the hotel attributes that are most likely to be sources of observable consumer value should be the focus of managers. Other hotel characteristics evaluated in the study included location, food and beverage services, physical assets, and other services that can increase "consumer value." (Sim, Mak, & Jones, 2006). Understanding the critical elements that influence client satisfaction is essential for success in the hotel industry (Poon & Low, 2005). Additionally, since it affects destination selection, product and service consumption, and the decision to return, visitor happiness is crucial for effective destination marketing (Kozak & Rimmington, 2000).

Additionally, Kandampully and Suhartanto, (2000); Ryu, Lee, and Kim, (2012); Worsfold, Fisher, McPhail, Francis, and Thomas (2016) highlighted the significance of a hotel's physical characteristics in relation to overall satisfaction and repeat business. Additionally, Bellingkrodt and Wallenburg (2015) noted that when it comes to the role of customer relations for innovation and customer satisfaction, they find that businesses that offer new or innovative services may draw customers' attention to them and reward them even though the improvements are modest. This demonstrates that hoteliers will be able to compete in the hotel market with the new Muslim Friendly Hotel (MFH) concept.

Moreover, with more than 6000 mosques nationwide, 821 flights every week from West Asian and OIC nations, and 5896 food establishments with certified Halal kitchens, Malaysia has one of the most developed and advanced halal industries. by Department of Islamic Development Malaysia (JAKIM) (Henderson, 2016). Nonetheless, study by Md Salleh, Hamid, Hashim, and Omain (2014) found that unclear MFH characteristic (e.g. absence of Islamic standard for hotels) lead to confusion amongst hoteliers and disrupted the process for hotels to adopt it. Even though numerous studies have examined a variety of topics on conventional hotels, there are still lacking in-depth research on the importance of hotel attributes in MFH.

So, this study should give an idea and benchmark for hoteliers to form and innovate better concept and understanding of Islamic attributes in their hotels. To helps government to boost up market of halal hotel in future as an effort for branding Malaysia as halal hub globally, in the same time, to help Malaysia's authorities to determine Islamic attributes that may satisfy the guests' needs.

LITERATURE REVIEW

Malaysia is prosperous with various cultures of multiple races (Laderlah et al., 2011) and Islam is its official religion, but Malaysians may practice any religion. Temples, mosques, and churches are often found in vicinity areas. Therefore, they become attractions for international tourists who seek for diversity in a country. With progressive promotion, one of the most popular tourist destinations in the world is now Malaysia. Currently, the tourist industry is recognised as a significant contributor to the economy, one of the main sources of foreign exchange profits, and a driver of economic growth (Mosbah & Al Khuja, 2014). Hence, tourism industry in Malaysia continues to expand in 2016 with the contribution of 14.8 per cent (RM182.4 billion) to the economy.

Ministry of Finance (2018) reported that number of hotels has increased in five years from 1,376 unit in year 2012 to 3,126 unit in year 2017 as shown in Figure 1. The significant increase was seen in 2017 with an increase of 1,667 units. This shows that the hotel industry in Malaysia is increasingly gaining attention among tourists with total average of stay per night was 5.7 nights.

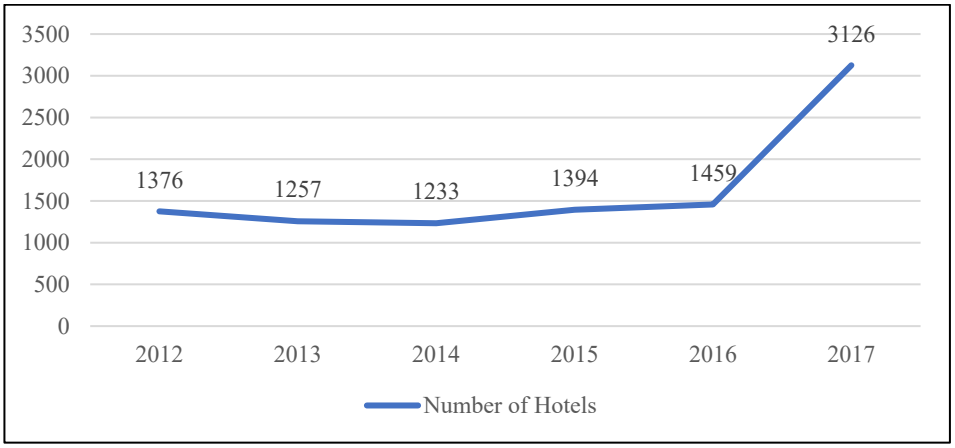


Figure 1: Number of Total Hotels in Malaysia from 2012 until 2017
(Valuation of Property Services Department, Ministry of Finance, 2018)

Aligned with the niche market, Ministry of Tourism established Islamic Tourism Centre (ITC) in February 2009 and one of the functions is to develop halal tourism in Malaysia (Kamarudin & Nizam, 2013). Malaysia also took initiative to promote products and services based on Islamic lifestyle by organizing events such as Islamic Festival Fashion (IFF), Halal Showcase, Islamic MATTA Fair, and Islamic tourism conferences such as Regional Seminar on Islamic Tourism (ReSIT, 2012) and World Islamic Tourism Mart (WITM, 2012) organized by ITC, Malaysian Association of Tours & Travel Agents (MATTA) and Tourism Ministry. These initiatives received overwhelming

response from international tourists especially from Middle East (ME) countries. Tourists from this region began looking for alternate vacation spots. One of their possibilities is Malaysia because it is an Islamic nation. Their arrivals in Malaysia have demonstrated an upward tendency (Mohd Salleh et al., 2010). Along with a growth in arrivals, visitors from the ME market also tend to spend more money and stay longer in this nation (WTO, 2008).

Islamic Tourism in Malaysia

A significant moment for Malaysia occurred when it became the first nation to have a formal, systematic halal assurance system in 2000. With this head start in the halal development, Malaysia has developed into the leading nation for halal standards and is in a favourable position to access the $2.30 trillion global halal market (MITI, 2015). Therefore, one of the many methods to promote Islamic tourism is by implementing the MFH, and Malaysia should lead the way in doing so. As any tourism destinations strive to find a balance between sustainability and development (see Mohd Rasdi et al., 2022) given that Malaysia is a multicultural nation, the exclusivity of Islamic tourism must be considered based on its emphasis on religion, culture, and spirituality.

Islamic tourism is beyond innovation from mass tourism by adding some Islamic way of life to fulfil Muslim travellers' requirement. Currently, recognized as a progressive Islamic country, Malaysia should aggressively promote Islamic tourism, by introducing the MFH (Mohd Yusof & Muhammad, 2010). Marketers may also use Islamic attributes in promotional programs (Mohamed Battour & Ismail, 2014). Shafaei and Mohamed (2015) agreed that In Malaysia, there are several tangible and intangible Islamic characteristics that can entice Muslim travellers. The presence of mosques and places for prayer, the abundance of halal food for Muslims, the presence of local Muslim communities, the country's stability and safety under Islam, and Malaysia's internet reputation as an Islamic nation are some of these.

For instance, JAKIM issues the halal hotel accreditation. Hotels that follow the halal restaurant concept are well renowned for adhering to all JAKIM guidelines' legal requirements. The findings of the SCH acceptance research are applicable to the majority of Muslim nations, however there are no universal Islamic standards that hotels in Malaysia to adopt (Othman, Tarmudi, & Mohd Taha, 2013).

Muslim Friendly Hotel

By implementing a Muslim-friendly approach, Samori & Abd Rahman (2013) advise hotels to use the appropriate Islamic themes, ambiances, and architecture to make guests feel at ease as they fulfil their religious obligations and to enhance the hotel's value, reputation, and brand. In essence, the management and growth of MFHs are the same as those of conventional hotels. However, when planning,

a few operational peculiarities must be taken into consideration (Rosenberg & Choufany, 2009). This planning important to make sure improper arrangement especially between spaces in toilet or bathroom that related to cleanliness. Designers should include sufficient ventilation systems in ablution areas and any other facilities that use water to prevent diseases that can develop in the future as a result of poor design (Haraty & Utaberta, 2019).

Islamic Quality Standard (IQS) by Universal Crescent Standard Centre (UCSC) can be a good initiative as a mechanism to standardize the compliance of Islamic principle that can be used for hotel management. To be awarded as an IQS, taken into account the quality of physical facilities, service quality, no alcohol in the premises is allowed and only "halal" food is available. As well as for relevant standards of quality in key areas of cleanliness, customer service, guest rooms, bathrooms and food must follow the rules of Islamic principles. Basic requirements under Islamic principles are the perquisites for a hotel to be considered under IQS (Jais, 2016). This study was adopted IQS as mechanism to choose population.

Islamic Attributes

The MFH concept is becoming more popular throughout the Middle East, particularly in Saudi Arabia where the majority of hotels are run in accordance with Islamic law. It is crucial to keep in mind that for a hotel to qualify as an MFH, Syariah norms and principles must be followed in terms of operation, design, and even the hotel's financial system. Islamic values should guide the management of the hotel's amenities. For instance, separate facilities for men and women should be adopted for the spa, gym, swimming pool, and guest and function rooms (Rosenberg & Choufany, 2009).

When promoting a hotel, service quality becomes an important reason for a potential guest. Thus, this study examines which attributes are more needed by respondents when selecting a Syariah-compliant hotel during their stay. The majority of the facilities (such as floors, a spa, a gym, and guest and function rooms) must be gender-separate for a hotel to be entirely Syariah-compliant. This is especially important while creating the hotel's floor plans during the development phase. Toilets and beds shouldn't be positioned facing Mecca. In terms of the building's architecture and décor, no artwork showing people should be on exhibit, nor should any jewellery that does not reflect any indication or symbol of daily life or furniture arrangements that adhere to Shariah principles (Din, 1989; Stephenson, Russell, & Edgar, 2010).

Additionally, Zhou, Ye, Pearce and Wu (2014) finds that factors related to room satisfaction include the size and layout of the room, the facilities in the room and bathroom, the cleanliness of the rooms, and the inviting additions. Rosenberg and Choufany (2009) concluded MFH attributes into three important dimension which are summarized in Figure 2. MFH attributes are divided into

three main dimensions, which are operations, the hotel must run and follow according to Syariah and Islamic laws.

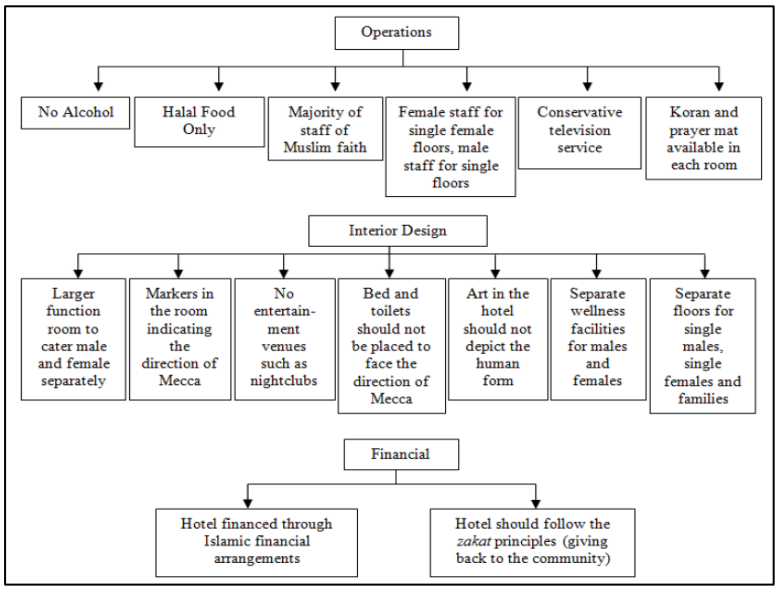


Figure 2: Islamic Attributes of MFH in Malaysia
(Rosenberg & Choufany, 2009)

RESEARCH METHODOLOGY

This quantitative study employed descriptive statistic method to determine level of Islamic attributes practices. The 5-point interval scale instruments were divided into five parts. Part A contained seven questions regarding respondents' demographic profile, such as gender, age, marital status, religion, place of origin, educational qualification and occupation. Part B consisted of respondent's travel pattern, while Part C comprised a set of questions about Islamic attributes experienced by respondents during their stay. Part D of the questionnaires included statements to measure customer satisfaction, and the last section was designed to measure guest revisit intention to the hotel.

Table 1: List of Hotels Awarded IQS by UCSC

No	Hotel's Name	Location
1	Grand Bluewave Hotel	Shah Alam, Selangor
2	De Palma Hotel	Shah Alam & Ampang, Selangor
3	PNB Perdana Hotel and Suites on the Park	Kuala Lumpur
4	Adya Hotel	Langkawi, Kedah
5	Primula Beach Hotel	Terengganu

6	Tabung Haji Hotel and Convention Center	Terengganu
7	Klana Beach Resort, Port Dickson	Negeri Sembilan

Source: Othman, Mohd Taha, & Othman (2015)

The study has utilized multi-tier method, which consists of the judgemental or purposive technique for the population and convenient technique for sampling method. Non-random sampling was chosen because there is no existing list of the entire tourist population that has stayed in MFH in Malaysia. At the first stage, the screening process of population was determined by the hotel list that was awarded IQS. The details of hotels listed are shown in Table 1. Then, by using convenient sampling, total 380 questionnaires being dispensed, 285 were returned. After screening the surveys and normality test, only 251 samples are appropriate to be analyzed.

FINDINGS

Level for each item in the variable for SCH attributes is summarized in Table 2. According to the mean values suggested by Oxford & Burry-stock (1995), low score is between range 1.0-2.4, medium between range 2.5-3.4 and high is between range 3.5-5.0. It indicated that the highest value means for Islamic attributes (4.79) belonged to the statement "Placement of Qibla stickers /direction (Qibla stickers/direction point towards Mecca city)" in hotel's room. It gives meaning that respondents fully support MFH providing direction towards Mecca city in hotel's room, which make easier for them to perform prayers.

Meanwhile, statement "Female non-Muslim staff are encouraged to wear hijab while on duty" gets the lowest score with 3.75 compared to others. However, as a whole, the values of the means for Syariah-compliant attributes items were classified as high (4.34).

Table 2: Level of Islamic Attributes Practices

No.	Items	Mean
1	Placement of Qibla stickers /direction (Qibla stickers/direction point towards Mecca city) in hotel's room	4.79
2	Hotels should only serve halal food	4.69
3	Provision of prayer mat in hotel's room	4.69
4	Banning of alcoholic drinks in hotel's premise	4.63
5	Male staff are allowed to perform Friday prayer while on duty	4.61
6	Banning of nightclub entertainment in hotel's premise	4.58
7	All staff are given break time to perform routine daily prayers while on duty	4.58
8	Provision of a copy of the Holy Qur'an in hotel's room	4.57
9	Availability of prayer schedule in hotel's room	4.57
10	Availability of Musolla (prayer room) for congregation prayer	4.53
11	Hotels should follow the Zakat principles (Giving back to the community)	4.50

12	Hotel policy on display forbidding unmarried Muslim couple to check-in hotel's room	4.50
13	Hotels must be financed in line with the Islamic principles (e.g. Islamic financing)	4.49
14	Hotel's premise (including all guest rooms) to be designated as non-smoking zone	4.47
15	Availability of shower hose//bidets in the hotel's bathroom for ablution	4.44
16	Hotels Art display should be other than human form	4.35
17	Availability of segregated gymnasium for men and women	4.30
18	Availability of Muslim travel packages/counter in hotel's premise	4.29
19	Availability of segregated swimming pools for men and women	4.25
20	Toilets should be arranged in opposite direction of Mecca	4.24
21	Banning of massage centre in hotel's premise	4.20
22	If no segregated facilities, the hotels should provide different timing for men and women to use common facilities, respectively	4.20
23	Presence of loud public pronouncement of Azan (call for prayer) to indicate prayer time	4.12
24	Availability of an exclusive floor of guest rooms for single women only in hotel's premise	4.09
25	Imam (religious officer) on duty to lead the 5 obligatory daily prayers at Musolla (prayer room)	4.09
26	Beds should be arranged in opposite direction of Mecca	4.08
27	Availability of zakat counter in hotel's premise	3.96
28	Hotel's location in proximity to mosque	3.93
29	Hotel policy to recruit Muslim staff only	3.80
30	Female non-Muslim staff are encouraged to wear hijab while on duty	3.75
	Total	**4.34**

DISCUSSION AND CONCLUSION

Descriptive analysis used to define the variables of Islamic attributes that influence hotel's guest to revisit. Understanding how consumers view the features of a product or service, as well as their significance and performance in comparison to rivals, is essential for success in the hospitality industry (Baruca & Civre, 2012). It also challenging to introduce Muslim friendly concept to the world, but marketer need to understand and promotes this way of life in positive surrounding. Thus, when promoting a hotel, service quality becomes an important reason for a potential guest. This study examines which attributes are more needed by respondents when selecting a MFH during their stay.

Measuring service quality is different among hotel when it comes to religious needs. In this study, service quality is measured by 30 items which were adopted by previous researcher (Farahdel, 2011; Henderson J.C., 2010a; Razalli et al., 2015; Rosenberg & Choufany, 2009). This study adapted 30 attributes from the previous research on MFH to be investigated by guests who have experienced staying in such hotels.

The result shows that item "Placement of Qibla stickers /direction (Qibla stickers/direction point towards Mecca city) in hotel's room" is the most agreed by respondents to be provided in hotel room. During pilot test, this item was dropped due to low of loading value. However, researcher decided to maintain the item because of prayer is compulsory to Muslims, and they need Qibla direction as a guide to perform prayers. Hence, the actual study approved that this item is important to most respondents during their stay. Since MFH is an inclusive concept guided by Islamic principles, this requirement is essential for the hotel guests.

In addition, frequency for the item show that 4 and 5 (strongly agree) is the highest number scale answered by respondents (42.7%). This reflects that hotels in Malaysia are now furnished with the necessities for Muslim visitors, including a prayer mat, a Qibla direction, and the ability to provide halal food or beverages (see Samori & Sabtu, 2014).

In this study, item "Hotel should only serve halal food" was listed as the second most important attribute the hotel needs to provide. Thus, hotel is required to obtain Halal certification from the authorities to provide guests with confidence regarding the halal food status, as Muslims should avoid "Syubhah" when consuming food. Although guests can search halal food elsewhere, some guests traveling with family members consist of parents and young children prefer to eat at hotel.

Result also shows that item "Provision of prayer mat in hotel's room" as equally important with Halal food since the mean values are equal. Prayer mat provides comfort to Muslim when performing a prayer, although not obligatory. This requirement is not taken seriously by some hotels which will cause dissatisfaction among hotel guests. "Banning alcoholic drinks in hotel's premise" also becomes a significant attribute to be classified as MFH. If the hotel still serves alcoholic drinks, the hotel is not worthy to be called SCH, but it is only known as a 'dry hotel'; it still does not meet the features as MFH (Ahmat et al., 2012b).

Until now, there are no specific Syariah-compliant laws and regulations concerning the service industry in Malaysia, especially in the accommodation sector. Since Malaysia is leading towards halal tourism globally, this research findings could help in developing Islamic module or standard based on Syariah principles to be adopted by practitioners. It is easier to adopt, which mean the process to apply and adopt the standard is not troubling existing hotel operation or involving major renovation. Various public, private and hybrid tourism stakeholders can also cooperate with hoteliers to think creatively, innovatively and solve common problems and create better Islamic tourism in future (see Azinuddin et al., 2022a, 2020; Mior Shariffuddin et al., 2020). As claimed by Samori and Abd Rahman (2013), in terms of market size and revenue, the halal business and tourism have enormous potential. Focusing specifically on the hotel

services industry demonstrates that it will not only assist Muslims in general but will also benefit non-Muslims.

ACKNOWLEDGEMENT

This study was financed by the Faculty of Applied Social Sciences, Universiti Sultan Zainal Abidin under Grant No: FRGS/1/2015/WAB12/UNISZA/01/1. The researcher is highly appreciative of Professor Dr. Ahmad Puad Mat Som, the Project Leader who has kindly given his attention and time to advise, check, amend and improve various aspects of this research as well as share knowledge with the researcher.

DISCLOSURE STATEMENT

Following international publication policy and our ethical obligation as a researcher, we report that we have no conflict of interest.

REFERENCES

Ahmat, N. C., Ridzuan, A. H. A., & Zahari, M. S. M. (2012b). Dry hotel and Syariah Compliant Practices: Concepts, Challenges and Reality in Malaysia. *ICIMTR 2012 - 2012 International Conference on Innovation, Management and Technology Research*, 107–111. https://doi.org/10.1109/ICIMTR.2012.6236370

Azinuddin, M., Mat Som, A. P., Mohd Saufi, S. A., Zarhari, N. A. A., Amin, A., & Mior Shariffuddin, N. S. M. (2022a). Investigating overtourism impacts, perceived man-made risk and tourist revisit intention. *Planning Malaysia, 20*(3), 239-254.

Azinuddin, M., Mior Shariffuddin, N. S., Hanafiah, M. H., Mat Som, A. P., & Wan Mohd Zain, W. M. A. (2022b). A systematic literature review on tourism networks, knowledge transfer, absorptive capacity, and performance. *Asia-Pacific Journal of Innovation in Hospitality and Tourism, 11*(1), 179-218.

Baruca, P. Z., & Civre, Z. (2012). How Do Guests Choose a Hotel? *Academica Turistica*, *5*(1), 75–84.

Battour, M., & Ismail, M. N. (2014). The Role of Destination Attributes in Islamic Tourism. SHS Web of Conferences, 12, 556–564. https://doi.org/10.1051/shsconf/20141201077

Bellingkrodt, S., & Wallenburg, C. M. (2015). The Role of Customer Relations for Innovativeness and Customer Satisfaction: A Comparison of Service Industries. *The International Journal of Logistics Management*, *26*(2), 254–274.

Caber, M., & Albayrak, T. (2014). Does the importance of hotel attributes differ for senior tourists? International Journal of Contemporary Hospitality Management, 26(4), 610–628. https://doi.org/10.1108/IJCHM-02-2013-0103

Din, K. (1989). Islam and Tourism: Patterns, Issues, and Options. *Annals of Tourism Research*, *16*, 542–563. Retrieved from http://www.sciencedirect.com/science/article/pii/016073838990008X

Farahdel, F. (2011). Islamic Attributes and Its Impact on Muslim Tourists' Satisfaction: A Study of Iran. *University of Malaya*. University of Malaya.

Haraty, H. J. S., & Utaberta, N. (2019). Cleanliness Inspection of The Ablution Spaces

of The Federal Territory Mosque. *Planning Malaysia: Journal of the Malaysian Institute of Planners, 17(2), 1-12.*

Henderson, J. C. (2010a). Sharia-compliant Hotels. *Tourism and Hospitality Research*, *10*(3), 246–254. https://doi.org/10.1057/thr.2010.3

Henderson, J. C. (2016). Halal food, Certification and Halal Tourism: Insights from Malaysia and Singapore. *Tourism Management Perspectives*, *19*, 160–164.

Jais, A. S. (2016). *Shariah Compliance Hotel: Concepts and Design*. Politeknik Merlimau Melaka.

Kamarudin, L. M., & Nizam, H. (2013). Islamic Tourism: The Impacts To Malaysia's Tourism Industry. In *International Conference on Tourism Development* (p. 397).

Kandampully, J., & Suhartanto, D. (2000). Customer Loyalty in the Hotel Industry : The role of Customer Satisfaction and Image. *International Journal of Contemporary Hospitality Management*, *12*(6), 346–351. https://doi.org/10.1108/09596110010342559

Kozak, M., & Rimmington, M. (2000). Tourist Satisfaction with Mallorca, Spain, as an Off-Season Holiday Destination. Journal of Travel Research, 38(3), 260–269. https://doi.org/10.1177/004728750003800308

Laderlah, S., Rahman, S., Awang, K., & Man, Y. (2011). A Study on Islamic Tourism: A Malaysian Experience. *International Proceedings of International Conference on Humanities, Historical and Social Sciences.* Retrieved from https://scholar.google.com/scholar?start=10&q=islamic+tourism&hl=en&as_sdt=0,5#3

Md Salleh, N. Z., Hamid, A. B. A., Hashim, N. H., & Omain, S. Z. (2014). The Practice of Shariah-Compliant Hotel in Malaysia. *International Journal of Trade, Economic and Finance*, *4*(1), 26–30. https://doi.org/10.7763/IJTEF.2014.V5.335

MITI. (2015). *Ministry of International Trade and Industry Report 2015*. *Ministry of International Trade and Industry*.

Mior Shariffuddin, N. S., Wan Mohd Zain, W. M. A., & Azinuddin, M. (2020). Collaborative challenges among stakeholders on destination competitiveness. *International Journal of Innovation, Creativity and Change, 13*(1), 456–466.

Mohd Rasdi, A. L., Mat Som, A. P., Azinuddin, M., Nasir, M. N. M., & Khan, N. F. A. H. (2022). Local community perspective on responsible tourism and destination sustainability. *Planning Malaysia, 20*(3), 255-269.

Mohd Yusof, M. F., & Muhammad, M. Z. (2010). Introducing Shariah Compliant Hotels as a New Tourism Product : The Case of Malaysia. In *Entrepreneurship Vision 2020: Innovation, Development Sustainability, and Economic Growth* (pp. 1142–1146).

Mosbah, A., & Al Khuja, M. S. A. (2014). A Review of Tourism Development in Malaysia. *European Journal of Business and Management*, *6*(5), 1–9. https://doi.org/10.1177/0047287514563167

Othman, N., Mohd Taha, R., & Othman, S. (2015). Maqasid Al Shariah in the Governance and Management Strategy of Islamic Tourism Businesses.

Othman, N., Tarmudi, S., & Mohd Taha, R. (2013). Marketing of Islamic Tourism: Transformation and Discovery of Values in Tourism & Hospitality from Islamic Perspectives. *Scientific Committee*, 50.

Oxford, R. L., & Burry-Stock, J. A. (1995). Assessing the Language Learning Strategies

Worldwide with the ESL/EFL version of the Strategy Inventory Language Learning. System, 23, 1-23.

Poon, W.-C., & Low, K. L.-T. (2005). Are Travellers Satisfied with Malaysian Hotels? International Journal of Contemporary Hospitality Management, 17(3), 217–227. https://doi.org/10.1108/09596110510591909

Razalli, M. R., Mohamed Ismail, R., & Yaacob, N. A. (2015). SIHAT : An Assessment Tool for Shariah-compliant Hotel Operations. *International Journal Islamic Marketing and Branding*, *1*(1), 55–68.

Rosenberg, P., & Choufany, H. M. (2009). Spiritual Lodging – the Sharia - Compliant Hotel Concept. *HVS Global Hospitality Services- Dubai*, (April), 1–7.

Ryu, K., Lee, H., & Kim, W. G. (2012). The Influence of the Quality of the Physical Environment, Food, and Service on Restaurant Image, Customer Perceived Value, Customer Satisfaction, and Behavioral Intentions. *International Journal of Contemporary Hospitality Management*, *24*(2), 200–223.

Samori, Z., & Abd Rahman, F. A. (2013). Establishing Shariah Compliant Hotels in Malaysia : Identifying Opportunities ,Exploring Challenges. *West East Journal of Social Sciences*, *2*(2), 95–108.

Samori, Z., & Sabtu, N. (2014). Developing Halal Standard for Malaysian Hotel Industry: An Exploratory Study Selection and Peer-review Under Responsibility of Centre for Islamic. *Procedia - Social and Behavioral Sciences*, *121*(2014), 144–157.

Shafaei, F., & Mohamed, B. (2015). Malaysia's Branding as an Islamic Tourism Hub: An Assessment. *Malaysia Journal of Society and Space*, *11*(1), 97–106.

Sim, J., Mak, B., & Jones, D. (2006). A Model of Customer Satisfaction and Retention for Hotels. Journal of Quality Assurance in Hospitality & Tourism, 7(3), 1–23. https://doi.org/10.1300/J162v07n03

Stephenson, M. L., Russell, K. A., & Edgar, D. (2010). Islamic Hospitality in the UAE : Indigenization of Products and Human Capital, *1*(1), 9–24. https://doi.org/10.1108/17590831011026196

Torres, E. N., Fu, X., & Lehto, X. (2014). Examining key drivers of customer delight in a hotel experience: A cross-cultural perspective. International Journal of Hospitality Management, 36, 255–262. https://doi.org/10.1016/j.ijhm.2013.09.007

World Tourism Organization. (annual). Yearbook of Tourism Statistic, *World Tourism Organization, Madrid, Spain.*

Worsfold, K., Fisher, R., McPhail, R., Francis, M., & Thomas, A. (2016). Satisfaction, Value and Intention to Return in Hotels. *International Journal of Contemporary Hospitality Management*, *28*(11). https://doi.org/10.1108/MBE-09-2016-0047

Zhou, L., Ye, S., Pearce, P. L., & Wu, M. Y. (2014). Refreshing Hotel Satisfaction Studies by Reconfiguring Customer Review Data. *International Journal of Hospitality Management*, *38*, 1–10.

Received: 28th Feb 2023. Accepted: 31st March 2023

PLANNING MALAYSIA:
Journal of the Malaysian Institute of Planners
VOLUME 21 ISSUE 1 (2023), Page 146 – 162

THE INFLUENCE OF SOCIO-CULTURAL AND ECONOMIC IMPACT ON TOURISM SUPPORT: A MEDIATING ROLE OF COMMUNITY VALUE

Nazirullah[1], Ahmad Puad Mat Som[2], Nur Shahirah Mior Shariffuddin[3], Wan Mohd Adzim Wan Mohd Zain[4], Amer Al Qassem[5]

[1,2,3,4]*Faculty of Applied Social Sciences,*
UNIVERSITI SULTAN ZAINAL ABIDIN, MALAYSIA
[5]*School of Business,*
SKYLINE UNIVERSITY COLLEGE, UNITED ARAB EMIRATES

Abstract

This research aims to determine the influence of citizens' socio-cultural and economic impact on tourism support. In addition, the study also measured the mediating effect of community value between socio-cultural, economic impact and tourism support. The theoretical foundation of social exchange theory was applied in the form of cost and benefit analysis to predictively test the socio-cultural, economic impact, community value and tourism support model. The nature of the study was quantitative and correlational research design. Residents of Gilgit Baltistan answered a total of 454 survey questionnaires. The association between community value, socio-cultural and economic impact constructs and the locals' resident support for future tourism were examined using structural equation modelling (SEM) (AMOS Version-28). The findings show that socio-cultural, economic impact and community value have statistically significant and positive predictors for tourism support among residents. The suggestion was put forward to the policymakers that socio-cultural and economic implications improve community value, and all these factors could sustainably boost objective support for tourism.

***Keywords**:* Socio-cultural, Economic Impact, Tourism Support, Community Value

[1] Postgraduate Researcher at University Sultan Zainal Abidin Email: nazirkhan730@gmail.com

INTRODUCTION

The study focuses on tourism support's socio-cultural and economic impact and its mediating role of community value. The socio-cultural and economic impact could play a considerable role in supporting the tourism industry. So far, the research on this topic focuses on the following aspects such as socio-cultural and economic impact, which is a positive drive to support tourism sustainably. The study explains the socio-cultural and economic impact and its effect on supporting tourism at the national level as well as in the broad sense for overall tourism development. To better understand tourism support and the role of socio-cultural and economic impact, this research needs to contribute to the tourism stakeholders with a practical simulative framework. This research could increase the demand for cultural activities and create more realistic opportunities to learn about other individuals' cultures. Although positive socio-cultural, economic impact and community value still need to be clarified in the tourism literature, and this research gap was filled by the empirical study. Social exchange theory (SET) testing is the theoretical contribution of this research which was tested and empirically justified in the advanced literature. Such as, Munanura et al. (2021) explained the community and environmental impact perception regarding support for tourism. Moreover, the current study applied the conceptual framework of Munanura et al. (2021, 2022) and derived the relationship between socio-cultural and economic impact regarding community value and tourism support. On the other hand, Munanura and Kline (2022) explained the relationship between ecocentric and commodity value orientation with the intervening effect of positive and negative impact attitudes toward satisfaction of life and support for tourism.

This problem has been largely studied and many viable solutions have been found. Comerio and Strozzi (2019) identified that tourism and socio-economic impact studies did not thoroughly conduct on the terrorism industry to support tourism, development, and its growth. It is widely acknowledged that local progress should strive towards environmental, economic, and socio-cultural sustainability, as emphasised by the United Nations Sustainable Development Goals 8 and 10 (SDGs) (United Nation, 2020). SDGs agenda worldwide focuses on achieving economic, social importance and the community value mindset which increases tourism sustainability for future generation (Giro, 2021; Higgins-Hall, 2019; Robinson et al., 2019; Desbiolles, 2018). The concept of sustainable tourism has long presented a challenge to those working in the business, policymakers, researchers, and governments. Due to the rapid growth of the tourism industry, it can be harmful to the environment and local communities because it is frequently regarded in economic development (Azinuddin et al., 2022a). Ultimately, the integrated values perceived and experienced by tourists are also contribute to the sustainable growth a of tourism destination (Azinuddin,

2022b). Since tourism support can have serious consequences, it is imperative to understand better the context of socio-cultural, economic impact and community value.

LITERATURE REVIEW

The debate on socio-economic impact is related to more than just supporting tourism, and its local economic planning to achieve SDGs agenda in general (Choe & Lugosi, 2022). Robinson et al. (2019) concluded that SDGs are embedded in national policy guidelines that still focus on sociological development with the help of socio-economic growth. These activities collectively preserve and reinforce geographical freedom to improve community value and capital accumulation for rural and urban livelihood (Bengtsson et al., 2018; Fuchs et al., 2021; Söderbaum, 2019). Söderbaum (2019) drew attention to the widespread socio-cultural impact on community value and tourism support, which can easily promote SDGs 8 and 10 at national levels.

According to Boluk et al. (2019), government and local citizens should emphasise sustainable tourism development and growth-oriented paradigms to support tourism. Social equality, good working conditions, and community quality of life are strong indicators of achieving long-term regional tourism support goals (Söderbaum, 2014, 2017; Lee & Chang, 2008). However, community value and tourism support planning need neoclassical methodologies, which can easily generate a sustainable economy for developing countries (Gretzel et al., 2020), even though many individuals try to boost community value to support tourism in society (Bramwell et al., 2017; Ioannides & Zampoukos, 2018). The numerous unsustainable tourist destination crises are due to the lack of planning of governmental and institutional tourism actions, which do not primarily focus on the socio-economic impact and its future development for rural and urban communities (Bengtsson et al., 2018). In light of this, our study emphasises on the significance of rural and urban citizens socio-cultural and economic impact on tourism support and community value for improving the country's overall tourism industry. From the above scientific literature review, this study hypothesised that socio-economic and cultural impacts are associated with tourism support among urban and rural tourism communities.

Advanced benefit approaches and maximum community value sustainability are the broader agenda of this tourism-based research study. Grandcourt (2020) revealed that traditional approaches do not need to counter the significance of socio-economic impact regarding tourism support at the global level (Grandcourt, 2020). As a result, both macro-and meso-level socio-economic views can contribute to the empirical literature regarding supporting tourism (Holland et al., 2022). Likewise, socio-economic generates revenue to the people of local income, and indirectly community value could improve. The results

concluded that socio-economic conditions influence tourism support and income (Dredge & Gyimóthy, 2015). The negative socio-economic impacts are already present in tourism literature, but positive socio-economic impact perception can sustainably push tourism support. According to Mahadevan and Suardi (2019), tourist expansion has little impact on reducing poverty and income, but the socio-economic impact can boost community value and regional tourist areas. Alam and Paramati (2016) found that socio-economic impact can affect tourism and add value to community people's life.

Shahbaz et al. (2020) revealed that socio-cultural impact influences tourism support, indirectly affecting community values. Adnyana and Nurwulandari's (2020) study observes that socio-economic status and the degree of tourism motivation are important factors for local community value improvement. The findings indicate that the tourist industry needs to pay greater attention to the local socio-economic condition. Similarly, Baum and Hai (2019) differentiated between poor and non-poor families regarding tourism support and urban and rural households' perspectives regarding tourism support. Their results suggested that the income of local families was improved due to the tourism industry. Nguyen (2022) tested the relationship between SET and the perception of tourism's impact on tourism development. Based on the above discussion, it can be hypothesised that social and economic impact perception influences community value and tourism support among local urban and rural citizens. However, as discussed in the literature, it was derived that socio-cultural and economic impact positively influences community value and tourism support. The below framework depicts a linear relationship between socio-cultural and economic impact, community value and tourism support (see Figure 1).

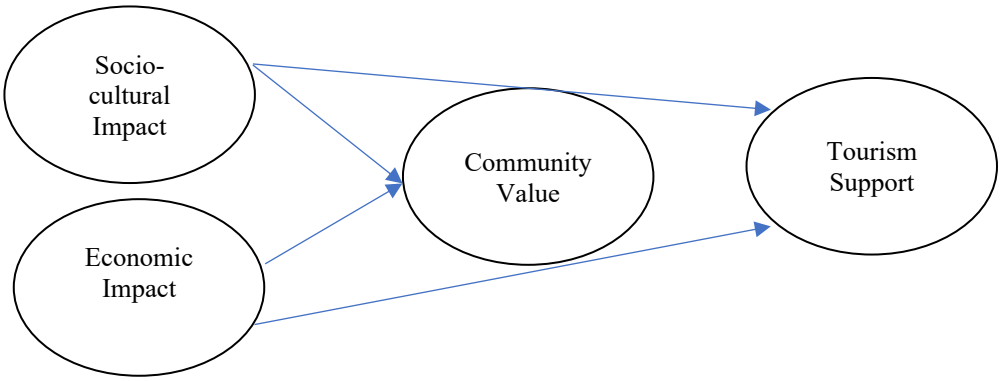


Figure 1: Framework of the study

RESEARCH DESIGN

The main objective of the study is to highlight the socio-cultural and economic impact that influences community value and tourism support. Considering the ethical considerations, the consent form was initially filled, and respondents were informed that data could be used only for research purposes. The present study applying a quantitative research design to know the predictive relationship between study constructs and test the social exchange theory lens. Similarly, the quantitative research deals with objective reality (Tashakkori & Creswell, 2007). The study used positivistic research methods associated with the quantitative research process. Similarly, population of the study was rural and urban community people of Gilgit Baltistan, Pakistan. The unit of the analysis for the study was both rural and urban areas community member (household leader). However, sixty-five (65) participants were selected for polit study, and these responses were not included in the study total sample size. Simple random sampling (SRS) method were applied, and sample size was chosen through G*Power analysis software. According to Faul et al. (2007) that G*Power analysis can produce sample size for the actual generalization. Respondents filled the questionnaire face to face and current study calculated the sample size with four (4) number of predictors. Furthermore, power analysis calculated noncentrality parameter ($\lambda = 22.700$). Like, "Critical F" for sample size is (2.391) with numerator df (4). Denominator df was measured 449 during sample size calculation. The value of effect size of f square was 0.05. Furthermore, the cut-off point was measured with power (1-β err prob= 0.98), actual power 0.980. Moreover, the (err prob=$\propto$= 0.05) value was 0.05. As a result, the sample size of (n=454) was statistically calculated with the above-mentioned mandatory conditions to generalize the quantitative research to the whole communities.

Tools and Survey Instrument

According to Mason (2017), the data collection tools, and the survey instrument is essential for quantitative research. The researchers employ a close-ended questionnaire to measure the forecasting effect of the latent constructs. Furthermore, Dixon et al. (2016) defined that a questionnaire collects quantitative data. The questionnaire scale was a 5-point Likert scale and data was collected from research respondents. Like this research was quasi-experimental survey-based design, which statistically confirmed the results.

DATA ANALYSIS

Using SPSS and SEM, the researcher employed descriptive and inferential statistics to examine the data (AMOS Version-28). Therefore, descriptive statistics were utilized to grasp the mean, standard deviation, and responses to the empirical questions posed for command of the phenomena. Mediation analysis

was used to understand the socio-cultural and economic impact directly influencing tourism support and the overall indirect influence on community value and tourism support. Equal to this, every study has a population parameter, and this study used a survey-like design to collect primary data through previously adaptive constructs. Such as socio-cultural impact on a 10-item scale and economic impact 7-items by Ap and Crompton (1998), tourism support 8-item scale by Munanura et al. (2021) and Munanura and Kline (2022), community value 9-item scale was adapted from the study of Burroughs and Rindfleisch (2002). SEM (AMOS) software depicts ubiquitous statistical results, and it could measure detailed instruments more validly and reliably to predict the future directional variation (Awang et al., 2016; Awang et al., 2017; Byrne, 2001). The role of reliability and validity of constructs are essential, and researchers also use SPSS and SEM (AMOS) to check measurement and structural model (Babbie et al., 2007; Byrne, 2001; Hair et al., 2014). Researchers measured simulation of exogenous and endogenous effect with an intervening construct for future prediction.

Measurement of Reliability, Validity and Correlation

The study revealed that socio-cultural has a relationship with economic impact, community value and tourism support. As a result, the socio-cultural impact has a higher positive significant relationship with tourism support, and the correlation coefficient was (r= .229) (see Table .1). Similarly, composite reliability and Cronbach alpha values met the threshold in the research study. Furthermore, the value of average variance extracted (AVE) met the research criteria and also factor loading of each construct (see Figure 2), such as there was no higher item error explanation than a variance. Likewise, the data normality was measured based on the mean and standard deviation for all the study variables.

Table 1: Continuous Constructs Association for Tourism Support (N=454)

Variables	AVE	C.R.	*1*	*2*	*3*	*4*
1. Socio-cultural Impact	0.53	0.74	(.82)			
2. Economic Impact	0.56	0.72	.262**	(.80)		
3. Community Value	0.59	0.78	.235**	.252**	(.85)	
4. Tourism Support	0.55	0.71	.229**	.120*	.172**	(.83)
Mean			2.951	3.293	3.047	2.901
S.D.			0.960	1.124	1.058	0.825
Skewness			0.025	-0.261	-0.179	0.346
Kurtosis			-0.709	-1.097	-0.882	0.109

Cumulative %	65.004	64.312	70.283	59.962
KMO	.900	.891	.904	.893
Alpha Level	.879	.909	.896	.902

Note: *p<.05, **p<.01, ***p<.001. "*Discriminant validity is shown in bracket parallel to correlation value*"

Data Analysis Using Structural Equation Modeling

Consequently, the study used highly constructive simulation statistical model with the help of "F test with linear multiple regression: fixed model, R^2 deviation from zero", and followed Covid-19 standard operating procedures (SOPs) during research data collection. The model fit for the conclusion was measured using SEM (AMOS). The final model was evaluated in this empirical study to project tourism support with factors of socio-cultural and economic impact. For instance, the final model has four (4) indicators, and their values of RMSEA and SRMR met the criteria of cutoff points such as .103 and .080 which is considered significant for model fit, whereas the GFI, CFI, NNFI values were .932, .928, and .915 which were also met the cutoff point of model fitness. The current model measured the value of $\chi^2 df = 2.556$ and $\chi^2/df = 3.875$, which met cutoff point. As a result, the model does not need modification method which is suggested by SEM output results. Like, causal and theoretical relationship have showed predictive simulation regarding community value and tourism support. According to the modeling phase, data pre-processing activities are necessary to counter inaccurate, blaring, superfluous and repetitive information in data and it were removed during confirmatory factor analysis to bring asymmetrical results. The study found that model was saturated best fit, and the *P*-value was smaller than (p<.05= 0.05) (see Figure 3). Equation .1 describes the "sum of squared differences" between the line and the actual data point minimization, and it is called least means squares in the multiple regressions and with the path of multiple predictors to know the actual statistical results.

Equation 1

$$Otcome\ i = (\text{model}) + \text{error}\ \ i$$

$$Y = (b_0 + b_1 X_{i1} + b_0 + b_2 X_{i2} + \ldots b_0 + b_n X_n) + \varepsilon_i$$

The SEM examines the extent of dependence in the linear equation model and ultimately contributes to structural modeling in applied statistics. The SEM fundamental formula is written down in the below Equation .2 which were applied to the current research.

Equation 2

$$C\ (\alpha.\alpha) = [N - r]\left[\sum_{g-1}^{G} \frac{(N)^{g\, f(\mu^g,\ \sum g, x^{(g)}, S^{(g)}}}{N}\right] = [N - r]\ F(\alpha.\alpha)$$

$$\text{fkl}\ (\mu^g \sum(g) x^{(g)} S^{(g)} = \log\left[\sum g\right] + tr(S^{(g)}\, \Sigma(g-1) + (x^{(g)} - \mu^g)\, \Sigma(g-1)\ (x^{(g)} - \mu^g).$$

$$c = (N^1 - 1)F^{(1)}\ =\ (N - 1)F.$$

$$\mathrm{C} = \sum_{g=1}^{(G)} N^{(g)}\ F^{(g)} =\ FN.$$

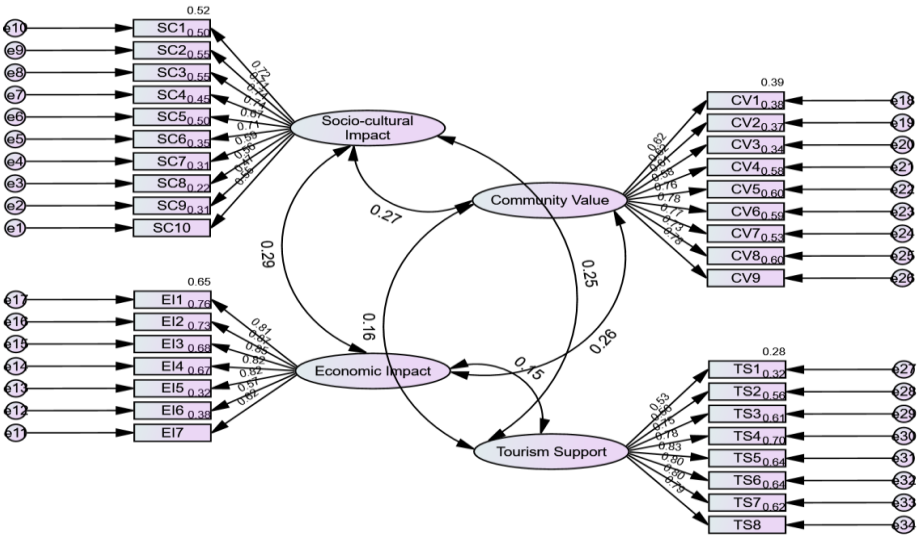
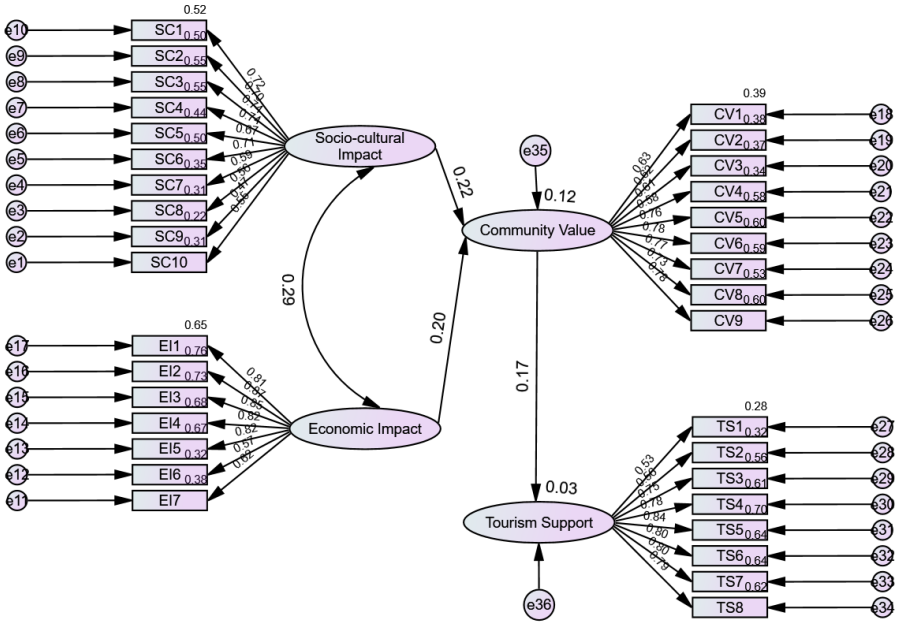


Figure 2: Construct Confirmatory Measurement Model (N=454)

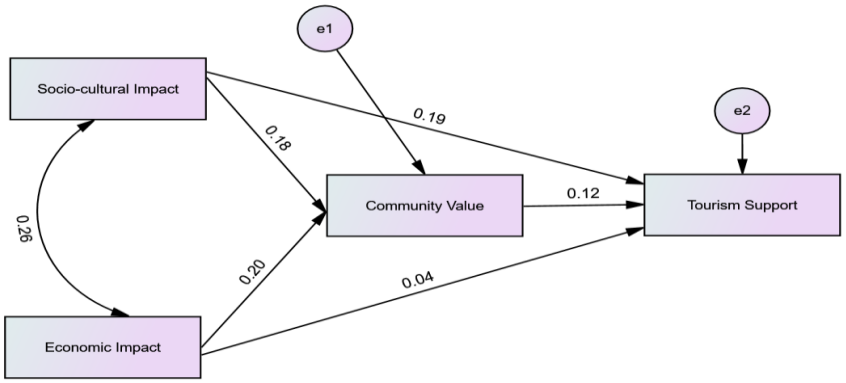
The saturated model was depicted in Figure 3 and the model paths such as socio-cultural and economic impact have predictive association between community value and tourism support. The inferential data concluded that socio-cultural and economic impact were a strong coefficient for community value when applied to the model of tourism support. Similarly, the R^2 variance was $100 \times .056 = 5\%$. It means 5 percent variance or change would occur in tourism support when socio-cultural and economic impact applied to the theoretical model, which is further linked with community value intervening effect. Equally, R^2 was measure for socio-cultural, economic impact and community value to measure the variance or change of $100 \times .069 = 6\%$. The R^2 predicted 6 percent change in the tourism support if socio-cultural, economic impact and community value added to the whole model. The proposed hypotheses were statistically

justified that community value mediate the relationship between socio-cultural, economic impact and tourism support (see Figure 3 & 4).



Note: "A complex multivariate measurement model of three exogenous constructs and one endogenous indicator. Completely standardized maximum likelihood parameter estimate for tourism support".

Figure 3: Complex Multivariate Measurement Model Fit Standardized Regression Coefficient (N=454)



Note: "A complex multivariate structural model for hypothesis testing with completely standardized maximum likelihood parameter estimate for tourism support".

Figure 4: Complex Multivariate Structural Model Fit Standardized Regression Hypotheses (N=454)

The study used bootstrapping technique to assess the direct and indirect effects and better understand the simulation estimation of the model fit. Socio-cultural, economic impact and community value were, directly and indirectly, affected tourism support at community level. Such as, Valeri and Vander Weele (2013) defined that individual model need condition of 5000-bootstrapped sample for reliable and valid SEM based linear multiple simulation association between constructs (see Figure 4).

Table 2: Standardized Estimates of Direct and Indirect Effects for the Paths of Tourism Support (N=454)

Variables	Community Value		Tourism Support	
	β	S.E	β	S.E
Socio-cultural Impact	.200***	.051	.164***	.041
Economic Impact	.192***	.044	.030	.035
Community Value	-	-	.091***	.037
Model 1: R^2	0.056			
Model 2: R^2	0.069			

NOTE: *P<.05, **P<.01, ***P<.001

The current paper hypothesized that socio-cultural and economic impact directly and indirectly influence tourism support with intervening effect of community value. Likewise, the results of direct effects revealed that socio-cultural has a strong positive predictor for tourism support with beta (β=.164 and β= .030). At the same time, socio-cultural and economic impact have significant positive influence on community value (β=.200 and β= .192). The results showed that community value has positive association regarding tourism support (β=.091). The whole model depicted that socio-cultural, economic impact and community value significantly increase tourism support (see Table .2).

Table 3: Hypothetical Paths and Significant Level of Approval for Tourism Support (N=454)

Hypotheses	Paths	Construct	Estimate (β)	S.E.	C.R.	P	Label
Community Value	<---	Socio-cultural Impact	0.200	0.051	3.915	***	Sig
Community Value	<---	Economic Impact	0.192	0.044	4.412	***	Sig
Tourism Support	<---	Socio-cultural Impact	0.164	0.041	3.999	***	Sig
Tourism Support	<---	Economic Impact	0.03	0.035	0.849	0.396	Insig
Tourism Support	<---	Community Value	0.091	0.037	2.462	0.014	Sig

Note: *p<.05, **p<.01, ***p<.001,

The projection of model fit showed that four hypotheses were accepted, and the theoretical and projective model can bring changes in tourism support. Alike, the prediction of hiding and observed hypotheses have a significant positive relationship with the outcome construct. Finally, the results of the paths concluded that one path was insignificant, such as individual economic impact does not directly affect tourism support (see Table .3). Moreover, the study measured the intervening effect of community value between socio-cultural, economic impact and tourism support. On the other hand, four significant hypotheses proved that these three independent constructs were projecting tourism support.

DISCUSSION

The researchers discovered that this sophisticated strategy and scale measurement is satisfactory for other academic researchers and governmental organizations to work on socio-cultural and economic impact in the context of community value and tourism support. Generalising the results to the tourism industry regarding local community support should be done for tourism development. Due to the

study's limitations, the conclusions may broadly apply to other rural and urban tourism-dependent communities. To promote tourism support, policymakers should work with a conscious measure of positive socio-cultural, economic impact and community value. Likewise, the study of Castro et al. (2023) suggested that socio-cultural impact influence tourism in a positive way and residents should play a positive role in tourism support, especially in film tourism. The result of the current study is linked with the above-mentioned projective findings, such as socio-cultural impact having a strong positive association with tourism support among residents. This finding is consistent with the results of a study conducted at Langkawi Island by Jaafar et al. (2017), which either identifies the interest of locals engaging in tourism improvement activities, regardless of how they perceive these activities can affect their personal lives in the community or not. Moreover, the current study tested the fundamental assumption of the social exchange theory concerning tourism support via socio-cultural and economic impact. In a similar vein, Castro et al. (2023) found that the study findings support the lens of social exchange theory cost and benefit analysis.

The present study hypothesised that socio-cultural and economic impact relates to community value and support for tourism. Apak and Gürbüz (2023) also revealed the economic and socio-cultural effects of sustainable tourism support. The study results show that perceived community value and beneficial tourism effects influence tourism support among local residents (Qin et al., 2021). In addition, the socio-cultural and economic impact is associated with the community perceived value among rural and urban residents and presents good theoretical factors for tourism. The local governments in rural and urban tourism places may benefit from this scientific model in future researches (Rasoolimanesh et al., 2017). Several authors suggested that perceived positive socio-cultural and economic outcomes support tourism, and its effect brings development in the tourism industry. Furthermore, it has been demonstrated that local residents' attitudes toward community value influence support for tourism. The study recommends to policymakers that official institutions, tourist industry experts, and non-governmental groups should improve community value and understand the attitudes and behaviours of the local population for tourism support (Aman et al., 2019; Erkilic, 2019; Uslu et al., 2020). This includes maintaining a destination's competitive edge in terms of its rare, unique, or irreplaceable resources is essential for destination management (Mior Shariffuddin et al., 2020). The current study result confirms that socio-cultural and economic impact directly and indirectly influence tourism support with the intervening effect of community value. The total effect of the model depicted that socio-cultural, economic impact and community value increase tourism support.

CONCLUSION

The main conclusion of this work is to explain the socio-cultural and economic impact on community value and tourism support. Understanding how socio-cultural and economic impact increases tourism support and community value in this paper. Socio-cultural and economic impact assessments often follow the macro-micro sociological viewpoint to overlook the Meso-level perspective in tourism development, and this study measured it for future prediction. From the social exchange theory lens, it is discussed that cost and benefits analysis sustains the model of tourism support and community value. The study connected socio-cultural and economic impact with community value and tourism support. In conclusion, findings showed that socio-cultural and economic impact increase tourism support, which is a big challenge for the tourism industry in developing countries. This process creates more and more social exchange processes for community value at the national level. In order to bring development in tourism, the socio-cultural institutional change and the economic impact could boost tourism support in the future. Findings indicate that the proportion of tourism support needs objective sustainability measures for future generations, and the lens of socio-cultural, economic impact and community value coefficient relatively increased tourism support at the local community level.

REFERENCES

Adnyana, M., & Nurwulandari, A. (2020). Empirical examination of intersectoral linkages between tourism and regional economy by using the social accounting matrix. *8*(1), 292-298. https://www.um.edu.mt/library/oar/handle/123456789/54364

Alam, M. S., & Paramati, S. R. (2016). The impact of tourism on income inequality in developing economies: Does Kuznets curve hypothesis exist? *Annals of Tourism Research*, *61*, 111-126. https://doi.org/10.1016/j.annals.2016.09.008

Aman, J., Abbas, J., Mahmood, S., Nurunnabi, M., & Bano, S. (2019). The influence of Islamic religiosity on the perceived socio-cultural impact of sustainable tourism development in Pakistan: A structural equation modeling approach. *Sustainability*, *11*(11), 3039. https://doi.org/10.3390/su11113039

Ap, J., & Crompton, J. L. (1998). Developing and testing a tourism impact scale. *Journal of travel research*, *37*(2), 120-130. https://doi.org/10.1177/004728759803700203

Apak, Ö. C., & Gürbüz, A. (2023). The effect of local food consumption of domestic tourists on sustainable tourism. *Journal of Retailing and Consumer Services*, *71*, 103192. https://doi.org/10.1016/j.jretconser.2022.103192

Awang, Z., Afthanorhan, A., & Mamat, M. (2016). The Likert scale analysis using parametric based Structural Equation Modeling (SEM). *Computational Methods in Social Sciences*, *4*(1), 13. https://www.ceeol.com/search/article-detail?id=418522.

Awang, Z., Afthanorhan, A., Mamat, M., & Aimran, N. (2017). Modeling structural model for higher order constructs (HOC) using marketing model. *World Applied*

Sciences Journal, *35*(8), 1434-1444. https://doi.org/10.5829/idosi.wasj.2017.1434.1444.

Azinuddin, M., Hafiz, M., Hanafiah, M., Mior Shariffuddin, N. S., Kamarudin, M. K. A., & Mat Som, A. P. (2022a). An exploration of perceived ecotourism design affordance and destination social responsibility linkages to tourists' pro-environmental behaviour and destination loyalty. *Journal of Ecotourism*, 1-24.

Azinuddin, M., Som, A. P. M., Saufi, S. A. M., Zarhari, N. A. A., Amin, W. A. A. W. M., & Shariffuddin, N. S. M. (2022b). Investigating overtourism impacts, perceived man-made risk and tourist revisit intention. *Planning Malaysia*, *20(3)*, 239-254.

Babbie, E. R., Halley, F., & Zaino, J. (2007). *Adventures in social research: data analysis using SPSS 14.0 and 15.0 for Windows*. Pine Forge Press. Pine Forge Press Amazon.com

Baum, T., & Hai, N. T. T. (2019). Applying sustainable employment principles in the tourism industry: righting human rights wrongs? *Tourism Recreation Research*, *44*(3), 371-381. https://doi.org/10.1080/02508281.2019.1624407

Bengtsson, M., Alfredsson, E., Cohen, M., Lorek, S., & Schroeder, P. (2018). Transforming systems of consumption and production for achieving the sustainable development goals: moving beyond efficiency. *Sustainability science*, *13*(6), 1533-1547. https://doi.org/10.1007%2Fs11625-018-0582-1

Boluk, K. A., Cavaliere, C. T., & Higgins-Desbiolles, F. (2019). A critical framework for interrogating the United Nations Sustainable Development Goals 2030 Agenda in tourism. *Taylor & Francis*, *27*(7), 847-864. https://doi.org/10.1080/09669582.2019.1619748

Bramwell, B., Higham, J., Lane, B., & Miller, G. (2017). Twenty-five years of sustainable tourism and the Journal of Sustainable Tourism: looking back and moving forward. *Taylor & Francis*, *25*(1), 1-9. https://doi.org/10.1080/09669582.2017.1251689.

Burroughs, J. E., & Rindfleisch, A. (2002). Materialism and well-being: A conflicting values perspective. *Journal of Consumer research*, *29*(3), 348-370. https://doi.org/10.1086/344429

Byrne, B. M. (2001). Structural equation modeling with AMOS, EQS, and LISREL: Comparative approaches to testing for the factorial validity of a measuring instrument. *International journal of testing*, *1*(1), 55-86. https://doi.org/10.1207/S15327574IJT0101_4

Castro, D., Kim, S., & Assaker, G. (2023). An empirical examination of the antecedents of Residents' support for of future film tourism development. *Tourism Management Perspectives*, *45*, 101067. https://doi.org/10.1016/j.tmp.2022.101067

Choe, J., & Lugosi, P. (2022). Migration, tourism and social sustainability. *Taylor & Francis*, *24*(1), 1-8. https://doi.org/10.1080/14616688.2021.1965203

Comerio, N., & Strozzi, F. (2019). Tourism and its economic impact: A literature review using bibliometric tools. *Tourism economics*, *25*(1), 109-131. https://doi.org/10.1177/1354816618793762

Dixon, J. C., Singleton, R., & Straits, B. C. (2016). *The process of social research*. Oxford University Press, USA.

Dredge, D., & Gyimóthy, S. (2015). The collaborative economy and tourism: Critical perspectives, questionable claims and silenced voices. *Tourism Recreation Research*, *40*(3), 286-302. https://doi.org/10.1080/02508281.2015.1086076

Erkilic, E. (2019). Yerel halkın turizm algısı ve turizmin gelişimine yönelik tutumları: Rize örneği. *International Journal of Contemporary Tourism Research*, *3*(1), 66-82. https://doi.org/10.30625/ijctr.550650

Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2007). G* Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior research methods*, *39*(2), 175-191.

Fuchs, M., Fossgard, K., Stensland, S., & Chekalina, T. (2021). Creativity and innovation in nature-based tourism: a critical reflection and empirical assessment. In *Nordic Perspectives on nature-based tourism*. Edward Elgar Publishing. https://doi.org/10.4337/9781789904031.00022

Giro, A. (2021). *Regional Strategy and Action Plan for the Valuation, Protection and/or Restoration of Key Marine Habitats in the Wider Caribbean 2021–2030 United Nations Environment Programme-Caribbean Environment Programme (UNEP-CEP) Caribbean Natural Resources Institute (CANARI), Technical Report No*. https://www.unenvironment.org/cep/

Grandcourt, M.-A. E. (2020). The role of the United Nations World Tourism Organization (UNWTO) in tourism and sustainable development in Africa. In *Routledge Handbook of Tourism in Africa* (pp. 131-138). Routledge. https://doi.org/10.4324/9781351022545-10

Gretzel, U., Fuchs, M., Baggio, R., Hoepken, W., Law, R., Neidhardt, J., Pesonen, J., Zanker, M., & Xiang, Z. (2020). e-Tourism beyond COVID-19: a call for transformative research. *Information Technology & Tourism*, *22*, 187-203. https://doi.org/https://doi.org/10.1007/s40558-020-00181-3

Hair, J. F., Gabriel, M., & Patel, V. (2014). AMOS covariance-based structural equation modeling (CB-SEM): Guidelines on its application as a marketing research tool. *Brazilian Journal of Marketing*, *13*(2). https://ssrn.com/abstract=2676480.

Hall, C. M. (2019). Constructing sustainable tourism development: The 2030 agenda and the managerial ecology of sustainable tourism. *Journal of Sustainable Tourism*, *27*(7), 1044-1060. https://doi.org/10.1080/09669582.2018.1560456

Higgins-Desbiolles, F. (2018). Sustainable tourism: Sustaining tourism or something more? *Tourism management perspectives*, *25*, 157-160. https://doi.org/10.1016/j.tmp.2017.11.017

Holland, K. K., Larson, L. R., Powell, R. B., Holland, W. H., Allen, L., Nabaala, M., Tome, S., Seno, S., & Nampushi, J. (2022). Impacts of tourism on support for conservation, local livelihoods, and community resilience around Maasai Mara National Reserve, Kenya. *Journal of Sustainable Tourism*, *30*(11), 2526-2548. https://doi.org/10.1080/09669582.2021.1932927

Ioannides, D., & Zampoukos, K. (2018). Tourism's labour geographies: Bringing tourism into work and work into tourism. *Taylor & Francis*, *20*(1), 1-10. https://doi.org/10.1080/14616688.2017.1409261

Jaafar, M., Rasoolimanesh, S. M., & Ismail, S. (2017). Perceived sociocultural impacts of tourism and community participation: A case study of Langkawi Island.

Tourism and Hospitality Research, *17*(2), 123-134. https://doi.org/10.1177/1467358415610373

Lee, C.-C., & Chang, C.-P. (2008). Tourism development and economic growth: A closer look at panels. *Tourism management*, *29*(1), 180-192. https://doi.org/10.1016/j.tourman.2007.02.013

Mahadevan, R., & Suardi, S. (2019). Panel evidence on the impact of tourism growth on poverty, poverty gap and income inequality. *Current Issues in Tourism*, *22*(3), 253-264. https://doi.org/10.1080/13683500.2017.1375901

Mason, J. (2017). *Qualitative Researching* (3rd ed.). Sage. https://books.google.com.pk

Mior Shariffuddin, N. S., Wan Mohd Zain, W. M. A., & Azinuddin, M. (2020). Collaborative challenges among stakeholders on tourism destination competitiveness. *International Journal of Innovation, Creativity and Change*, *13*(1), 454-466.

Munanura, I. E., & Kline, J. D. (2022). Residents' support for tourism: The role of tourism impact attitudes, forest value orientations, and quality of life in Oregon, United States. *Tourism Planning & Development*, 1-17. https://doi.org/10.1080/21568316.2021.2012713

Munanura, I. E., Needham, M. D., Lindberg, K., Kooistra, C., & Ghahramani, L. (2021). Support for tourism: The roles of attitudes, subjective wellbeing, and emotional solidarity. *Journal of Sustainable Tourism*, 1-16. https://doi.org/10.1080/09669582.2021.1901104

Nguyen, V. H. (2022). Segmenting local residents by perceptions of tourism impacts in Sapa, Vietnam: a cluster analysis. *International Journal of Tourism Cities*, *8*(1), 153-167. https://doi.org/10.1108/IJTC-03-2021-0046

Qin, X., Shen, H., Ye, S., & Zhou, L. (2021). Revisiting residents' support for tourism development: The role of tolerance. *Journal of Hospitality and Tourism Management*, *47*, 114-123. https://doi.org/10.1016/j.jhtm.2021.02.010

Rasdi, A. L. M., Som, A. P. M., Azinuddin, M., Nasir, M. N. M., & Khan, N. F. A. H. (2022). Local community perspective on responsible tourism and destination sustainability. *Planning Malaysia*, *20(3)*, 255-269.

Rasoolimanesh, S. M., Ringle, C. M., Jaafar, M., & Ramayah, T. (2017). Urban vs. rural destinations: Residents' perceptions, community participation and support for tourism development. *Tourism management*, *60*, 147-158. https://doi.org/10.1016/j.tourman.2016.11.019

Robinson, R. N., Martins, A., Solnet, D., & Baum, T. (2019). Sustaining precarity: Critically examining tourism and employment. *Journal of Sustainable Tourism*, *27*(7), 1008-1025. https://doi.org/10.1080/09669582.2018.1538230

Shahbaz, M., Solarin, S. A., Azam, M., & Tiwari, A. K. (2020). Tourism-induced income distribution in Malaysia: A practical experience of a truly Asian economy. *Current Issues in Tourism*, *23*(23), 2910-2929. https://doi.org/10.1080/13683500.2019.1697648

Söderbaum, P. (2014). The role of economics and democracy in institutional change for sustainability. *Sustainability*, *6*(5), 2755-2765. https://doi.org/10.3390/su6052755

Söderbaum, P. (2017). Do we need a new economics for sustainable development. *Real-world economics review,* (80), 32-44. http://www.paecon.net/PAEReview/issue80/whole80

Söderbaum, P. (2019). Economics and democracy for sustainability politics. *International Journal of Pluralism and Economics Education*, *10*(1), 91-102. http://www.inderscience.com/offer.php?id=98174

Tashakkori, A., & Creswell, J. W. (2007). The new era of mixed methods. Sage Publications.

United Nation (2020). *About the sustainable development goals*. https://www.un.org/sustainabledevelopment/sustainable-development -goals/

Uslu, A., Alagöz, G., & Güneş, E. (2020). Socio-cultural, Economic, and Environmental Effects of Tourism from the Point of View of the Local Community. *Journal of Tourism and Services*, *11*(21), 1-21. https://doi.org/10.29036/jots.v11i21.147

Valeri, L., & VanderWeele, T. J. (2013). Mediation analysis allowing for exposure–mediator interactions and causal interpretation: Theoretical assumptions and implementation with SAS and SPSS macros. *Psychological methods*, *18*(2), 137.

Received: 28th Feb 2023. Accepted: 31st March 2023

PLANNING MALAYSIA:
Journal of the Malaysian Institute of Planners
VOLUME 21 ISSUE 1 (2023), Page 163 – 179

CAPITALISING LOCAL FOOD FOR GASTRO-TOURISM DEVELOPMENT

Wan Mohd Adzim Wan Mohd Zain[1], Muaz Azinuddin[2], Nur Shahirah Mior Sharifuddin[3], Hawa Husna Ab. Ghani[4]

[1,2,3]Faculty of Applied Social Science,
[4]Faculty of General Studies & Advanced Education,
UNIVERSITI SULTAN ZAINAL ABIDIN, MALAYSIA

Abstract

Food industries are essential to shaping and structuring destination food tourism focus and the overall food industry. By highlighting regional distinctiveness and the contribution of local food to distinctive visitor experiences as well as boosting the local economy, destinations and food producers or businesses must recognize the significance of local food and gastronomy experience in tourism. This research used qualitative techniques and was conducted in the states of Pahang and Terengganu in East Coast Malaysia (ECM). Since food production in ECM is one of the key contributions to the regional economy and a significant locally-owned industry, 13 food producers were picked for the interviews. Food producers are therefore essential for a destination to ensure that the local cuisine satisfies tourists' growing interest in and demand for local cuisine as well as their quest for an exceptional local food experience. In this regard, the research incorporated the viewpoints of the ECM local food producers to offer a beneficial and substantial contribution to developing gastrotourism and destinations.

Keywords: Gastronomy Tourism, Culinary Tourism, Food Production, Local Food

[1] Lecturer at University Sultan Zainal Abidin. Email: wmadzimz@unisza.edu.my

INTRODUCTION

Gastronomy tourism or gastro-tourism is one of a subgroup of cultural tourism, with local food being an essential destination attribute because production is a locally embedded activity which emphasises cultural distinctiveness, authenticity, and sense of place, thereby, facilitating competitive advantage for destinations and tourism businesses (Tang, Thomas & Fisher, 2022, Robinson & Getz, 2016). However, not until 2000s, the interlinked between food and tourism has only begun to get recognised as a niche tourism segment (see e.g., Hall & Sharples, 2003). Studies linking local food with the economics of agricultural production, supply and tourism date back to the early 1970s and 1980s. Seminal studies on the development of tourism and agriculture linkages include Gooding (1971); Belisle (1983, 1984); and, Momsen (1972, 1986). Momsen's (1972) classic study of the Caribbean describes the integration of food production and tourism in the Caribbean as challenging. Similarly, other related studies cite the failures and constraints of combining production and tourism as an important economic activity in the Caribbean (e.g., Momsen, 1973; Belisle 1983; Telfer and Wall, 1996).

In recent years, more studies highlight gastronomy experience as a beneficial tool to market destinations and market diversification by centralizing food tourism experience, to attract more tourists, aside from the 'typical' sun and sea holidaymakers during the peak season (Garanti & Stylianou, 2022). Studies from Testa et al. (2019), Kurt and Dluzewska (2018) and Skryl et al. (2018) depict that gastro- tourism has transform into one of the most creative and dynamic segments in nations such as Italy and Croatia. Given the emerging yet strong global interest in food as a key tourism segment proposed that the touristic experience is complex and is formed pre, during, and post-travel in a detailed way, but what travelers recall after a trip is mostly the unique and unexpected food experiences they had, which are different from other experiences (Park & Santos, 2017). The key to creating an experience versus one encounter of good food or atmosphere is to consider all factors related to the food or drink consumed, location or setting, companions, the occasion, and touristic elements of novelty and authenticity (Stone et al., 2022). Moreover, for a gastro-experience to become memorable, sensory connections, emotional connections, social and interpersonal connections, novelty, and experimental connections, focus and attention and reflective connections are all involved.

Based on the above's notion, Haven-Tang, Thomas, and Fisher (2022) mention that profiting from linkages in gastro-tourism can also help food producers, as tourists and tourism businesses are drawn to short food supply chains where they can purchase products directly from the producer or through local retailers in the destination, lowering costs for food producers, boosting local economies, and re-connecting food production and consumption with the place. Yeoman et al. (2015) discuss numerous goals that can be achieved with this

strategy, including promoting destination growth and distinctiveness through geographic connections and upending conventional food supply.

As the culinary ecosystem become a significant part of the tourism offer, it is essential to focus on building partnerships, collaboration and networks, thereby facilitating the creation of collaborative tourism products and experiences (see Azinuddin et al., 2020; 2022a; Jolliffe, 2016). For instance, Cyprus unveiled two projects focused on gastro-tourism, namely 'Taste Cyprus' and 'Cyprus Breakfast', with the goal of bringing together key players in the sector and developing distinctive gastronomic experiences (Haven-Tang, Thomas & Fisher, 2022). Through projects and funding, this kind of strategic collaboration initiative between public, private and hybrid stakeholders can act as a catalyst for cluster development by creating a forum for collaboration (see Mior Shariffuddin et al., 2020).

Although it may seem counterintuitive to work together with a rival, studies have shown that when tourism businesses are interlinked, they produce dynamic synergies becoming more inventive and boosting their performances and competition (Romanova et al., 2019; Pan et al., 2018; Kim & Shim, 2018;). Local foods are becoming an increasingly important component of the tourism industry. With collaboration between gastronomic businesses and tourism industries, gastro-tourism clusters can be fully developed and operated. According to reports, effective marketing of culinary experiences largely depends on the overall strategy, cooperation among all stakeholders, leadership, and communication that improves tourist consumption experiences (Ottenbacher & Harrington, 2013). Morrison et al. (2018) depict tourism as a system instead of an industry made up of numerous interconnected subsystems. For example, one particular dish or drink at a restaurant cannot drive tourism on its own; instead, it is a cooperation between tourism attractions, lodging establishments, accessibility and transportation service providers, amenities that together give the tourists a complete experience (Garanti & Stylianou, 2022).

Therefore, it is important to take a universal perspective and recognise that the benefits that local food can offer to tourism correlate with the actions of producers or suppliers as well as the behaviour of tourists (Lin and Mao, 2015). By doing so, gastro-tourism production needs the clear vision and drive of passionate locals food industries to begin their development via tourism (Alonso et al., 2018). The connections made through gastro-tourism activities can serve as a forum for interaction and the sharing of shared values between producers and visitors. It can be incorporated into a more comprehensive framework because, according to Hkansson and Snehota (1990), connections are crucial to the success of any food business.

RESEARCH BACKGROUND

The definition of "gastronomy", "food" and "culinary" are interchangeable when referring to the range of gastronomy tourism activities and products, which encompasses a wide variety of gourmet, cuisine, or food-oriented activities (De Jong et al., 2018; Ellis et al., 2018; Sotiriadis, 2015). Gastro-tourism refers to the pursuit of attractive, authentic, memorable culinary experiences of all kinds while travelling internationally, regionally or even locally which can be a driver of destination choice, especially for emerging markets (Arcana & Mahadewi, 2019). Arcana and Mahadewi also assert that studies on gastro-tourism cultivated diverse themes including gastro-tourists' experiences, culinary trends, sustainable tourism, food choice and destination tourism, and the motivation and destination choice for gastro-tourism. These integrated themes value tourists' perception and experience as an important role in tourism destinations' sustained growth, success, and competitiveness (Azinuddin et al., 2022b).

As a counterbalance to mass tourism, this interactive form of gastro-tourism is quickly gaining popularity. It deals with participation within a geographic area and can draw expensive tourists (Everett, 2012, 2016; Fusté-Forné & Berno; 2016; Novelli, 2005). Gastro-tourism entails changes from more conventional service-heavy tourism to experiential pursuits this market is attracting food enthusiasts who go behind the scenes to experiment with unusual flavors and ingredients and learn about regional foods or beverages from cultural experts (Williams, Yuan, & William Jr, 2019; Blichfeldt & Halkier, 2013).

Building a comprehensive gastro-tourism is part of a systematic network of production; in this case, tourism alone is not able to increase the value of quality food or vice versa (Montanary & Staniscia, 2009). In tourism, interaction is a key characteristic as a result of simultaneous production and consumption (Chathoth et al., 2018) or 'pro-sumption'. Co-creation entails a deeper customer engagement and a deeper emphasis on the experience created during the network interaction between the producer and the value received by the tourists. In this regard, value creation in tourism experiences particularly emphasises the role of tourists as consumers, service providers as producers/suppliers, and the destination set in the co-creation process (Prebensen, Chen, & Uysal, 2018). Co-creating values occur when the production process in gastro-tourism is conceptually equivalent to the production of a tourist food experience. It is also connected to the collective effort of a number of actors and food producers which are increasingly an integral part of destination development across the world (Andersson et al., 2017).

However, past failures to predict linkages of gastro-tourism provide evidence of the complex relationship between food production and tourism (Momsen 1998; Telfer and Wall, 1996, 2000). Using evidence from the early 2000s, Torres (2003) makes the following claims about the elements that

influence the development of reciprocal links between food production and tourism:

- Demand-related;
- Supply or production-related; and
- Marketing/intermediate related

There have been a small number of studies, such as Torres (2003), Green and Dougherty (2008), Horng and Tsai (2012), and Frisvol et al. (2016) that developed comprehensive research that go beyond in-depth analyses to examine the interplay between tourism, food production, consumption, or tourist demand. Additionally, Park and Widayanta (2022) demonstrate that there is a direct relationship between co-production and customization and their impact on the diversity and identity of regional foods. The creation and marketing of food experiences should consider the potential positive and negative effects on regional gastronomic diversity and identity.

There are three stages in the evolution of gastronomy travel experiences related to the production of themed experiences for consumers, value co-creation between food tourism supply and demand and gastronomic experiences position for the growth of communities and food (Prayang & Dixit, 2022; Pratt et al., 2020; Richards, 2015). This implies a deeper integration of gastro-tourism into regional development, sustainability, and local food systems. Local gastronomy, in particular, sheds light on the host culture, heritage, and traditions at one end but also develops a sense of pride amongst the community at the other end (Dixit, 2019), while also providing opportunities for both rural and urban communities to participate in the tourism industry.

Despite the quality devoted to assessing and reducing the tourism and production scarcities, this literature still needs to identify the most effective strategy or process to merge production-tourism linkages. Many prior studies (e.g., Andreatta 1998; Belisle, 1983, 1984; Momsen, 1998; Telfer & Wall 1996, 2000) lack the holistic approach needed to investigate tourism and production linkages that extend beyond a narrow assessment of certain geographical locations or food systems. Local food tourism in other words requires strategic decisions about supplying food products and services relevant to particular types of tourists. In addition, the organisational micro-dynamics of the interaction between private and public actors within food and tourism and around the destination become a specific focus point because it is through these interactions that particular food experiences for tourism consumption are selected, communicated, and made available for consumption (Halkier, 2012).

There are a number of solutions that could be implemented in ECM to close the gap in the food tourism value chain, predominantly to conduct contractual relationships by being proactive in creating local networks of

collaboration with other food and tourism stakeholders or organisations. This result is consistent with Mei, Lerfald, and Bråtå's (2017) observations, according to which a project funded by the European Network for Rural Development (ENRD) in Austria aimed to promote the modernization of the European agri-food sector by bringing consumers and local farms together through the use of technologies like smartphone apps. Gastro-tourism strategies are supported by local agricultural/food policies, despite the fact that the main agenda may not be considered to be tourism-focused or to be only partially related to tourism because they can assist the agriculture, agri-food, and food industry in addressing some of their key issues with economic instability (Telfer and Hashimoto, 2013: 174).

To reduce the obstacles in the process of food production and connection with the tourism business, steps must be taken to develop the link between local food businesses and tourists. This study emphasises a model of the tourism production function from Smith (1994), which shows how tourism production requires the active involvement of consumers in the production. As illustrated in Figure 1, Smith's model of the tourism production function is used to further validate gastro-tourism development for local food in synergizing the collaborative approach to redefine how food producers, consumers, and suppliers should not be conceptualised as separate entities. Smith stated that because there is no solitary production method, uniform output, and geographically restricted market, tourism is not an "industry" in the traditional sense.

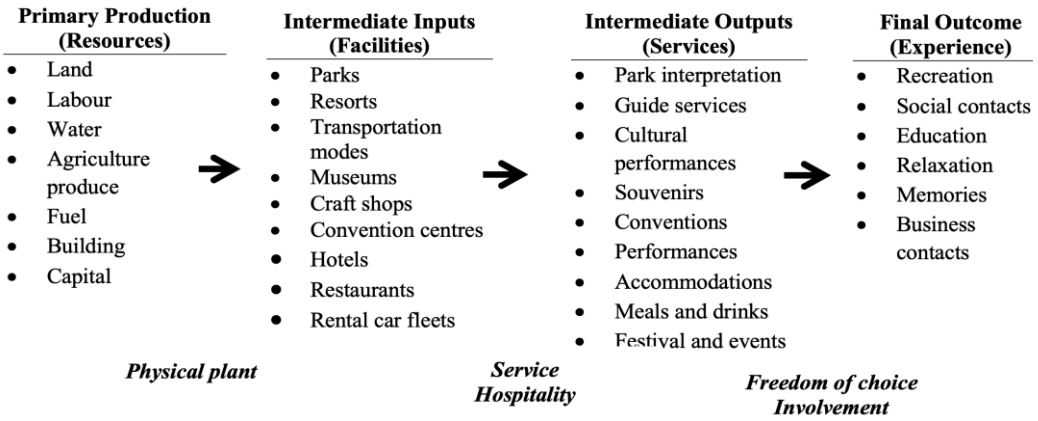


Figure 1: Smith Tourism Production Function
Source: Smith (1994)

The Smith (1994) model highlights a tool for bridging production-consumption linkages: it begins with upstream activities (primary production or resources) and concludes with a downstream activity (outcome). Smith pointed

out that the consumer experience is the result of the tourism product. It is an integrating pattern of transforming resources into values (product or service) to experience (satisfaction), which ultimately apply to what is referred to as tourism idiosyncrasies or the nature of tourism. The distribution creates values that do not end through purchasing activities (customer). In this context, the model provides a different interpretation of the nature of the relationships by taking into account potential drivers of tourist food consumption, such as motivation, demographic change, and local product knowledge (e. g. Kim and associates. (2009) and (2013); Kim and Eves (2012); Mak et al., 2012). In the idea put forth by Madaleno et al. (2018), the gastro-tourism connections show an important potential mechanism for boosting local production, keeping tourism revenue in the area, and enhancing the distribution of tourism benefits or value creation to visitors and local society.

RESEARCH METHODOLOGY

The semi-structured interviews represent this study's qualitative approach and elicit the interviewee's ideas and opinions on the topic of interest. For that reason, the interview used in this study is to validate the influence and effect of food production on the development of the local gastro-tourism movement. The questions are solely developed to measure the view of local food producers about the presence of food tourism, and how they would be able to relate it to the current situation and market values. In particular, each state of Pahang and Terengganu provided diverse groups of food producers that actively produce and operate food businesses, involving seven producers in the different areas in Kuala Terengganu and another six producers were situated in Pahang, and all the respondents are coded as producer P1-P13. The interviews were held at all the business premises and the business owners and managing directors participated in the sessions. The length of each interview was between 1-1.5 hours. The information collected in the semi-structured interview was transcribed from the recorded interviews and translated from Malay to English. Based on the finalized transcripts of all 13 interviews, each of them was categorized and grouped into several main themes using thematic analysis.

RESEARCH FINDINGS

Local food producers can have an impact on the growth of food tourism by using the "added-value" aspect of already-existing tourism products. The study shows that links between local food production and tourism, especially in ECM, need to undergo significant changes because they are a major driver of additional but crucial economic activity. The evidence presented in this study suggested that food produced by local producers could play a crucial role in bolstering the destination's tourism industry by transforming food resources (e.g., raw materials, and money) into a travel-related food product.

The production process, according to Smith (1994), initially results in two distinct characteristics: (i) added value is injected at every stage of the process, and (ii) the consumer becomes a crucial component of the entire process because the experience of a tourism product is only possible if a consumer (tourist) activates the process and actively participates in the final phase. The physical plant, service, hospitality, freedom of choice, and involvement are the additional five components that make up the tourism manufacturing process. These are intended to be the key building blocks in creating the tourism product, which is then supported by the tourism production process, as indicated in Table 1.

The physical plant part transforms into a generic product between the primary production and intermediate input stages. Service and hospitality are added as intermediate inputs to be processed into intermediate outcomes. The last stage of the tourist experience is when the freedom of choice and participation are translated into the overall results of the intermediate results. The original tourism manufacturing method differed in several aspects compared to the modified model. However, it is still being determined how well the model in Figure 1 will adapt to different tourism products, including food and diverse tourist perspectives. Smith's work needed a factual foundation and was conceptual confined. Therefore, this study looks at food products and how they have been adapted for a specific tourism market to operationalize a new framework based on Table 1. The interview questions were constructed around four themes, and several reconstructed sub-themes that were linked to the inputs of the tourism production process model.

Table 1 : Themes and subthemes of semi-structured interview questions with food producers

Themes
Primary production (resources) ● Raw item resources ● Product concepts, characteristics and volumes
Intermediary inputs ● Customer and marketing ● The role of value/supply chain system
Intermediary outputs ● Export and trade strategies ● Regional tourism development
Tourist involvement and experience ● Gastronomy tourist-oriented product strategy

Source: Adapted from Smith (1994)

Primary production (resources)
The first inputs (resources) identify the ways in which producers self-planted, acquired, supplied, or exploited basic materials. More significantly, it was also proposed that the main input produced a solid foundation at the local level, based on a specialisation that is supported by the producer's capacity to produce/manufacture goods with distinguishing or distinctive qualities. This comprises the ability to make items with distinctive traits, (ii) innovation, (iii) the ability to create things or materials that are not available elsewhere, and (iv) a distinctive image associated with a specific geographic place (Musso & Francioni, 2015). Both producers, P10 and P6 reached a consensus on their self-purchasing resource decisions based on such beliefs. Producer P10 indicated that:

"Currently I buy the raw materials directly from factories that provide the ingredients I needed in Kuantan, Pahang. Because if I wanted to buy them from far away like in Penang, I would need a bigger capital to manage it."

Producer P6 verified:
"We get the dried spices by ourselves because there is a shop which we used to get the spices from them and they already knew what the spices that we need."

According to the investigation's findings, Pahang and Terengganu's food product inventions and diversifications had different characteristics. Compared to Terengganu's farmers, who mostly focused on fish-based food items, Pahang's producers are more "adventurous" in manufacturing various types of food products from various resources, according to producer P2:

"We decided to go for fish crackers and fish sausages because it is one of Terengganu's signature foods. Besides that, Terengganu is also well known for its turtle eggs and nasi dagang (traditional rice with fish gravy). Originally, we planned to open a food stall if our fish crackers business does not survive but now since the business runs smoothly, we just proceed."

On the other hand, one example derived from the data was producer P8 in Pahang who produced a diverse range of agricultural-food based products including fruits, vegetables, palm oil, livestock, honey and freshwater fish.

Intermediary inputs
In order to provide the "platform" for the product to reach the tourist market, effective intermediaries are required in the production process of food tourism. The internal and external mediators for product distributions were connected to the input and output of intermediaries. Before the commercial transaction occurs in the intermediary outputs, the intermediary inputs serve as management

inputs/tools, including managerial or operational expertise and knowledge, technical services, and food packaging. It is evident that the manufacturers were able to target their promotional efforts to appeal to people from a variety of demographic backgrounds thanks to their understanding of consumers and marketing. Because they are better familiar with the food goods produced, certain producers are specifically targeting local consumers and visitors who are of particular ethnic groups, primarily Malay users, as described by producer P12:

"The target is the Malay. The spices that we produce are compatible with the tastes of the Malays and the targeted demographic is a family group. That is our target. Because mostly are Malays who love to eat the opor and gulai kawah as well."

The research also showed that ECM producers understood how marketing opened up the appropriate channel, improved their performance and operations, and made them more competitive with other commercial food goods. For instance, Producer P12 specifically targeted local Malay households for his cooking paste products, whereas Producer P3 invested heavily in the neighbourhood football club to reach a bigger audience of buyers outside of Terengganu.

Undoubtedly, the value chain plays a significant role in organising the product till it reaches the final consumer in a methodical sequence. Producers could decide who and where to distribute their goods to, as well as how much they could spend on hiring the channel stakeholders. most of the meals, As stated by producer P2:

"Oh yes, we have a retailer, and they will come to buy in bulk and sell our products outside of Terengganu. For example, they will buy 200 or 300 sticks and mark up the price in Kuala Lumpur, and normally they are our close friends. Local people will come and buy directly from us. We also have agents, but not the registered one that has the government licence. They are more to a personal or individual party that will sell our product outside in a small scale."

One aspect derived from the discussion of the value chain system in SMEs food production business is that depending on the producer's financial and physical capacities, the system may be completely exploited. As it entails a very strict commitment to fully occupy the value/supply chain system that is influenced by the changing market changes and economic conditions, they won't implement the system unless they have a proper and adequate capacity to supply the items from one channel to another.

Intermediary outputs

According to Smith (1994), the intermediary output is made up of services that are typically connected to the tourism sector but are still considered potential commodities. The three aforementioned factors—regional tourism growth, export and trade plans, and tourist influences—were the primary drivers of include ECM culinary products in the tourism service platform. Producer P4 has facilitated platforms and chances for international market expansion for, she established, in terms of export and trade:

"So far we have a good market demand in Singapore. With help from MATRADE, we could bring our products into the UK market, but to establish in the UK, we must keep on with their standards. For example, we have to send our product for a sample there and the cost is so expensive, about 4, 000 Pound Sterling, so I have to it let go first. In Manchester, I also market my product in the Malaysian Food Supermarket. That one is online e-commerce. With help from MOA, I can supply my products to Brunei and Australia as well. I am now seeking the opportunity to market my product to China, Saudi Arabia and Germany."

Several producers who had market their food products abroad (e.g., Singapore, the Middle East, Australia, Thailand) have provided compelling evidence of the potential for local producers to "internationalise" their businesses. These producers did so in order to secure network collaborations with local stakeholders, tourists, and foreign investors. Endorsing the food product while simultaneously marketing ECM (via food) as a destination for food and tourism and obtaining worldwide exchanges for the advantages of the socio-economic developments in ECM are both parts of the two strategic directions.

Moving on to the following sub-theme, tourism is included in this context as part of a destination development strategy that considers network engagement with local producers, stakeholders, and communities. The growth of destination tourism involves more than just building physical "attractions" to draw tourists. In this context, producer P4 bluntly commented:

"How I'm going to say this; tourism development is still in a slow phase. It needs some improvements, for business persons like us, we never been introduced by any tourist segments yet. I think most of us only believe that tourism is all about beautiful places and attractions, but gastro-tourism is not yet being recognized and understood in that kind of perspective. I received a customer's suggestion on this matter before this

According to producer P4, the Terengganu tourism development strategy has hit a rough patch due to serious problems with local business participation and a lack of efficient marketing. The growth of local tourism is mainly focused on the already available things (islands, beaches, nature, and eco-

tourism). Since a long time ago, marketing has tended to focus on a group of comparable attractions, and tourism-related events and programmes are run using a broad strategy rather than a focused one.

Tourist involvement and experience

The final element of the process focuses on how the gastro-tourism service enhances the visitor's experience. The food producers in the study decided how to respond to the needs and characteristics of tourists based on their understanding of food tourism and the development of tourist-oriented products. It is one of the main strategies conducted by producer P3 as she explained:

"Yes, my products considered as tourist-oriented products. Now I am in the process to make the savoury sauce, shrimp in chili paste and anchovy chili pastes in a sachet so that it easier for tourist or people who travel. We have also sent our products to ERAMAN Shop, in Kuala Lumpur International Airport (KLIA) and surprisingly they have repeated the order from us twice."

Product diversity and product concentration are two categories into which producer techniques can be divided (Benur & Bremwell, 2015). The growth of tourism destinations depends heavily on these strategies, which are highlighted by the creation of key tourism food products. Even though many producers were aware of the advantages and significance of tourism for the food production industry and destination development, the impact of gastro-tourism also received conflicting interpretations and the implementation is limited in ECM. Producer P5 addressed the issues of scarcity in gastro-tourism:

"For local, I could not engage very well on the business opportunity, because there are abundances of food products in Terengganu and the competition is quite stiff."

Producer P11 added to the arguments:

"In terms of business, our core product is Sambal Hitam, but not well-promoted or highlighted. The business opportunities in Pahang are excellent, but one thing's needed is the rigorous support from the state government and state tourism as well."

Despite the necessity to increase food product competition and government support, which is mentioned in both of the aforementioned justifications, the data showed that product concentration and diversification were effective incentives for ECM food producers to engage tourists. This implies that there is increasing interest in gastro-tourism and that it has considerable potential

to support destination development and boost visitor satisfaction in ECM. However, there are obstacles to strengthening the connections between the "tourist" component and the production process. The industry has to develop a better geographical distribution so culinary tourism may be promoted as trails rather than just by individual businesses if it is to flourish in the destination and reap economic benefits (e.g., Green and Dougherty, 2008). Despite its benefits for the economy, tourism has significantly contributed to habitat fragmentation, overtourism, adverse social and cultural effects, and environmental degradation (Rasdi et al., 2022). In the foresight, the product needs to be improved with greater business information on tourist food demand (for example, food motive, demographic features), which might effectively help commercialise food products as an important part of a vacation and allow the necessary source to be used wisely.

CONCLUSION

The interaction of ECM food producers with destination gastro-tourist development was framed using Smith's (1994) tourism production process. According to Robinsons and Getz (2016), the production process is a methodical approach to the food tourism supply system (from resources to ultimate output: tourist experience), and it is in line with the demand and expanding interests of the ECM tourist food engagement. Rethinking food production can give the local tourism sector a competitive edge by adding value to food-based tourism offerings.

This study supports the notion that the model raises a number of significant issues that warrant investigation. How do local food producers bargain with distributors, suppliers, vendors, and retailers when making financial decisions? The significance of local food networks with tourism (among stakeholders and tourism providers) poses crucial difficulties with regard to generating food products for tourism. What additional value do food goods add to increase tourist food consumption? How much do visitors interact with local production landscapes through their consumption activities, shaping them or being shaped by them? These questions highlight the significant food and tourist difficulties that the ECM region is dealing with and that may be resolved, developed, and improved upon by the disclosure of an integrative production-consumption system for gastronomy and tourism.

REFERENCES

Andersson, T. D., Getz, D., Vujicic, S., Robinson, R. N., & Cavicchi, A. (2016). Preferred travel experiences of foodies: An application of photo elicitation. *Journal of Vacation Marketing, 22*(1), 55-67.

Andreatta, S. (1998). Transformation of the Agro-food Sector: Lessons from the Caribbean. *Human Organization*, *57*(4), 414-429. Retrieved from https://www.jstor.org/stable/44127538

Alonso, A. D., Kok, S., & O'Brien, S. (2018). Sustainable culinary tourism and Cevicherías: a stakeholder and social practice approach. *Journal of Sustainable Tourism, 26*(5), 812-831.

Arcana, I. N. & Mahadewi, N. M. E. (2019). Factors that affect tourists' satisfaction towards traditional Balinese cuisine at Ubud Bali as gastro tourism destination. *Jour of Adv. Research in Dynamical & Control Systems*, 11(11), 349-359.

Azinuddin, M., Mior Shariffuddin, N. S., & Wan Mohd Zain, W. M. A. (2020). Profiling entrepreneurs inclinations on networking: A case of small and medium-sized tourism enterprises (SMTEs) in Terengganu, Malaysia. *International Journal of Innovation, Creativity and Change, 13*(5), 417–432.

Azinuddin, M., Mior Shariffuddin, N. S., Hanafiah, M. H., Mat Som, A. P., & Wan Mohd Zain, W. M. A. (2022a). A systematic literature review on tourism networks, knowledge transfer, absorptive capacity, and performance. *Asia-Pacific Journal of Innovation in Hospitality and Tourism, 11*(1), 179–218.

Azinuddin, M., Som, A. P. M., Saufi, S. A. M., Zarhari, N. A. A., Amin, W. A. A. W. M., & Shariffuddin, N. S. M. (2022b). Investigating overtourism impacts, perceived man-made risk and tourist revisit intention. *Planning Malaysia*, *20*(3), 239-254.

Benur, A. M., & Bramwell, B. (2015). Tourism product development and product diversification in destinations. *Tourism Management, 50*, 213-224.

Belisle, F. J. (1983). Tourism and food production in the Caribbean. *Annals of Tourism Research, 10*(4), 497-513.

Belisle, F. J. (1984). Food production and tourism in Jamaica: Obstacles to increasing local food supplies to hotels. *The Journal of Developing Areas*, *19*(1), 1-20.

Blichfeldt, B. S. & Halkier, H. (2013). Mussels, Tourism and Community Development: A Case Study of Place Branding Through Food Festivals in Rural North Jutland, Denmark, *European Planning Studies, 22*(8), 1587-1603.

Chathoth, P. K., Ungson, G. R., Harrington, R. J., Altinay, L., Okumus, F., & Chan, E. S. W. (2018). Conceptualization of value co-creation in the tourism context. In N. Prebensen, J. S. Chen, & M. Uysal (Eds.), *Creating experience value in tourism* (pp. 31–43).

Dixit, S. K. (2019). Gastronomic Tourism: A Theoretical Construct. In Dixit, S. K. (ed.) The Routledge Handbook of Gastronomic Tourism (pp. 13-23.). London: Routledge.

Dixit, S. K. & Prayag, G. (2022). Gastronomic tourism experiences and experiential marketing. *Tourism Recreation Research*, *47*(3), 217-220.

Ells, H. (2015). The Impact of Future Food Supply on Food and Drink Tourism: In I. Yeoman, U. McMahon-Beattie, K. Fields, J. N. Albrecht & K. Meethan (Eds.), *The Future of Food Tourism: Foodies, Experiences, Exclusivity, Visions and Political Capital* (62-74). Bristol, UK: Channel View Publications.

Everett, S. (2012). Production places or consumption spaces? the place-making agency of food tourism in Ireland and Scotland. *Tourism Geographies*, *14*(4), 535-554.

Everett, S. (2016). *Food and Drink Tourism: Principles and Practice* (1st ed.). London, England: Sage Publications Ltd.

Frisvoll, S. Forbord, M. & Blekesaune, A. (2016). An empirical investigation of tourists consumption of local food in rural tourism. *Scandinavian Journal of Hospitality and Tourism*, *16*(1), 76-93.

Fusté-Forné, F. & Berno, T. (2016). Food tourism in New Zealand: Canterbury's foodscapes. *Journal of Gastronomy and Tourism*, *2*, 71–86.

Garanti, Z. and Stylianou, C. (2022). Opening the path of gastro-tourism cluster development: the case of Cyprus. *Worldwide Hospitality and Tourism Themes*, *14*(5), 492-500.

Gooding, E.G. B. (1971). Food Production in Barbados with Particular Reference to Tourism. In G.V. Doxey & Associates (Eds.), The Tourist Industry in Barbados: A Socio-Economic Assessment (pp. 73-116). Kitchener, Canada: Dusco Graphic PREZ.

Green, G. P. & Dougherty, M. L. (2008). Localizing linkages for food and tourism: Culinary tourism as a community development strategy. *Community Development*, *39*(3), 148-158.

Halkier, H. (2012). Local Food for International Tourists: Explorative studies of perceptions of networking and interactions in two holiday home destinations in North Jutland, Denmark. Retrieved from http://vbn.aau.dk/files/71041596/fremtidensferiehus_delrapport_3.pdf

Hall, C. M., & Sharples, L. (2003). The consumption of experiences or the experience of consumption? an introduction to the tourism of taste. In C. M. Hall, L. Sharples, R. Mitchell, N. Macionis & B. Cambourne (Eds.). Food tourism around the world: Development, management, and markets (1st ed., pp.1-24). New York, NY: Routledge.

Håkansson, H. & Snehota, I. (1990). No business is an island: The network concept of business strategy. *Scandinavian Journal of Management, 4(3)*, 187-200.

Haven-Tang, C. Thomas, A. & Fisher, R. (2022). To what extent does the food tourism 'label' enhance local food supply chains? experiences from Southeast Wales. *Tourism and Hospitality, 3*(1), 153-160.

Horng, J. S., & Tsai, C. T. (2012). Culinary tourism strategic development: An Asia-Pacific perspective. International Journal of Tourism Research, 14(1), 4055. doi: 10.1002/jtr.834

Jolliffe, L. (2016). Marketing culinary tourism experiences: In M. Sotiriadis & Gursoy, D (Eds.), *The Handbook of Managing and Marketing Tourism Experiences* (363-378). Bingley: Emerald Group Publishing.

Kim, Y. G., & Eves, A. (2012). Construction and validation of a scale to measure tourist motivation to consume local food. *Tourism Management, 33*(6), 14581467.

Kim, Y. G., Eves, A., & Scarles, C. (2009). Building a model of local food consumption on trips and holidays: A grounded theory approach. *International Journal of Hospitality Management, 28*(3), 423-431.

Kim, Y. G., Eves, A., & Scarles, C. (2013). Empirical verification of a conceptual model of local food consumption at a tourist destination. *International Journal of Hospitality Management, 33*, 484-489.

Kim, N. & Shim, C. (2018). Social capital, knowledge sharing and innovation of small- and medium- sized enterprises in a tourism cluster. *International Journal of Contemporary Hospitality Management*, *30*(6), 2417-2437.

Kurt, G. & Dluzewska, A. (2018). Gastro tourism potential and perspectives for Turkey – A theoretical approach. *Czasopismo Geograficzne*, *89*(1–2), 121–137.

Lin, L., & Mao, P. C. (2015). Food for memories and culture–A content analysis study of food specialties and souvenirs. *Journal of Hospitality and Tourism Management, 22*, 19-29.

Madaleno, A., Eusébio, C., & Varum, C. (2018). Purchase of local food products during trips by international visitors. *International Journal of Tourism Research, 20*(1), 115-125.

Mak, A. H. Lumbers, M. Eves, A. & Chang, R. C. (2012). Factors influencing tourist food consumption. *International Journal of Hospitality Management*, *31*(3), 928-936.

Mior Shariffuddin, N. S., Wan Mohd Zain, W. M. A. & Azinuddin, M. (2020). Collaborative challenges among stakeholders on destination competitiveness. *International Journal of Innovation, Creativity and Change, 13*(1), 454-466.

Mei, X. Y., Lerfald, M., & Bråtå, H. O. (2017). Networking and collaboration between tourism and agriculture: Food tourism experiences along the National Tourist Routes of Norway. *Scandinavian Journal of Hospitality and Tourism*, *17*(1), 59-75.

Momsen, J. 1972: Report on vegetable production and the tourist industry in St Lucia. University of Calgary, Canada.

Momsen, 1973: Report on vegetable production and the tourist industry in Montserat. University of Calgary, Canada.

Momsen, 1986: Linkages between tourism and agriculture: problems for the smaller Caribbean economies. University of Newcastle-upon-Tyre, Seminar Paper 45

Momsen, 1998: Caribbean tourism and agriculture: new linkages in the global Era? In Klak, T. (Eds.), *Globalization and neoliberalism: the Caribbean context.* Lanham MD and Oxford: Rowman & Littleman Publishers, Inc., 115– 33.

Montanari, A., & Staniscia, B. (2009). Culinary tourism as a tool for regional reequilibrium. *European Planning Studies, 17*(10), 1463-1483. doi: 10.1080/09654310903141656

Ottenbacher, M. C. & Harrington, R. J. (2013). A case study of a culinary tourism campaign in Germany: Implications for strategy making and successful implementation. *Journal of Hospitality & Tourism Research*, *37*(1), 3-28.

Pan, X. Song, M.L. Zhang, J. & Zhou, G. (2018). Innovation network, technological learning and innovation performance of high-tech cluster enterprises. *Journal of Knowledge Management*, *23*(9), 1729-1746.

Park, S. & Santos, C.A. (2017). Exploring the tourist experience: a sequential approach. *Journal of Travel Research*, *56*(1), 16-27.

Park, E., & Widyanta, A. (2022). Food tourism experience and changing destination foodscape: An exploratory study of an emerging food destination. *Tourism Management Perspectives*, *42*, 100964.

Pratt, S. Suntikul, W. & Agyeiwaah, E. (2020). Determining the attributes of gastronomic tourism experience: Applying impact-range performance and asymmetry analyses. *International Journal of Tourism Research, 22*(5), 564-581.

Prebensen, N. K. Chen, J. S. & Uysal, M. (2018). *Creating experience value in tourism* (2ed.). Wallingford, UK: Cabi.

Rasdi, A. L. M., Som, A. P. M., Azinuddin, M., Nasir, M. N. M., & Khan, N. F. A. H. (2022). Local community perspective on responsible tourism and destination sustainability. *Planning Malaysia*, *20(3)*, 255-269.

Richards, G. (2015). Evolving gastronomic experiences: From food to foodies to foodscapes. *Journal of Gastronomy and Tourism, 1*(1), 5-17.

Robinson, R. N., & Getz, D. (2016). Food enthusiasts and tourism: Exploring food involvement dimensions. *Journal of Hospitality and Tourism Research, 40*(4), 432-455.

Romanova, A. Abdurakhmanov, A. Ilyin, V. Vygnanova, M. & Skrebutene, E. (2019). Formation of a regional industrial cluster on the basis of coordination of business 'entities' interests. *Procedia Computer Science, 149*, 525-528.

Skryl, T. Gregoric, M. & Dugi, V. (2018). Culinary trends in the Republic of Croatia as part of gastro tourism development. *European Research Studies Journal, 21*(3), 465-475.

Smith, S. L. (1994). The tourism product. Annals of Tourism Research, 21(3), 582-595.

Stone, M.J. Migacz, S. & Sthapit, E. (2022). Connections between culinary tourism experiences and memory. *Journal of Hospitality and Tourism Research, 46*(4), 797-807.

Telfer, D. J., & Hashimoto, A. (2013). Raising awareness of local food through tourism as sustainable development. In C. M. Hall & S. Gossling (Eds.). Sustainable Culinary Systems: Local Foods, Innovation, Tourism and Hospitality, (1st ed., pp. 169-185). Oxford, England: Routledge.

Telfer, D. J., & Wall, G. (1996). Linkages between tourism and food production. *Annals of Tourism Research, 23*(3), 635-653.

Telfer, D. J., & Wall, G. (2000). Strengthening backward economic linkages: Local food purchasing by three Indonesian hotels. *Tourism Geographies, 2*(4), 421-447.

Testa, R. Galati, A. Schifani, G. Di Trapani, A. M & Migliore, G. (2019). Culinary tourism experiences in agri-tourism destinations and sustainable consumption—understanding Italian 'tourists' Motivations. *Sustainability, 11*(17), 4588.

Torres, R. (2003). Linkages between tourism and agriculture in Mexico. *Annals of Tourism Research, 30*(3), 546-566.

Williams, H. A., Yuan, J. (Jessica), & Williams, R. L. (2019). Attributes of Memorable Gastro-Tourists' Experiences. *Journal of Hospitality & Tourism Research, 43*(3), 327–348.

Received: 28th Feb 2023. Accepted: 31st March 2023

PLANNING MALAYSIA:
Journal of the Malaysian Institute of Planners
VOLUME 21 ISSUE 1 (2023), Page 180 – 192

THE INFLUENCE OF SOCIAL AND ECONOMIC INEQUALITIES ON SUPPORT FOR TOURISM IN DEVELOPING COMMUNITY: AN INTERVENING EFFECT OF TOURISM RESOURCES

Nazirullah[1], Ahmad Puad Mat Som[2], Amer Al Qassem[3]

[1,2]*Faculty of Applied Social Sciences,*
UNIVERSITI SULTAN ZAINAL ABIDIN, MALAYSIA
[3]*School of Business,*
SKYLINE UNIVERSITY COLLEGE, UNITED ARAB EMIRATES

Abstract

The focus of the study is on social and economic inequalities that influence tourism resources and support for tourism. Social and economic influence has dramatically affected the modern tourism industry and the achievement of the sustainable development goal (SDG) agenda. The aim of the study was to explain social and economic inequalities and tourism resources' influence on tourism support at the national level. The study applied a quantitative research method, and data were collected through a questionnaire from 470 respondents in Gilgit Baltistan, Pakistan. Data were analysed with the help of descriptive and inferential statistics using statistical package for social science (SPSS V-28) and analysis of a moment structures (AMOS V-28). The study found that social and economic inequalities have no direct association with tourism support, and indirectly tourism resources have a significant negative influence on support for tourism. The study concluded that a more reflective view is necessary for the tourism industry to fully comprehend the consequences of social and economic inequalities, tourism resources, and action to support tourism. A practical policy-wise effort would be needed to address all social and economic inequality national-wise issues related to tourism support.

***Keywords**:* Social, Economic Inequality, Support for Tourism, Tourism Resources Planning

[1] Postgraduate Researcher at Universiti Sultan Zainal Abidin. Email: nazirkhan730@gmail.com

INTRODUCTION

The study focuses on the influence of social and economic inequality and tourism resource on tourism support. Social and economic inequality has affected tourism industry and also environment of small rural society (Hatipoglu et al., 2022). According to the UN (2020), socio-economic inequality is a significant stumbling block for tourism sustainability, tourism support and resources. The phenomenon of unequal economic distribution causes a substantial effect on tourism support and also a hindrance to achieving SDGs 8 and 10, respectively. Such as, Hall (2019) explained socio-economic inequality's effect on supporting tourism. In order to better understand the role of socio-economic inequality's negative impact on tourism support, future research should apply practical modern conceptual framework (Munanura & Kline, 2022; Munanura et al., 2021). Although social and economic disparities in supporting tourism are still one of the research gaps in the tourism industry of developing countries, especially in rural areas, this advanced predictive model could solve the theoretical and empirical gap in the previous literature. Such as, unequal income distribution, resources, and tourism opportunities are more meagre. Overall, social and economic inequalities are not supporting tourism and achieving the agenda of SDGs 8 and 10. Similarly, this particular study explains the intervening predictive effect of tourism resources between social and economic inequality and support for tourism in rural tourism areas.

For instance, Moscardo and Murphy (2014) invented a new sustainable tourism framework for the reconceptualization of tourism, but it was considered a traditional approach (Moscardo & Murphy, 2014). Likewise, Musavengane et al. (2022) found that socio-economic and environmental inequality should not overcome traditional approach and it will decrease the plan of supporting tourism. Therefore, these notable limitations of past research do not focus on unequal tourism resource distribution for the local community's tourism planning, which is a problem. The already set social and economic negative impact scale needs to be improved with measurement scale analysis because these constructs have different contents and statements issues in the past. Moreover, several authors described that SDGs are based on a growth-oriented mindset, which is the long-term concept for planning and resource sustainability (Baum & Hai, 2019; Higgins-Desbiolles, 2018). Choe and Lugosi (2022) justified that socio-economic inequality undermines sustainable supporting tourism.

However, tourism resources and tourism support planning need neoclassical methodologies, which can generate a sustainable economy for developing countries (Gretzel et al., 2020). Such as, Azinuddin et al. (2022) found that social, cultural and economic impact can bring a sustainable future for tourism support from the perspective of UNESCO. Likewise, Rasdi et al. (2022) discussed social, cultural and economic impact on community tourism support

and satisfaction. In general, more costs and unbalanced income status could not support tourism and its effect on environment (Ngan et al., 2022). The results revealed that traditional approaches do not need to counter the significance of socio-economic disparities regarding tourism support at the global level (Grandcourt, 2020). From the above critical discussion, it is hypothesized that social and economic inequality indirectly affects tourism support and directly effects tourism resources.

FRANK'S DEPENDENCY AND CONCEPTUAL FRAMEWORK

The study applied the theoretical lens of dependency theory. Susman et al. (2019) advocate that capitalism's growth has brought under development in developing nations. Several authors supposed that individuals have capital, knowledge (especially in advertising tourism), connections with potential tourists and control over tourism flows. Tour operators control peripheral destinations with the vital link of the distribution system and ongoing development activities (Britton, 1991; Cornelissen, 2017; Tucker & Akama, 2009). Cairó-i-Céspedes and Palacios Cívico (2022) emphasized that core and semi-periphery systems are connected by the individual periphery system. Similarly, the semi-periphery consumes and supplies all the goods and resources to the individual periphery system and send to core system. The circulation of the resources is again unequally distributed to the core system, and they remain underdeveloped (Hitchcock, 2023; Suwandi & Foster, 2022). The above theoretical underpinning discusses a holistic approach, and this research puts together Frank's dependency theory assumption and relates unequal internal power with social and economic inequalities in response to tourism resources and support for tourism. This theoretical debate leads toward the conceptual framework for the study and relate to research objectives, which is drawn in Figure .1 and discussed in the next section.

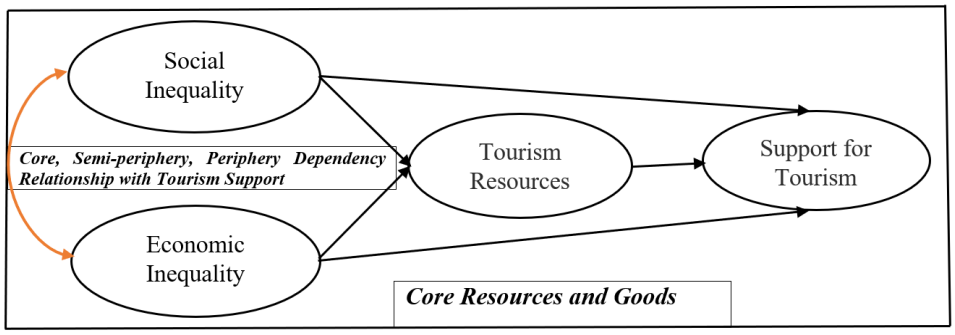


Figure 1: Conceptual Framework
Source: Munanura et al. (2021) and Munanura and Kline (2022)

RESEARCH OBJECTIVES

- To explain the influence of social inequality on support for tourism among local citizens.
- To measure the impact of economic inequality on support for tourism among local citizens.
- To measure the effect of socio-economic inequality on tourism resources among local citizens.
- To see the mediating relationship of tourism resources between socio-economic inequalities and support for tourism among local citizens.

RESEARCH DESIGN

The present study applies a quantitative design to measure social and economic inequalities that influence support for tourism with mediating role of tourism resources in developing countries' local citizens. Tashakkori and Creswell (2007) define that quantitative research deals with objective reality. Several authors discussed that quantitative research has determined the nature of objectivity, which is universal, rigid and inflexible (Sekaran & Bougie, 2019; Singleton, 1999). The location of the study was Gilgit Baltistan, Pakistan. The unit of the analysis for the study was local household members. A pilot study with sixty (60) respondents was done to measure the constructs' exploratory factor analysis (EFA), and these sixty responses were not included in the sample size. The sampling technique for the present study was simple random sampling (SRS). G*Power analysis software is a reliable tool for sample size selection (Faul et al., 2007). As mentioned earlier, the sample size was selected through the software and filled the questionnaire face to face from the respondents. Furthermore, sample size was calculated with five (5) number of predictors and noncentrality parameter ($\lambda = 18.800$). The importance of "Critical F" measured the sample size with 2.391 with numerator df (4). Denominator df measured 465, and effect size of f square was 0.04. Such that, power (1-β err prob= 0.95), actual power 0.950, as well as the err prob=$\propto$= 0.05 were measured. In conclusion, the study's sample size was statistically selected (n= 470) from the given respondents.

DATA ANALYSIS

The researcher used descriptive and inferential statistics to analyse the data with the help of SPSS and SEM (AMOS Version-28). However, descriptive statistics were used to understand the mean and standard deviation. Mediation analysis was employed to understand the direct, indirect, and total effect association among study constructs. The nature of the study was a survey and gathered data with the help of adapted constructs. Such as social inequality with a 6-item scale and economic inequality 6-items by (Ap & Crompton, 1998), support for tourism 8-items scale by Munanura et al. (2021), tourism resources 5-item scale was adapted from the study

of Stanciu et al. (2022). The questionnaire scale was a 5-point Likert scale and control the demographic variable with quasi-experimental survey-based research statistics. The uses of SEM (AMOS) can predict measurement and structural model (Byrne, 2001; Hair et al., 2014), and researchers measured the prediction of exogenous, endogenous and intervening effect of constructs.

RELIABILITY AND VALIDITY RESULT

The values of reliability and validity suggested that participants were more representative for generalization. As independent constructs in the study design are often presented in the methods portion of the research paper. In this particular paper, researchers have measured EFA which is shown in Table 1.

Table 1: Reliability Analysis and EFA (N=470)

Items	Loading	Cumulative %	KMO	Alpha Level
SFT		72.932	0.883	0.887
SFT1	0.722			
SFT2	0.772			
SFT3	0.766			
SFT4	0.778			
SFT5	0.695			
SFT6	0.725			
SFT7	0.775			
SFT8	0.757			
SI		66.975	0.895	0.901
SI1	0.868			
SI2	0.817			
SI3	0.813			
SI4	0.842			
SI5	0.849			
SI6	0.713			
E1				
EI1	0.882	77.278	0.926	0.941
EI2	0.862			
EI3	0.885			
EI4	0.900			
EI5	0.902			
EI6	0.841			
TR		72.013	0.879	0.902
TR1	0.894			
TR2	0.824			
TR3	0.835			
TR4	0.864			
TR5	0.823			

Source: Survey, 2022

RELATIONSHIP AND MEASUREMENT

The study measured the correlation between socio-economic inequality, tourism resources and tourism support. Similarly, the results revealed that there was a strong positive relationship between socio and economic inequality. As a result, social and economic inequality has a high negative correlation with tourism resources and support, and this coefficient level was high as compared to other constructs with (r= -.489) (See Table 2).

Table 2: Intercorrelation of Constructs and Data Normality (N=470)

Variables	AVE	C.R.	*1*	*2*	*3*	*4*
1. Social Inequality	0.53	0.88	(.76)			
2. Economic Inequality	0.57	0.87	.454**	(.72)		
3. Tourism Resources	0.50	0.90	-.424**	-.489**	(.78)	
4. Support for Tourism	0.54	0.70	.040	.053	-.117*	(.70)
Mean			2.387	2.764	3.360	3.113
S.D.			1.095	1.252	1.104	0.794
Skewness			0.618	0.207	-0.368	-0.365
Kurtosis			-0.558	-1.200	-0.809	0.271

Note: *p<.05, **p<.01, ***p<.001. Discriminant validity is shown in bracket parallel to correlation value

Source: Survey, 2022

MEASUREMENT AND STRUCTURAL ANALYSIS

This research uses confirmatory measurement factor analysis to investigate all indicators and create a formula for each statement. It was found that the model has a significant degree of construct validity and dependability within the domain of measurement equations (see Figure 2). These additional parameters determine whether the model is statistically significant or not (see Figure 2).

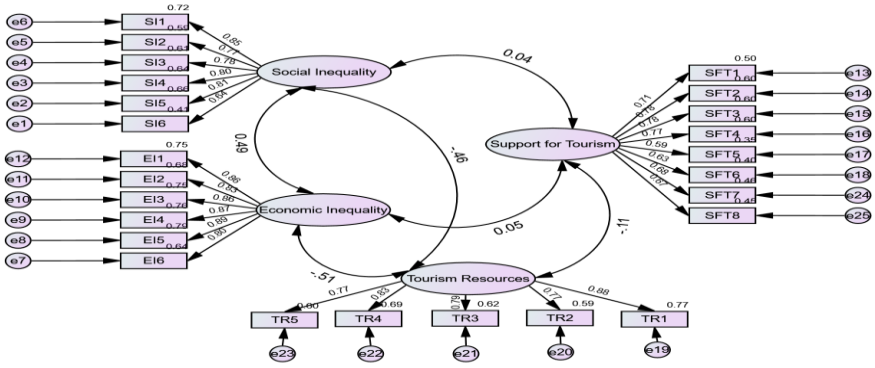


Figure 2: Combined Measurement Model for the Support for Tourism

Source: Survey, 2022

Consequently, the path diagram presents a picture of the theoretical explanation of the interactions between causes and effects relationship among different constructs, leading to numerical outputs (ratio and percentages). Hair et al. (2014) defined that path causal links between predictors and outcomes are one of the essential aspects of path analysis. Moreover, SEM was created and used to assess the relationship between social and economic inequality, tourism resources and support for tourism. The initial model's fit and model fit numerical values are displayed in Table 3.

Table 3: Fit Indices for Tourism Support (N=470)

Model	$\chi^2 df$	χ^2/df	*GFI*	*CFI*	*NNFI*	*RMSEA*	*SRMR*
Initial Model	10.111	8.521	0.801	0.821	0.87	0.31	0.334
Model Fit	2.321	2.122	0.906	0.897	0.920	0.052	0.072
$\Delta\chi^2$	7.790						

Note: N= 470, All the changes in chi square values are computed relative to model, χ^2>.05, GFI = Goodness of fit index, CFI = Comparative fit index, NNFI (TLI) = Non-normed fit index, RMSEA = Root mean square error of approximation, SRMR = Standardized root mean square, $\Delta\chi^2$ = Chi square change" *Source: Survey, 2022*

Likewise, the model modification process suggested that social, economic inequality and tourism resources need modification because the model fit effect were not significant for tourism support, and it is advised to change the statistical modification indices. Furthermore, the study of Tomás et al. (1999) found that covariance in a survey-based study is an important method to draw variance between legitimate factors. Such as, Byrne (2016) described that some covariance errors should be at least 4.0 difference during the modification process for the model fit indices. Moreover, the value of covariance, and the "Chi-square Chang" were higher than 4.0 and it was originally measured at 7.790. Basically, it was a modification process of the models and the last model suggested that the value of 7.790 is approved. Likewise, in the process of modification all the non-significant paths were removed in step two and added some covariance paths, control variable (income). As a result, the research found that absolute and relative fit are measured with the values of GFI, CFI, NNFI, and RMSEA. The result of relative and model fit was measured. Also, the value of RMSEA and SRMR of the model fit was again calculated with covariance and removed insignificant paths of the relationship. The results of RMSEA = .052 and SRMR = .072 had given the absolute fit point. The importance of GFI = .906, CFI = .897, and NNFI = .920 were measured for the model fit indices. Similarly, the value of goodness of fit (χ^2/df = 2.321) was decreased, which is a sign of the good model fit prediction. As a result, the study findings discovered that unique differences found between proposed and saturated models, and it was impartially measured

for model fit. Now this saturated model was the perfect model when added mediation path of tourism resources and measure the effect of tourism support. Therefore, the study concluded that saturated model was fit, and no further modification was found for the model fit indices (See Figure 3).

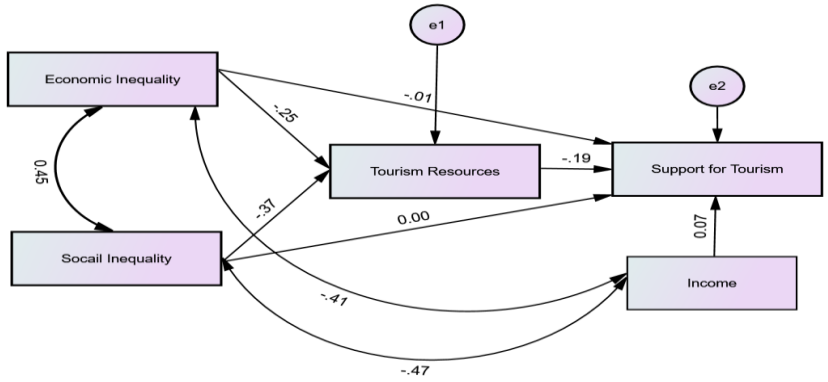


Figure 3: Empirical Results from Complex Multivariate Model Fit Representation Standardized Regression Coefficient. Note: "A complex multivariate model of three exogenous constructs and one endogenous factor along with one control factor (income). Completely standardized maximum likelihood parameter estimate for tourism support".
Source: Survey, 2022

Table 4: Standardized Estimates of Direct Effects for the Paths of Tourism Support (N=470)

Variables	Tourism Resources		Support for Tourism	
	β	S.E	β	S.E
Economic Inequality	-.256***	.044	-.008	.040
Social Inequality	-.370***	.047	-.002	.037
R^2	0.09			

In this paper, it was hypothesized that social and economic inequality do not directly influence tourism support, but mediating role of tourism resources negatively influences tourism support. Likewise, the results of direct effects revealed that social inequality has a weak positive predictor for tourism support. At the same time, economic inequality has an insignificant negative influence on tourism support. The results showed that social and economic inequality might decrease tourism support via tourism resources with β=-.256 and β=-.370.

Similarly, the R^2 variance was $100 \times .090 = 9\%$. It means 9 percent variance or change would occur in tourism support. The statistical data concluded that social and economic inequality have negatively decreased tourism resources in the tourist community area (See Table 4).

Table 5: Standardized Estimates of Indirect Effects for the Paths of Tourism Support (N=470)

Variables	Support for Tourism		
	β	S.E	CR
Social Inequality	-	-	-
Economic Inequality	-	-	-
Tourism Resources	-.134***	.039	-3.429
R^2	.101		

Note: *p<.05, **p<.01, ***p<.001, *Source: Survey, 2022*

The results as mentioned above in Table 5 depicted indirect effects of tourism resources in the context of tourism support. Likewise, R^2 was measured for social and economic inequality, which is further linked with mediation model of tourism resources and the variance or change was $100 \times .101 = 10\%$. The R^2 predicted 10 percent change in the support for tourism supposed if social, economic inequality and tourism resource effect were removed, then ten percent variance occurred in the predictive model with β=-.134. Similarly, tourism resource inequality was found to be a negative mediator for the overall model and also does not support for tourism.

Table 6: Hypothetical Paths and Significant Level of Approval for Tourism Support (N=470)

Hypotheses	Paths	Variables	Estimate	S.E.	C.R.	P	Label
Tourism Resource	<---	Economic Inequality	-0.256	0.044	-5.812	***	Sig
Tourism Resource	<---	Social Inequality	-0.33	0.039	-8.573	***	Sig
Support For Tourism	<---	Tourism Resource	-0.134	0.039	-3.429	***	Sig
Support For Tourism	<---	Economic Inequality	-0.008	0.04	-0.189	0.85	Insig
Support For Tourism	<---	Social Inequality	-0.002	0.037	-0.048	0.962	Insig
Support For Tourism	<---	Income	0.047	0.038	1.224	0.221	Insig

Source: Survey, 2022

The projection of model fit showed that three hypotheses were accepted and the prediction of hiding and observed hypotheses model predict support for

tourism. Finally, the results of the paths concluded that three hypothetical paths were significant and three were rejected according to statistical measurement criteria, which fulfilled our criteria of the research (See Table 6).

DISCUSSION AND CONCLUSION

In practice, the researchers found that this advanced approach and scale measurement are effective for other academic scholars and government agencies to improve support for tourism and mitigate the social and economic inequality's effect on tourism resources and support for tourism. The analysis was restricted; hence, the findings may assertively apply to other rural and urban tourism-based regions. This particular approach can bring changes in the opinion of the local citizens in the context of tourism support and resources if government agencies will follow in the future. Such as, Grandcourt (2020) suggested that the broader sustainability agenda of tourism has a positive significant influence on sustainable tourism. Likewise, Dredge and Gyimóthy (2015) agreed that direct and indirect effect of social and economic conditions have perceived good indicator for tourism resources, experiences and support. Similarly, the assumption of Frank's dependency theory described that core, semi-peripheral and peripheral system influence internal conditions and power of society (Hitchcock, 2023; Suwandi & Foster, 2022). The current results were linked with the above study and found that social and economic inequalities decrease tourism support and also effect tourism resources in general.

Hatipoglu et al. (2022) described the association between social and economic inequality as well as considerable effect on tourism support in small rural society environment. Numerous authors concluded that supporting tourism and socio-economic inequality's negative impact are interrelated in the modern conceptual interpretation (Munanura & Kline, 2022; Munanura et al., 2021). Such as, Moscardo and Murphy (2014) used traditional strategic planning approaches for tourism support, resources, and community destinations. According to Adnyana and Nurwulandari (2020), the social and economic inequality decrease tourism resources. Furthermore, the present study results were linked with the studies mentioned earlier, and it was found that social and economic inequality and tourism resources decrease support for tourism in rural tourist areas. Moreover, Mahadevan and Suardi (2019) delineated the importance of low and poor income on tourism support and found that unequal resource distribution cannot boost tourism support.

Finally, the study concluded that addressing social and economic inequality for the sustainability of the tourism industry is very important. There is a need for a mixed method approach to explore and explain the social and economic disparities in the context of tourism support in the view of local community leaders. Findings from this research showed that social and economic

inequalities decrease support for tourism, which is a big challenge for the tourism industry in developing countries and creates more and more dependency at the national level. Findings indicate that the proportion of tourism resources needs objective sustainability measures for future generations. Interestingly, the social and economic inequality coefficient indicates a relatively declining tourism resources and support for tourism among local citizen perception.

REFERENCES

Adnyana, M., & Nurwulandari, A. (2020). Empirical examination of intersectoral linkages between tourism and regional economy by using the social accounting matrix. *International Journal of Economics and Business Administration*, *8*(1), 292-298. https://econpapers.repec.org

Ap, J., & Crompton, J. L. (1998). Developing and testing a tourism impact scale. *Journal of Travel Research*, *37*(2), 120-130. https://doi.org/10.1177/004728759803700

Azinuddin, M., Som, A. P. M., Saufi, S. A. M., Zarhari, N. A. A., Amin, W. A. A. W. M., & Shariffuddin, N. S. M. (2022). Investigating Overtourism Impacts, Perceived Man-Made Risk and Tourist Revisit Intention. *PLANNING MALAYSIA*, *20*(3), 239-254. https://doi.org/10.21837/pm.v20i22.1142

Baum, T., & Hai, N. T. T. (2019). Applying sustainable employment principles in the tourism industry: righting human rights wrongs? *Tourism Recreation Research*, *44*(3), 371-381. https://doi.org/10.1080/02508281.2019.1624407

Britton, S. (1991). Tourism, capital, and place: Towards a critical geography of tourism. *Environment and Planning D: Society and Space*, *9*(4), 451-478. https://doi.org/10.1068/d090

Byrne, B. (2016). Structural equation modeling with AMOS: Basic concepts, applications, and programming: Routledge Choo, SY, & Chan, CKY (2013). Predicting eating problems among Malaysian Chinese: Differential roles of positive and negative perfectionism. *Personality and Individual Differences*, *54*, 744-749.

Byrne, B. M. (2001). Structural equation modeling with AMOS, EQS, and LISREL: Comparative approaches to testing for the factorial validity of a measuring instrument. *International Journal of Testing*, *1*(1), 55-86. https://doi.org/10.1207/S15327574IJT0101_4

Cairó-i-Céspedes, G., & Palacios Cívico, J. C. (2022). Beyond core and periphery: the role of the semi-periphery in global capitalism. *Third World Quarterly*, 1-20. https://doi.org/10.1080/01436597.2022.2079488

Choe, J., & Lugosi, P. (2022). Migration, Tourism and Social Sustainability. *Tourism Geographies*, *24*(1), 1-8. https://doi.org/10.1080/14616688.2021.1965203

Cornelissen, S. (2017). *The global tourism system: Governance, development and lessons from South Africa* (1st ed.). Routledge. https://doi.org/10.4324/9781315239354

Dredge, D., & Gyimóthy, S. (2015). The collaborative economy and tourism: Critical perspectives, questionable claims and silenced voices. *Tourism Recreation Research*, *40*(3), 286-302. https://doi.org/10.1080/02508281.2015.1086076

Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2007). G* Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, *39*(2), 175-191.

Grandcourt, M.-A. E. (2020). The role of the United Nations World Tourism Organization (UNWTO) in tourism and sustainable development in Africa. In *Routledge Handbook of Tourism in Africa* (pp. 131-138). Routledge. https://doi.org/10.4324/9781351022545-10

Gretzel, U., Fuchs, M., Baggio, R., Hoepken, W., Law, R., Neidhardt, J., Pesonen, J., Zanker, M., & Xiang, Z. (2020). e-Tourism beyond COVID-19: a call for transformative research. *Information Technology & Tourism*, *22*, 187-203. https://doi.org/https://doi.org/10.1007/s40558-020-00181-3

Hair, J. F., Gabriel, M., & Patel, V. (2014). AMOS covariance-based structural equation modeling (CB-SEM): Guidelines on its application as a marketing research tool. *Brazilian Journal of Marketing*, *13*(2), 44-55. https://doi.org/10.5585/remark.v13i2.2718

Hall, C. M. (2019). Constructing sustainable tourism development: The 2030 agenda and the managerial ecology of sustainable tourism. *Journal of Sustainable Tourism*, *27*(7), 1044-1060. https://doi.org/10.1080/09669582.2018.1560456

Hatipoglu, B., Ertuna, B., & Salman, D. (2022). Small-sized tourism projects in rural areas: The compounding effects on societal wellbeing. *Journal of Sustainable Tourism*, *30*(9), 2121-2143. https://doi.org/10.1080/09669582.2020.1784909

Higgins-Desbiolles, F. (2018). Sustainable tourism: Sustaining tourism or something more? *Tourism Management Perspectives*, *25*, 157-160. https://doi.org/10.1016/j.tmp.2017.11.017

Hitchcock, M. (2023). *Tourism, Development and Terrorism in Bali*. Taylor & Francis. https://doi.org/10.4324/9781351144483

Mahadevan, R., & Suardi, S. (2019). Panel evidence on the impact of tourism growth on poverty, poverty gap and income inequality. *Current Issues in Tourism*, *22*(3), 253-264. https://doi.org/10.1080/13683500.2017.1375901

Moscardo, G., & Murphy, L. (2014). There is no such thing as sustainable tourism: Re-conceptualizing tourism as a tool for sustainability. *Sustainability*, *6*(5), 2538-2561. https://doi.org/10.3390/su6052538

Munanura, I. E., & Kline, J. D. (2022). Residents' support for tourism: The role of tourism impact attitudes, forest value orientations, and quality of life in Oregon, United States. *Tourism Planning & Development*, 1-17. https://doi.org/10.1080/21568316.2021.2012713

Munanura, I. E., Needham, M. D., Lindberg, K., Kooistra, C., & Ghahramani, L. (2021). Support for tourism: The roles of attitudes, subjective wellbeing, and emotional solidarity. *Journal of Sustainable Tourism*, 1-16. https://doi.org/10.1080/09669582.2021.1901104

Musavengane, R., Leonard, L., & Mureyani, S. (2022). Doing tourism in Southern Africa amid the coronavirus pandemic: Navigating political, socio-economic and environmental inequalities. *Development Southern Africa*, *39*(1), 3-19. https://doi.org/10.1080/0376835X.2020.1829459

Ngan, N. N. C., Omar, S. I., & Ngoc, H. N. (2022). Local Perceptions Towards The Environmental Impact Of Tourism On The Chàm Islands, Vietnam. *PLANNING MALAYSIA*, *20*(4), 389-404. https://doi.org/10.21837/pm.v20i23.1174

Rasdi, A. L. M., Som, A. P. M., Azinuddin, M., Nasir, M. N. M., & Khan, N. F. A. H. (2022). Local Community Perspective on Responsible Tourism And Destination Sustainability. *PLANNING MALAYSIA*, *20*(3), 255-269. https://doi.org/10.21837/pm.v20i22.1143

Sekaran, U., & Bougie, R. (2019). *Research Methods for Business*. John Wiley & Sons, Incorporated.

Singleton, A. (1999). Combining quantitative and qualitative research methods in the study of international migration. *International Journal of Social Research Methodology*, *2*(2), 151-157. https://doi.org/10.1080/136455799295113

Stanciu, M., Popescu, A., Sava, C., Moise, G., Nistoreanu, B. G., Rodzik, J., & Bratu, I. A. (2022). Youth's perception toward ecotourism as a possible model for sustainable use of local tourism resources. *Frontiers in Environmental Science*, 1243. https://doi.org/10.3389/fenvs.2022.940

Susman, P., O'Keefe, P., & Wisner, B. (2019). Global disasters, a radical interpretation. *Interpretations of Calamity* (1st ed., pp. 263-283). Routledge. https://doi.org/10.4324/9780429329579-14

Suwandi, I., & Foster, J. B. (2022). COVID-19 and imperial value: Commodity chains, global monopolies, and catastrophe capitalism. *International Critical Thought*, *12*(3), 426-447. https://doi.org/103.16.182.247

Tashakkori, A., & Creswell, J. W. (2007). The New Era of Mixed Methods. *Journal of Mixed Methods Research*, *1*(1), 3-7. https://doi.org/10.1177/2345678906293042

Tomás, J. M., Meliá, J. L., & Oliver, A. (1999). A cross-validation of a structural equation model of accidents: organizational and psychological variables as predictors of work safety. *Work & Stress*, *13*(1), 49-58.

Tucker, H., & Akama, J. (2009). *Tourism as Postcolonialism*. Sage Publication Ltd. https://www.torrossa.com/en/resources/an/4913746

UN. (2020). *About the sustainable development goals*. https://www.un.org/sustainabledevelopment/sustainable-development-goals.

Received: 28th Feb 2023. Accepted: 31st March 2023

PLANNING MALAYSIA:
Journal of the Malaysian Institute of Planners
VOLUME 21 ISSUE 1 (2023), Page 193 – 202

EFFECTS OF TRAVEL CHARACTERISTICS ON TOURISM EXPENDITURE: A CASE STUDY OF MALAYSIA YOUNG OUTBOUND TOURISTS

Syakir Amir Ab Rahman[1], Syahriah Bachok[2], Lukman Hakim Mahamod[3]

[1,2,3]*Department of Urban and Regional Planning,*
Kulliyyah of Architecture and Environmental Design,
INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA

Abstract

This paper aims to identify the travel characteristics determinants affecting tourism expenditure, among 40 young outbound tourists to Fukuoka Japan. Two hypotheses are tested using data collected from purposive sampling recruited via diary record survey. Pearson correlation explores the difference in length of stay, planned expenditure in influencing the actual expenditure of accommodation, shopping, food and beverages, entertainment and transportation. Empirical result confirmed that the determinants of expenditure have different influence on spending sectors. Length of stay, has bearing in most of the expenditure segments. This result provides useful input for decision makers to revise policies and strategies related to domestic and outbound tourists flows and expenditures.

Keywords: Travel characteristics, tourist expenditure, outbound tourist, tourism

[1] Senior Lecturer at International Islamic University Malaysia Email: syakiramir@iium.edu.my

INTRODUCTION

Tourism is being recognized as a push force in economic development of several regions especially developing and undeveloped countries. Studies by Craggs & Schofield (2009) manifested that tourism has the capability and capacity to generate economic benefits especially for locals. In 2019, World Travel and Tourism Council (WTTC) reported that the contribution of the travel and tourism industry towards global GDP has significantly increased from USD940 billion in 2018 to USD800 billion in 2019. Among of the factors was tourists' expenditure, which was a measure of money that has been spent by domestic and international tourists. Tourism industry in Malaysia recorded an outstanding performance in 2018. The share of gross value added tourism industries (GVATI) to GDP elevated to 15.2% in 2018 against 14.6% in 2017 that contributed to RM220.6 billion in 2018 compared to RM220.4 billion in 2017.

At present, there is a large volume of published studies associating tourism destination with spending behaviour. With the cognisance of this pattern, relevant authorities can then better strategize tourism promotion and marketing in improving the performance of tourism industry. However, to date far too little attention has been paid to Malaysian outbound tourism expenditure in specific countries. The regions in which the tourism as the main industry, it is important to comprehend this behavioural pattern of expenditure among tourists especially in Asian destinations, a region in which tourism industry play a paramount role in the economy, for the analysis provides an insight to planning and arrangement of domestic and internal tourism strategies.

In light of the above, this paper seeks to address the expenditure patterns of selected segments of Malaysians to Fukuoka Japan as outbound tourists and its determinants. Fukuoka, with an area of 343.39km sq., and a population of 1.59 million (as of June 2019), is one of the more popular Malaysian tourists' destination. Fukuoka is characterized as smart, modern and natural tourism, with historical and cultural tourism. This paper is organized as follows. The first part presents the literature review relating to tourism expenditure. This is followed by description of methodology. Next section presents the results on the total tourists expenditure patterns in five main tourism sectors, namely, accommodation, food and beverage, transportation, shopping and entertainment. The last section involve the discussion and conclusion.

LITERATURE REVIEW

Tourist expenditure has been clearly defined by World Tourism Organzation (1991) as the total consumption and spending made by a tourist for and during their visit to the destination. It is a basic concept of measurement to measure tourism activities and total consumption of product and services (Dixon et al., 2012) that is known as tourism demand (Zhang et al., 2020). In Malaysia context, according to Tourism Satellite Account (TSA) 2005-2011, a tourist's expenditure

refers to the total paid by tourists for their consumption of goods and services during trips. All goods purchased and prepared before the trip should be included. Outbound tourism expenditure refers to the tourism expenditure for a resident visitor outside Malaysia.

Tourism market segments can be defined by using a range of segmentation bases. This has been categorized into geographical, socio-demographic, tourist behavioural, psychographic, economic and socio-cultural (Wedel & Kamakura, 2000; Dolnicar, 2007). However, Wang (2014), Syakir Amir et al. (2014) and Yuliana (2018) believe that socio-demographic and travel characteristics are the most frequently used as expenditure determinants. Several studies revealed the varying directional relationships of tourists' expenditure have with each of the associated socio-demographic factors namely income level, education level (Hung et al., 2012), age, occupation, country of residence (Wang et al., 2006). Travel characteristics relate to purpose of visit, frequency of visit, number of accompanying people (Joy, 2001; Swanson & Horridge, 2004). There are a few studies that explore expenditure distribution across five tourism main sectors, namely, accommodation, transportation, food and beverage in depth (Li et al., 2020; Syakir Amir et al., 2017), shopping, and entertainment. Shopping has become a significant tourism sector that took a large portion of tourist expenditure (Lioyd et al., 2011; Hang et al., 2019) and generated a major revenue source for many tourism cities, namely Hong Kong (Choi et al., 2008), Macau (Wong, 2013). In some studies, tourists spent much only for subsegment of shopping, as it was initially the purpose of the trip (Wong & Wan, 2013; Lehto et al., 2014). Food and beverages subsegment is a manifestation of sense of place with reference to the host destination (Nik Mohd Aizat et al., 2020) which demonstrated the sensory functioning of auditory, taste, vision, tactile and olfaction (Kivela & Crotts, 2005). (Wu et al., 2016) believe that expenditure covers one-third of the total expenditure in most of the regions with food experiences, i.e. in their offering of local cuisine as part of the activities (Sengel et al., 2015).

On the other hand, many outbound tourism studies have been conducted, For example, Anyango et al. (2013) explore that the Dutch tourists spent 18% on accommodation, 7.5% for transportation, and 10.5% for food beverages. While, Japanese tourists spent as high as 36.2% of total expenditure, relative to other subsegments expenditure (Kim et al., 2011). Several similar studies explored a few other tourist destinations including China (Wen et al., 2020), United Kingdom (Sharma et al., 2020), Tuscany (Ferrari et al., 2018), North Korea (Li & Ryan, 2018), Italy (Brida & Tokarchuk, 2017). In the Malaysia context, the total Malaysian tourists' expenditure abroad increased to RM41.3 billion in 2018 compared to RM38.9 billion in 2017 and RM34 billion in 2016 with a moderate growth of 6.2%. According to the statistics, the main components

for outbound tourists expenditure were transportation 31.6%, followed by shopping 23.7%, accommodation 23.4% and food and beverages 13.3%.

H1: The relationship between length of stay and expenditure is significant
Most studies in tourism economics and behaviour concluded that length of stay had somewhat positive impact on total tourist expenditure (Agarwal & Yochum, 1999; Downward & Lumsdon, 2003; Downward & Lumsdon, 2004; Nicolau & Mas, 2005; Pouta et al., 2006; Fredman, 2008; Nik Mohd Aizat & Syakir Amir, 2020). In regard to tourists' behavioural pattern, Zhang et al. (2012) believe that the longer a tourist stays in a destination, the more likely it is that their expenditure will increase.

H2: The relationship between allocation of tourist budget (planned) and expenditure is significant
To date, there is little discussion on tourists' planned budget before travel. Several researchers claim that when an individual's preparation duration increases, his/her demand for travel is likely to increase (Chhabra et al., 2002; Thrane, 2002; Syakir Amir et al., 2017).

METHODOLOGY

Diary record survey (DRS) was chosen as the data collection method to record the outbound tourists' expenditure in Fukuoka Japan. As compared to other expenditure recording methods in tourism research, DRS reduced the error caused by memory decay recalling expenditure among tourists. This study used a purposive sample of 40 young Malaysian tourists who visited Fukuoka from 14th January until 23rd January 2020. The respondents were selected on the basis of degree of homogeneity of their travel characteristics namely, length of stays and length of time for trip preparation. The respondents were required to record the detail expenditure in five main tourism sectors, food and beverages, accommodation, entertainment, shopping and transportation. The subcategories under two sectors were further generated to represent the second layer of expenditure typology. For example, classification of food and beverage expenditure was split into five subcategories of which were (i) total expenditure on food and beverage, (ii) breakfast, (iii) lunch, (iv) dinner and (v) snacks. Similarly, classification of shopping expenditure was further typified by two subcategories namely (i) souvenir and (ii) non-souvenir. Cultural and entertainment expenses were deemed as entertainment expenditure. These breakdowns of expenditure allowed the investigation of influencing effect that each and every distinct spending category and subcategory has on selected travel and trip making factors. Hence, the result may provide significant information to tourism sectors and services industries.

RESULT AND FINDINGS

Table 1: Length of Stay and Expenditure in Tourism Sectors

Length of stay and Average Expenditure					
Pearson Correlation Test					
Variables	**r value**	**ρ value**	**Decision**	**Strength**	**Direction**
Total exp. FOOD BEVERAGE	.334	.043	Reject H_0	Small	Positive
exp. breakfast	-.402	.183	Fail to Reject H_0		
exp. lunch	**.653**	**.037**	**Reject H_0**	**High**	**Positive**
exp. dinner	.244	-.293	Fail to Reject H_0		
exp. snacks	**.432**	**.031**	**Reject H_0**	**Small**	**Positive**
Total exp. ACCOMMODATION	**.577**	**.015**	**Reject H_0**	**Medium**	**Positive**
Total exp. TRANSPORTATION	-.391	.149	Fail to Reject H_0		
Total exp. SHOPPING	**.433**	**.008**	**Reject H_0**	**Small**	**Positive**
exp. souvenirs	**.615**	**.038**	**Reject H_0**	**Medium**	**Positive**
exp. non-souvenirs	**.811**	**.014**	**Reject H_0**	**High**	**Positive**
Total exp. ENTERTAINMENT	.105	.473	Fail to Reject H_0		
exp. cultural	.235	.282	Fail to Reject H_0		
exp. recreational	.493	-.194	Fail to Reject H_0		

Source: Diary Record Survey, 2020

Table 1 above illustrates the relationship of length of stay with outbound tourists expenditure to Fukuoka Japan. Results indicate that length of stay correlated positively expenditure for lunch (r =.653) p>.05 and expenditure for non-souvenirs (r =.811) p>.05 with both strong relationships. It is followed by total expenditure for accommodation (r =.577) p>.05 and expenditure for souvenirs (r =.615) p>.05 with both medium relationships, with total expenditure of food and beverage (r = .334) p>.05, , and expenditure of snacks (r =.432) p>.05, , total expenditure for shopping (r =.433) p>.05 with small relationships.

Table 2: Planned Expenditure and Average Expenditure in Tourism Sectors

Planned expenditure and Average Expenditure					
Pearson Correlation Test					
Variables	**r value**	**ρ value**	**Decision**	**Strength**	**Direction**
Total exp. FOOD BEVERAGE	.302	.233	Fail to Reject H_0		
exp. breakfast	.453	.183	Fail to Reject H_0		
exp. lunch	.546	.237	Fail to Reject H_0		
exp. dinner	.443	.293	Fail to Reject H_0		
exp. snacks	.781	.231	Fail to Reject H_0		
Total exp. ACCOMMODATION	**.258**	**.018**	**Reject H_0**	**Small**	**Positive**
Total exp. TRANSPORTATION	**.428**	**.023**	**Reject H_0**	**Medium**	**Positive**
Total exp. SHOPPING	**.731**	**.019**	**Reject H_0**	**High**	**Positive**
exp. souvenirs	**.834**	**.036**	**Reject H_0**	**High**	**Positive**
exp. non-souvenirs	.541	.065	Fail to Reject H_0		
Total exp. ENTERTAINMENT	.213	.634	Fail to Reject H_0		
exp. cultural	.334	.324	Fail to Reject H_0		
exp. recreational	.134	.244	Fail to Reject H_0		

Table 2 above illustrates the relationship of planned expenditure with outbound tourists expenditure to Fukuoka Japan. Result indicates that planned expenditure correlated positively with total expenditure for shopping (r = .731) p>.05 and expenditure for souvenirs (r = .834) p>.05 with both strong relationships. It is followed by total expenditure for transportation (r = .428) p>.05 with medium relationship, total expenditure for accommodation (r = .018) p>.05 with small relationship.

DISCUSSION

Diary Some 40 samples have been collected, with an average age cohort of 21-25 years old. The 10 days trip to Fukuoka Japan began and ended with a flight to and from Fukuoka International Airport, which was planned some 6 months earlier. Accommodation was bed and breakfast style, located in the city centre, 5 minutes from Hakata station. On average these 18 males and 24 female respondents spent each person an average daily RM100 (USD23) on food, RM80 (USD18) on accommodation, RM50 (USD12) on shopping, RM50 (USD12) on entertainment and cultural and RM40 (USD10) on transportation. This homogeneous group had a full day activity on five of planned days and half day excursions for the remaining days. On average they made three minimum trips per day. The tourists had allocated a budget of RM300 (USD70) daily to cover the 10 days trip total expenses, amounting to RM3000 (USD700).

The results of this study indicated that the Malaysian tourists expenditure for an outbound visit was affected by a complex set of travel characteristics, namely, length of stay and planned expenditure. One an unanticipated finding was that the tourism expenditure for this group of respondents being higher than had been planned for, for this outbound market, to be precise, Fukuoka Japan. A plausible reason could be the fluctuation of foreign exchange rates and the weakening of Malaysian Ringgit, not withstanding the fact that Asians were indeed high spenders. An observed behaviour of these young tourists staying in B&B, they would either skip breakfast to catch up with the tight schedule or take a light breakfast and prepare for an outing with a very heavy lunch in between activities. As such, it was relevant that their expenditure on lunch was the highest among all food consumption i.e. RM100 per day. These Malaysia tourists demonstrated typically similar behaviour when they are touring domestically, i.e. high lunch consumption rate and expenses. This observation was supported by Siti Radhiah Omar et al. (2015) that suggested some tourists were motivated by culinary exploration and cuisine testing when deciding on making a trip. This study also showed that this segment of tourists were highly like to consume snacks between meals. It is important to note that length of stay is a significant determinant of most of the spending for Malaysian in Japan, except transportation and entertainment. This finding has important implications for Malaysia is also one of the leading tourism destinations is Asia. One such

implication is that in making tourists stay longer, various facilities should be packaged so as to induce inclusivity among domestic and inbound tourists to explore deeper any attraction or linking on destination to another through seamless transportation. This may be the future niche market for Malaysia, which can be learned from examples in Japan. Japan offers variety of so-called discount passes especially for their public transportation – shinkansen, subway and public bus. The introduction of JR pass for foreigners – 3 days pass and 7 days pass with an embedded combination for some other services including food purchase has aimed at both increasing tourists' expenditure levels and extending tourists stay. Another important observation was that food and beverages expenditure had significant correlations with all travel characteristics. This result indicated that while general food were abundantly found in Japan, special dietary meals like Halal food were also increasingly widely offered. It is timely for Fukuoka, Japan to serve Halal food for Muslim travellers. As expected, expenditure in shopping correlated positively with all travel characteristics Of the items purchased by tourists, non-souvenirs contributed to a significant share of overall shopping expenditure. There were several possible explanations for this result, the first being Asians were among the most widely recognized tourists groups for shopping activities, while other national and ethnic groups especially European and American were more interested in cultural and heritage values. Second, the habit of gift-giving to friends and relatives in Asian cultures after completing a trip has been the source for harmonious relationships and demonstrated gratitude for the kindness of others. Last, tourists were influenced by tax-free items, Japanese branded products and products availability. This study demonstrated that despite Japan being a cultural and techno-nation, the country was also serving tourists as a shopping destination in Asia.

CONCLUSION

The present study is an explorative research that has been designed to highlight spending behaviour and segmented expenditure of young Malaysians with specific travel characteristics making a trip to Fukuoka, Japan. With a few limitations that need to be considered, a number of possible future studies using the same experimental set up are apparent. The study was limited in several ways. First, the study used a limited sample size that shared most of the similar socio-demographic background. Also, these data apply only to a specific city – Fukuoka. Therefore, it is recommended the further research be undertaken in the following areas: first, identify other travel characteristics, for instance, trip purpose, type of trips, number of destinations visited, payment method, actual and planned expenditure. Second, the outbound tourism expenditure can be evaluated in other regions like Europe and Middle East. Third, these future studies may improve the understanding on outbound tourism pattern and characteristics and contribute to the empirical studies on certain niche tourism.

For decision makers, an appreciation and high comprehension of outbound tourists' expenditure were important in order to plan and control the expenditure-driven economic activity of local citizen at host destinations.

REFERENCES

Brida, J.G., & Tokarchuk, O. (2017). Tourits' spending and adherence to shopping plans: the case of the Christmas market in Merano, Italy. *Tourism Management. 61*:55-62.

Choi, T. M., Liu, S. C., Pang, K.M., & Chow, P.S. (2008). Shopping behaviors of individual tourists from the Chinese Mainland to Hong Kong. *Tourism Management, 29*(4): 811-820.

Craggs, R., & Schofield, P. (2009). Expenditure-based segmentation and visitor profiling at the quays in Salford, UK. *Tourism Economics, 15*(1): 243-260.

Dixon, A. W., Backman, S., Backman, K., & Norman, W. (2012). Expenditure based segmentation of sport tourists. *Journal of Sport and Tourism, 17*(1): 5-21.

Dolnicar, S. (2007). Management learning exercise and trainer's note for market segmentation in tourism. *International Journal of Culture, Tourism and Hospitality Research, 1*(4): 289-295.

Downward, P., & Lumsdon, L. (2003). Beyond the demand for day-visits: an analysis of visitor spending. *Tourism Economics, 9*(1):67-77.

Downward, P., & Lumsdon, L. (2004). Tourism transport and visitor spending: a study in the North York Moors National park, UK. *Journal of Travel Research, 42*(4): 415-420.

Ferrari, G., Jimenez, J.M., & Secondi, L. (2018). Tourists' expenditure in Tuscany and its impact on the regional economic system. *Journal of Cleaner Production*. 171: 1437-1446.

Fredman, P. (2008). Determinants of visitor expenditures in mountain tourism. *Tourism Economics, 14*(2): 297-311.

Han, H., Moon, H, & Kim, W. (2019). The influence of international tourists' self-image congruity with a shopping place on their shopping experiences. *Journal of Hospitality and Tourism Management*, 41: 101-109.

Hung, W., Shang, J., & Wang, F. (2012). Another look at the determinants of tourism expenditure. *Annals of Tourism Research, 39*(1): 495-498

Joy, A. (2001). Gift giving in Hong Kong and the continuum of social ties. *Journal of Consumer Research, 28*(2): 239-256.

Kim, S.S., Timothy, D.J., & Hwang, J. (2011). Understanding Japanese tourists' shopping preferences using the decision tree analysis method. *Tourism Management*. 32: 544-554.

Kivela, J., Crotts, J.C. (2005). Gastronomy Tourism. *Journal of Culinary Science & Tourism, 4*(2-3): 39-55.

Kivela, J., Crotts, J.C. (2006). Tourism & gastronomy: Gastronomy's influence on how tourist experience a destination. *Journal of Hospitality and Tourism Research*, 30: 354-377.

Lehto, X. Y., Chen, S. Y., & Silkes, C. (2014). Tourist shopping style preferences. *Journal of Vacation Marketing, 20*(1): 3-15.

Li, Y., Filimonau, V., Wang, L., & Cheng, S. (2020). Tourist food consumption and its arable land requirements in a popular tourist destination. *Resources, Conservation, Recycling*, 153: 1-12.

Li, F. & Ryan, C. (2018). Souvenir shopping experiences: A case study of Chinese tourists in North Korea. *Tourism Management*, 64: 142-153.

Lloyd, A. E., Yip, L. S. C., & Luk, S. T. K. (2011). An examination of the differences in retail service evaluation between domestic and tourist shoppers in Hong Kong. *Tourism Management, 32*(3): 520-533.

Murphy, L., Moscardo, G., Benckendorff, P., & Pearce, P. (2011). Evaluating tourist satisfaction with the retail experience in a typical tourist shopping village. *Journal of Retailing and Consumer Services, 18*(4): 302-310.

Nik Mohd Aizat Nik Mohd Adib & Syakir Amir Ab Rahman (2020). Analysis of sense of places effect on tourist's length of stay in the Kota Bharu cultural heritage zone. EMARA: *Indonesian Journal of Architecture, 6*(1), 23-32.

Nik Mohd Aizat Nik Mohd Adib, Syakir Amir Ab Rahman, Shunji Suzuki & Nor Nadiah Najib (2020). Do tourists really intend to revisit Kota Bharu Cultural Heritage Zone? *E-Bangi, 17*(9), 114-125.

Sengel, T., Karagoz, A., Cetin, G., Dincer, F.I., Ertugral, S.M., & Balik, M. (2015). Tourists' approach to local food. *Procedia Social and Behavioral Sciences*, 195: 429-437.

Sharma, A., Woodward, R., & Grillini, S. (2020) Unconditional quantile regression analysis of UK inbound tourist expenditure. *Economic Letters*. 186.

Siti Radhiah Omar, Shahrim Ab. Karim, Ainul Zakiah Abu Bakar, Siti Nazirah Omar. (2015). Safeguarding Malaysian heritage food (MHF): The impact of Malaysian food culture and tourists' food culture involvement on intentional loyalty. *Procedia Social and Behavioral Sciences*, 172: 611-618.

Sondoh, S.L., Maznah Wan Omar, Nabsiah Abdul Wahid, Ishak Ismail & Amran Harun. (2007) The effect of brand image on overall satisfaction and loyalty intention in the context of color cosmetic. *Asian Academy of Management Journal, 12*(1): 83–107.

Swanson, K. K., & Horridge, P. E. (2004). A structural model for souvenir consumption, travel activities, and tourist demographics. *Journal of Travel Research, 42*(4): 372-380.

Swanson, K. K., & Horridge, P. E. (2006). Travel motivations as souvenir purchase indicators. *Tourism Management, 27*(4): 671-683.

Swanson, K. K., & Timothy, D. J. (2012). Souvenirs: Icons of meaning, commercialization and commoditization. *Tourism Management, 33*(3): 489-499.

Svensson, B., Moreno, P., and Martìn, D. (2011). Understanding travel expenditure by means of market segmentation. *The Service Industries Journal, 31*(10): 1683-1698.

Syakir Amir, Mariana Mohamed Osman, Syahriah Bachok, Mansor Ibrahim (2014). Understanding of tourists' preferences pattern: A study in Melaka, Malaysia. *Planning Malaysia, 3*, 81-94.

Syakir Amir, Mariana Mohamed Osman, Syahriah Bachok, Mansor Ibrahim, and Ismawi Zen (2017). Community-based Tourism in Melaka UNESCO World Heritage Area: A Success in Food and Beverage Sector? *Planning Malaysia, 15*(1), 89-108.

Syakir Amir, Mariana Mohamed Osman, Syahriah Bachok, Mansor Ibrahim and Mohd Zin Mohamed (2017). Tourism stakeholders perception on tourists' expenditure in entertainment sector in Melaka UNESCO world heritage area. *Advanced Science Letter, 23*(7), 6336-6338.

Thrane, C. (2014). Modelling micro-level tourism expenditure: Recommendations on the choice of independent variables, functional form and estimation technique. *Tourism Economics. 20*(1): 51-60.

Wang, Y. S. (2014). Effects of budgetary constraints on international tourism expenditures. *Tourism Management,* 41: 9-18.

Wang, Y., & Davidson, M. C. G. (2010). A review of micro-analyses of tourist expenditure. *Current Issues in Tourism, 13*(6): 507-524.

Wedel, M., & Kamakura, W. A. (2000). Market segmentation: Conceptual and methodological foundations. *Journal of Classification, 17*(1): 143-145.

Wen, J., Huang, S., & Goh, E. (2020). Effects of perceived constraints and negotiation on learned helplessness: A study of Chinese senior outbound tourists. *Tourism Management*, 78.

Wong, I. K. A. (2013). Mainland Chinese shopping preferences and service perceptions in the Asian gaming destination of Macau. *Journal of Vacation Marketing, 19*(3): 239-251.

Wong, I. K. A., & Cheng, M. (2014). Exploring the effects of heritage site image on souvenir shopping attitudes: The moderating role of perceived cultural difference. *Journal of Travel & Tourism Marketing, 31*(4): 476-492.

Wong, I. A., & Wan, Y. K. P. (2013). A systematic approach to scale development in tourist shopping satisfaction: Linking destination attributes and shopping experience. *Journal of Travel Research, 52*(1): 29-41.

Wu, K., Raab, C., Chang, W., & Krishen, A. (2016). Understanding Chinese tourists' food consumption in the United States. *Journal of Business Research*, 69: 4706-4713.

Yuliana (2018). Analysing destination experience, satisfaction and loyalty of domestic tourists: A case study of Bali, Indonesia. *Pertanika Journal Social Sciences & Humanities*, 26: 213-224.

Zhang, H., Zhang, J., & Kuwano, M. (2012). An integrated model of tourists' time use and expenditure behaviour with self-selection based on a fully nested Archimedean copula function. *Tourism Management, 33*(6): 1562-1573.

Zhang, Y., Li, G., Muskat, B., Law, R., & Yang, Y. (2020). Group pooling for deep tourism demand forecasting. *Annals of Tourism Research*, 82.

Received: 28th Feb 2023. Accepted: 31st March 2023

PLANNING MALAYSIA:
Journal of the Malaysian Institute of Planners
VOLUME 21 ISSUE 1 (2023), Page 203 – 214

DESTINATION IMAGE AND TOURIST RETENTION IN JERUSALEM

Edais Shehab[1], Ahmad Puad Mat Som[2], Amer Al Qassem[3]

[1]*Faculty of Tourism & Hotel,*
MODERN UNIVERSITY COLLEGE, PALESTINE
[2]*Faculty of Applied Social Sciences,*
UNIVERSITI SULTAN ZAINAL ABIDIN, MALAYSIA
[3]*School of Business,*
SKYLINE UNIVERSITY COLLEGE, UNITED ARAB EMIRATES

Abstract

Tourism industry plays a vital role in the economic development of a country by attracting local and foreign tourists. The turbulent situation in Jerusalem occasioned by Israeli Palestinian crisis put euphoria in the mind set of tourists visiting the country. Thus, this paper aims at examining the effects of destination image on tourist loyalty in Jerusalem, mediated by political stability. A quantitative methodology was applied in this study and primary data was collected from 384 tourists who had visited Jerusalem. Results of the structural equation modelling found that destination image has a significant relationship with tourist loyalty, but there is a negative relationship between destination image and political stability. Political stability does not act as a mediator in the relationship between destination image and tourist loyalty. Tourism practitioners should focus on improving Jerusalem's image as a destination to increase influx of tourists, revenue and sustainability because successful tourism development is closely related to reduction of risks and stability. The results of this study will help Israeli-Palestinian tourism sector to undertake more efficient planning, marketing, advertising, and enhancing the overall management of their resources in Jerusalem.

***Keywords**:* Destination Image, Political Stability, Tourist Loyalty, Jerusalem

[1] Lecturer at Modern University College. Email: Shehab.Edeis@muc.edu.ps

INTRODUCTION

Palestine is one of the most ancient countries in the Middle East with a long history of religious sites with a very strategic location because it connects the Middle East, Africa and Asia (Çakmak and Isaac, 2016). Since 1967, Israel has embarked on a campaign to colonise the occupied Palestinian territories by illegally confiscating Palestinian lands and natural resources while confining the indigenous Palestinians population in enclaves (Isaac et al., 2016). Tourism in Jerusalem along the years has been gaining an increasingly important profile due to its religious and economic importance, and the substantial role it plays in Israeli-Palestinian relations, depicting the Palestinian statehood and identity, and the Middle Eastern politics in general. Jerusalem is considered as a sacred location for the people following the three great religions: Muslims, Christians, and Jews. Accordingly, pilgrims visit this city from all over the world. Both Israelis and Palestinians are demanding that Jerusalem be recognized as the capital of its state. Today, the sacred city is controlled by Israel. The international legal status of the city has never been definitively determined (Pipia and Pipia, 2020). Jerusalem, like most of the Middle Eastern countries, remains highly underrepresented in tourism literature. The roots of tourism in Jerusalem rest in religious pilgrimages undertaken by the three great monotheistic religions which were born in the region.

Being home to the world's three main religious, international Muslims visit Jerusalem for the sacred mosque that has been in Jerusalem for decades called Aqsa Mosque, while Christians visit Jerusalem due to the historic churches and monasteries, and the Jews regard Jerusalem as a founding state for the Abrahamic religion (Suleiman and Mohamed, 2011). Jerusalem is not the only centric religious site in Palestine, other cities surrounding Jerusalem include villages and districts such as Bethlehem and Nazareth (Isaac et al., 2016). Aside Jerusalem being known for its ancient religious history, Palestine in general holds tales to a lot of deep ancient history, culture and heritage where discoveries are made from monuments found that provided a lot of knowledge to historians.

The political instability in Jerusalem caused by the Israeli-Palestinian crisis discourages tourists from visiting the country. To calm the feelings of despair among tourists who think that the on-going conflict might be a barrier to explore the sites in the country, this study will bring up debates and possible issues to be resolved. Indeed, the conflict over Palestine is unarguably one of the most complicated problems that the international community has faced. Israeli-Palestinian conflict is deeply embedded in history, and the conflict is primarily motivated by conflicting quests for national identity and self-determination by the Palestinian people and the Jews. This paper aims at examining the effects of destination image on tourist loyalty in Jerusalem, mediated by political stability.

THEORETICAL GAP AND LITERATURE REVIEW

Theoretical Gap

The theoretical gaps in this study are extensive and some of these gaps involved the suggested consequences of threat and confidence in local tourism relations which are based on current studies. Due to the decade long of political instability in Jerusalem, Palestine, many research studies conducted have mainly focused on the political situation and a minimal work has been conducted to identifying how the on-going political situation in Palestine is negatively affecting the tourism industry. Therefore, the research findings are necessary for the authorities in Jerusalem to take steps to strengthen the safety aspect of the state in order to revive the tourism sector. A gap in this research is to understand how Jerusalem's tourism industry is able to maintain some level of tourist loyalty even during many years of political instability. Thus, conducting further studies in this area will give weight to this study because there will be a clear understanding of what has worked over the years in Jerusalem to maintain a decent floor of tourists and what needs to be done by looking into the recommendations highlighted in this research.

Destination Image

The image of a location or a tourist destination has been considered a critical factor in evaluating the overall performance of the tourism industry (Kandampully and Hu, 2007). This statement is centered on the fact that the image of the destination is central in the mind of tourists and forms the benchmark used by tourists to measure the efficiency of service providers (Bravo et al., 2009; Nguyen, 2006). While image of a location has been considered a significant selling tool that the destination should keep, there is no global concept of what defines these unique selling points of locations, according to Pina et al. (2006).

In the tourism industry, the image of a destination plays a significant role in its relevance and Jerusalem as a city ensures this through its distinctive existence, and ancient history which makes the city a travel choice for many historians and religious groups (Dhillon, 2013). Image represents a perception of the idea created by tourists based on experience and memories created in that location, and that is actually what tourists think when they reflect on the location or it crosses their minds (Saleem and Raja, 2014).

In the study conducted by Mohajerani and Miremadi (2012), the authors contended that image refers to the overall impression imprinted in the public's minds regarding something. They added that image of a service industry such as the tourism sector is diverse, with every customer having different expected impressions, experiences and contacts regarding the destination, leading to various image acceptance.

As a result, attaining a positive image for a tourist destination is a strategic tool in gaining edge over competitors. Hence, it is difficult to attain a positive image in the tourism industry; it is a process that requires time and financial investment to eventually get to that level (Akın and Demirel, 2011). Thus, the opposite is equally true. In the tourism industry, a lot of hard work and tourism marketing is done to protect the image of a destination from negative associations, and as a result, governments and the private sector invest heavily to protect their brand image from any negative publicity (Akın and Demirel, 2011).

Primarily, destination image directly influences tourist decision making process and their perception towards that destination is shaped as a result. The destination image of Palestine significantly influences tourist satisfaction levels and tourist intention to visit Palestine. Thus, the perceived image tourists develop towards a travel destination is based on a process of evaluation of the pros and cons of tourism, which in turn influences the choices tourists make on which locations to visit (Krippendorf, 1982). Furthermore, tourists are attracted to a destination if their perception towards the destination is positively and highly influenced by individual tourist's experience and through tourism marketing. This in turn shapes tourist behavior towards the destination and their choice of travel destination.

Political Stability

This paper has indicated that political stability, as a mediating variable, is a key determinant that influences tourist behaviour towards a travel destination because generally, if a travel destination is politically stable, it is easier to influence tourists to visit and to even retain tourists (Gefen and Straub, 2003). However, political instability is a great setback for travel destinations because tourist emotion, perception of the destination (destination image) is negatively influenced. To support this notion, findings from the literature indicate that destination image positively influences political stability while perceived risk negatively influences political stability. These findings indicate that when a tourism destination is politically stable and safe, it influences the rate of tourists visiting the destination. Political stability has also been described in politics as the orderliness of the channels of political exchange, so any divergence from such a line is called political instability (Ake, 1975). Political instability occurs when normal procedures of governance are challenged by other groups operating outside the government legitimate circle, and this challenge disrupts the usual, stable functions of the sitting government; this occurs in varying levels and the impact is also felt differently. When a country's level of political instability attracts international media attention, it directly impacts the tourism image, thus building a negative perception by tourists.

Political instability of any form affects the economic growth of industries in a particular country or region. Therefore, a key determining factor for ensuring a sustainable tourism industry in Jerusalem is for the government to ensure the highest level of stability in the environment in order to positively influence destination image and loyalty. Aside making Palestine unsafe for tourists, the inflation rate will further discourage tourists from choosing Palestine as a travel choice.

Tourist Loyalty

The study's proposed dependent variable is tourist loyalty. According to Oliver (1999), tourist loyalty is a firmly held determination to regularly repurchase or re-patronize a favourite product or service in the future, resulting in repeated purchases of the same brand or brand package, considering situational influences and marketing efforts that have the potential to trigger switching behaviour. One of the most important aspects of tourist loyalty for potential tourists is that keeping current visitors is more attractive and less expensive than attracting new ones (Loureiro and González, 2008). For several tourist sites, tourists with a high degree of loyalty serve a significant segment of the market, since they are more likely to remain at a destination longer than the first-time tourists, prefer to convey helpful news by word of mouth and engage more rigorously in consumer activities (Li *et al*., 2010; Zhang *et al*., 2014). Also, these frequent visitors may lower the cost of marketing relative to obtaining first-time visitors (Shoemaker and Lewis, 1999).

Research Questions, Hypothesis Development and Methodology

Research Questions

1) Does destination image have a significant influence with tourist loyalty in Jerusalem?
2) Does destination image have a significant influence with political stability in Jerusalem?
3) Does political stability influence tourist loyalty in Jerusalem?
4) Does political stability mediate the relationship between destination image and tourist loyalty in Jerusalem?

Research Hypothesis Development

H1: Destination image has a significant positive influence on tourist loyalty.
H2: Destination image has a significant positive influence on political stability.
H3: Political stability has a significant positive influence on tourist loyalty.
H4: Political stability mediates the relationship between destination image and tourist loyalty.

RESEARCH METHODOLOGY

This study applied a quantitative method to achieve the objectives of research and answer the research questions. A research questionnaire was developed and distributed to 384 tourists who visited religious sites in Jerusalem at four different places namely Qubbat As-Sakhra, Al-Masjid Al-Aqsa, Church of the Holy Sepulchre and Tomb of the Virgin Mary. Cluster and non-probability purposive sampling technique was used in this study and data were analysed using SPSS version 22 and IBM AMOS 22.0 version 22.

RESULT

Hypothesis Testing Result of Direct Relationship of Variables

The direct relations of the hypotheses were examined using Structural Equation Modelling. As presented in Table 1, direct connection paths by 2 out 3 were found to be approved as their p-values were less than 0.05, which shows that the connections are significant. In contrast, only 1 out of 3 paths was found to be insignificant because the p-value was greater than the 0.05 cut-off. This is thus unsupported. Table 1 below explains the paths together with their statement type.

Table 1: Results of Direct Hypotheses

	Estimate	P-value	Bootstrapped (P-value)	Label
H1: Destination Image→Tourist Loyalty	.220	.000	.000	Supported
H2: Destination Image→Political Stability	-.009	.840	.840	Unsupported
H3: Political Stability→Tourist Loyalty	.188	.004	.005	Supported

Note: *p<0.05

Testing the Mediating Effect

The mediating variable in this research study is political stability. The term mediating variable in a research refers to the variable that connects the independent variable and the dependent variable identified in the study. This research is to test whether political stability construct is mediating or not, the relationship between destination image and tourist loyalty. In this regard, this study obtains the standardised regression weight and the probability values which indicate the required information about the estimate indirect effect and bootstrapping result, as shown in Table 2.

Table 2: Bootstrapping Summary of Mediation Effect

HYPOTHESES	ESTIMATE (INDIRECT EFFECT)	Bootstrapped	HYPOTHESES
H4: Destination image → Political stability→Tourist Loyalty	-0.002	0.840	Unsupported

DISCUSSION OF RESULTS

Research Question 1

The findings from this research have indicated that destination image has a positive influence on tourist loyalty. The tourism destination image refers to knowledge, beliefs, emotions, and the overall understanding of tourists toward the destination. Tourists perceive destination image through media (pre-visit) and their direct experiences (post-visit) can differ from reality since the image is formed from reality and personal perception. This clearly means that if the tourism industry in Jerusalem positively manages all the variables mentioned in this study, the industry has an opportunity to influence and retain tourist loyalty. Tourist loyalty in general can be attained if tourists are satisfied with the general destination image, and that is based on a number of factors such as the location, the environment setup, the culture, the people, service delivery and a lot more. If all these elements are positively nurtured, the level of tourist loyalty towards Jerusalem will increase and that will positively influence the number of visitations the city will experience.

In the context of Palestine, the tourism industry has not fully recovered from the negative image perceived by tourists due to the Israel-Palestine conflict, and conflict negatively influences the image of any tourist destination (Lopes, 2011). Therefore, this research hypothesis has clearly indicated that a positive image needs to be maintained in order to attain tourist loyalty. When tourists uphold a good image or perception of loyalty, the higher their chances to revisit the location and to spread a positive word of mouth to friends and family about the destination and their experience. Therefore, it is highly essential that tourists have a great travel experience as it guarantees tourists revisiting the destination. Tourists have a negative perception on the level of political stability in Palestine. In order to rectify these negative perceptions, the tourism sector in Palestine will have to consider destination branding to ensure that the other variables, image are properly represented each time tourists visit the city. The political instability in Palestine has resulted to a dent in the country's image and that has greatly affected its tourism industry. However, Jerusalem due to the city's rich ancient history, the city has a unique selling point to ensure the revival of its lost image through extensive tourism marketing to recreate a positive destination image. In the

process of reviving destination image, international tourists rely on the global media to build their perception regarding the tourism industry in Jerusalem. To be able to achieve this, it is essential to understand the impact image has on tourism. It is also important to ensure that tourists have a positive image through their experiences in Palestine to gain tourist loyalty. According to Kozak and Decrop (2009), maintaining a positive destination image is crucial in the tourism industry to attain tourist loyalty. Tourists are naturally loyal to destinations where they had an excellent experience, and when the destination met tourist expectations at all levels, then it becomes easier for tourists to visit the same destination or location again.

Research Question 2

The results indicate that political stability significantly impacts tourist perception of a destination. Therefore, it is of utmost importance to ensure that tourism locations maintain political stability in order to gain positive perception of the tourist location. Destination image directly influences tourist emotion, and these factors are negatively influenced when a destination is politically unstable.

The result of this study has indicated that political stability has a link with tourist level of satisfaction regarding a travel destination, which in turn influences tourist intention to revisit a destination. This clearly reflects the impact tourist perceived image on a destination has on their level of loyalty. The conclusion drawn shows that generally, the tourism sector is negatively affected when tourists hold a negative perception on the political environment due to the level of threat posed on their security. In the case of Palestine, the country is well known in the international community as a conflict zone because of the Israel-Palestinian political conflict which has a direct political interest on Jerusalem. Additionally, the media has done a bias reporting on the current situation of Jerusalem. Tourists have a negative perception on the level of political stability in Palestine. In other words, political instability will result to a negative influence on destination image.

Research Question 3

Political stability has a positive relationship with tourist loyalty. What is important for economic growth is political stability over time, because any violation of a stable environment threatens market stability and leads to a lower economic growth rate. Political instability poses a negative influence on tourist loyalty. Tourists are very careful when planning their next travel destination. When making a travel decision, tourists rely greatly on information available to them through various news platforms and the findings gained from these platforms influence their decision making. Tourists tend to critically assess the possible risk involved in a politically unstable travel destination, and in most cases tourists prefer an alternative destination with a stable and safe environment.

Some tourists are an exception to this rule; political instability can be a reason for tourists to visit a location if political unrest has become a thing of the past, and in such situations tourists will like to revisit a location that underwent conflict in order to feed their curiosity and to get an opportunity to explore the affected locations due to political instability. In situations like this, tourists would like to revisit the location to understand the impact of conflict in that destination (Isaac, 2018).

Political stability plays a key role in positively influencing on dependent variable of this research, and the result directly influences tourist loyalty. Several researches have discussed how political instability negatively affects the growth rate of the tourism industry. Conflict hinders growth in this industry, therefore maintaining political stability results to growth because it allows the tourism industry to create a positive brand image (destination image). If an industry can determine political stability for visitors, the possibility of gaining tourist loyalty becomes much easier. Therefore, political stability positively influences tourist loyalty.

Research Question 4

The research has hypothesized that political stability does not directly influence the relationship between destination image and tourist loyalty. Political stability is not an important variable in the relationship between destination image and tourist loyalty in Jerusalem. Thus, the research findings have strongly concluded that political stability between destination image and tourist loyalty is not supported. Previous studies maintain that reports of political stability will negatively affect the image of the destination as well as the intention to recommend it (Alvarez & Campo, 2014). Previous research (C Michael Hall, Timothy & Duval, 2004) has found that destination image affects travellers' behaviours and intentions.

Jerusalem welcomes millions of travellers for religious purposes; therefore, the findings also suggest that there needs to be a much deeper reason for tourist travel to a destination not just leisure travels. The findings also have strongly indicated that tourist travel is negatively influenced by the political situation of a destination if the travel is leisure based solely (vacation etc.); however, if the travel is for religious purposes and business transactions, the impact is very less due to the traveller's high level of motivation for the travel.

IMPLICATIONS OF STUDY

Theoretical Implication

In relationship marketing theory, new customer attraction incurs more costs compared to the retention of existing ones. In the field of tourism management, researchers revealed that a slight increase in tourist loyalty leads to a significant increase in profitability in the industry (Bowen and Shoemaker, 1998).

Nevertheless, the development and sustenance of tourist loyalty is quite challenging as evidenced by Wang et al. (2006). This is what urged the researcher to conduct this study in order to provide a relationship marketing model that can effectively be utilized to secure tourist loyalty in Jerusalem. The present study specifically extends literature on destination image by examining their effect on political stability and tourist loyalty. Such relationship indicates the requirement to shed light on whether or not the variables improve tourist loyalty in the tourism industry. Literature argues that the measure of destination image is reflective of the overall evaluation of visitation to Jerusalem. The findings of this study indicate that image is not an important determinant in this context.

Managerial Implication

Based on the perspective of management, several significant implications can be derived from the research findings. In the tourism industry, there is a keen focus on improving the positive image of Jerusalem to increase influx of guests, more revenue and sustainability.

This research emphasizes the importance of developing and maintaining relationship with tourists through activities that lead to tourist loyalty in Jerusalem. The significance of the study variables is to improve political stability and keep in mind that the benefits from destination image has to be enhanced through quality interactions. This is because tourists are also aware of the benefits offered by travel destinations. Thus, it is important for tourist destinations to establish a strong relationship and to maintain it with tourists. The study findings confirm that when tourists are convinced of the high-quality relationships with their service providers, they have a higher tendency to be loyal to them.

According to Crosby et al. (1990), relationship quality is the best determinant of the likelihood that the customer seeks future contact with the same destination service provider. This supports the notion that in order to revive the tourism industry in Jerusalem, destination image should be integrated to remain competitive in the market because in doing so, they will maintain their offers effectively, particularly when offering financial incentives through holiday discounted packages.

CONCLUSION AND RECOMMENDATIONS FOR FURTHER RESEARCH

The results of the structural equation modelling, found that destination image has a significant relationship with tourist loyalty, but there is a negative relationship between destination image and political stability. Political stability does not act as a mediator in the relationship between destination image and tourist loyalty. Tourism managers should focus on improving the positive image of Jerusalem to

increase influx of guests, more revenue, and sustainability because successful tourism development is closely related to lower risk at a destination.

Future studies may also extend the understanding of the study constructs by employing a different methodology. For example, future studies may examine the role of satisfaction in different service settings to determine whether or not the results can be generalised to attain excellent service.

Moreover, the findings may differ when they are considered in other cultural groups. This indicates a need for future studies to conduct cross-cultural research to determine whether or not premium customers have the same behaviour all over the globe, or whether tourists who visit Jerusalem are unique due to their culture. Sheth and Parvatiyar (1995), stressed on culture as a significant issue in consumer-business relationships. The findings attained during this study are relevant for tourism service providers globally because it is not limited to Jerusalem alone as a tourist destination. Added to the above recommendations, it may also be useful to examine the differences between tourist places in Palestine and their inferior counterparts. Despite the fact that the study model provides an effective relationship marketing, several other areas may be examined by future studies. For instance, the results of this study are confined to tourist places in Jerusalem; future studies can include other tourist places in Palestine and conduct a comparison.

REFERENCES

Ake, C. (1975). A definition of political stability. *Comparative Politics*, 7(2), 271-283.

Akın, E., & Demirel, Y. (2011). An empirical study: Are corporate image relation satisfaction and identification with corporate influential factors on effectiveness of corporate communication and consumer retention. *European Journal of Social Sciences*, 23(1), 128-153

Bowen, J. T., & Shoemaker, S. (1998). Loyalty: A strategic commitment. *Cornell Hotel & Restaurant Administration Quarterly*, 39, 12-25.

Bravo, R., Montaner, T., & Pina, J. M. (2009). The role of bank image for customers versus non-customers. *International Journal of Bank Marketing*, 27(4), 315-334.

Çakmak, E., & Isaac, R. K. (2016). The state of Palestine: The newest country probably with the oldest nation brand in the world. In: R. K. Isaac, C. M. Hall, & F. Higgins-Desbiolles (Eds.), *The politics and power of tourism in Palestine* (pp. 228–243). London and New York: Routledge.

Crosby, L., Evans, K., & Cowles, D. (1990). Relationship quality in services selling: an interpersonal influence perspective. *The Journal of Marketing*, 54(3), 68-81.

Dhillon, J. S. (2013). Brand Loyalty in Hospitality Sector in India: A Case study of Indian Hotels in Goa-Kerala. *Journal of Business and Management*, 9(3), 58-63.

Gefen, D., & Straub, D. (2003). Managing user trust in B2C e-services. *e-Service*, 2(2), 7-24.

Isaac, R. K., Hall, C. M., & Higgins-Desbiolles, F. (2016). Palestine as a tourism destination. In: R. K. Isaac, C. M. Hall, & F. Higgins-Desbiolles (Eds*.), The*

politics and power of tourism in Palestine (pp. 15–34). London and New York: Routledge.

Kandampully, J., & Hu, H. (2007). Do hoteliers need to manage image to retain loyal customers? *International Journal of Contemporary Hospitality Management*, 19(6), 435-443. https://doi.org/10.1108/09596110710775101.

Krippendorf, J. (1982). Towards new tourism policies; The important of environmental and sociocultural factors. *Tourism Management*, 135-137.

Loureiro, S. M. C., & González, F. J. M. (2008). The importance of quality, satisfaction, trust, and image in relation to rural tourist loyalty. *Journal of Travel & Tourism Marketing,* 25(2), 117-136.

Mohajerani, P., & Miremadi, A. (2012). Customer satisfaction modelling in hotel industry: a case study of Kish Island in Iran. *International Journal of Marketing Studies*, 4(3), 134.

Nguyen, N. (2006). The collective impact of service workers and servicescape on the corporate image formation. *International Journal of Hospitality Management*, 25(2), 227-244.

Oliver, R. L. (1999). Whence Consumer Loyalty? *Journal of Marketing*, 63, 33–44.

Pina, J., Martinez, E., De Chernatony, L., & Drury, S. (2006). The effect of service brand extensions on corporate image: an empirical model. *European Journal of Marketing*, 40(1/2), 174-197.

Pipia, S., & Pipia, S. (2020). *Challenges of Religious Tourism in the Conflict Region: An Example of Jerusalem*. In E. Alaverdov & M. Bari, *Global Development of Religious Tourism* (pp. 135–148). USA: IGI Global.

Saleem, H., & Raja, N. S. (2014). The impact of service quality on customer satisfaction, customer loyalty and brand image: Evidence from hotel industry of Pakistan. *Middle-East Journal of Scientific Research*, 19(5), 706-711.

Sheth, J. N., & Parvatiyar, A. (1995). The evolution of relationship marketing. *International business review*, *4*(4), 397-418.

Shoemaker, S., & Lewis, R. C. (1999). Customer loyalty: the future of hospitality marketing. *International Journal of Hospitality Management*, 18(4), 345-370.

Suleiman, J. S. H., & Mohamed, B. (2011). Factors impact on religious tourism market: The case of the Palestinian territories. *International Journal of Business and Management*, 6(7), 254.

Wang, W. H., Liang, C. J., & Wu, Y. D. (2006). Relationship bonding tactics, relationship quality and customer behavioural loyalty--behavioural sequence in Taiwan's information services industry. *Journal of Services Research*, *6*(1).

Zhang, H., Fu, X., Cai, L. A., & Lu, L. (2014). Destination image and tourist loyalty: A meta-analysis. *Tourism Management*, 40, 213-223.

Received: 28th Feb 2023. Accepted: 31st March 2023

PLANNING MALAYSIA:
Journal of the Malaysian Institute of Planners
VOLUME 21 ISSUE 1 (2023), Page 215 – 231
(NOT AVAILABLE)

Article unavailable.

Pages 215-231 were intentionally left blank
to preserve the document's numbering.

Not available

Not available

Not available

Not available

Not available

Not available

Not available

Not available

PLANNING MALAYSIA:
Journal of the Malaysian Institute of Planners
VOLUME 21 ISSUE 1 (2023), Page 232 – 246

WHAT IS THE PERSPECTIVE OF MILLENNIAL TOURISTS ON THE REVITALIZATION OF TOURISM DEVELOPMENT IN NEW IKN?

Jiuhardi Jiuhardi[1], Rosyadi Rosyadi[2], Tri Cicik Wijayanti[3], Fitriadi Fitriadi[4]

[1,4]*Faculty of Economics and Business,*
UNIVERSITAS MULAWARMAN, SAMARINDA, INDONESIA
[2]*Faculty of Economics and Business,*
UNIVERSITAS TANJUNGPURA, PONTIANAK, INDONESIA
[3]*Faculty of Economics and Business,*
UNIVERSITAS GAJAYANA, MALANG, INDONESIA

Abstract

The election of East Kalimantan as the new capital city is an optimistic momentum for development stakeholders, especially the tourism industry. The analogy, one of the benchmarks in tourism excellence can be assessed from efforts to change the crisis of tourist confidence into collective certainty. This scientific work aims to detect the factors that influence tourist attractiveness in the new IKN. The core of tourist attraction is built through access to information, tourism facilities, value added tourism, tourism tariffs, and market orientation. The case revolves around six destination clusters based on four IKN tourism buffer zones: Archipelago Zero Point, Mentawir Tourism Village, Bangkirai Hill, Pampang Cultural Village, Tanah Merah Beach, and Balikpapan Botanical Garden. Interview data collection involved 438 millennial tourists from domestic and foreign countries. In principle, the linear regression method is applied to investigate the relationship between variables. As a result, facilities, added value, tariffs, and market orientation have a positive impact on tourist attractiveness. Other statistical outputs clarify that access to information actually has no effect on tourist attractiveness. This paper also providing holistic findings on tourism revitalization for the future agenda.

Keywords: Tourism Industry, Millennial Travelers, Destination Clusters, Regression, Indonesian National Industry Association

[4] Senior lecturer at Universitas Mulawarman. Email: fitriadi@feb.unmul

INTRODUCTION

The plan taken by the Indonesian government authorities by relocating the government center from Jakarta to the new Archipelago Capital (IKN) in the East Kalimantan region is seen as a long–term solution (Van de Vuurst & Escobar, 2020). Even though the actualization of the transfer will take effect in 2045, the supporting facilities have been designed since 2022 (Akhmadi & Himawan, 2021). This movement is also an alternative for equitable development which allows a multiplier effect sustainably. Not only economic urgency, social interaction, infrastructure integration, and administrative office transfers, but also cultural transfer. Related to culture, can not be separated from the element of tourism (Alvarez-Sousa, 2018; Noonan, 2022; Shahzalal, 2016; Viken et al., 2021).

In the tourism context, the reputation of tourist destinations in IKN is still less shining than the 10 priority domestic tours, for example: Labuan Bajo–East Nusa Tenggara, Bromo Tengger Semeru–East Java, Borobudur–Central Java, Tanjung Lesung–Banten, Seribu Islands–Jakarta, Morotai Island –North Maluku, Wakatobi–Southeast Sulawesi, Mandalika–West Nusa Tenggara, Tanjung Kelayang–Bangka Belitung, and Lake Toba–North Sumatra (Lee & Syah, 2018; Wulung et al., 2021). According to Antara & Sumarniasih (2017), Endi & Prasetyo (2020), and Widanta (2021), all destinations from Bali are world-recognized, well-known objects and have international tourist status.

The less popular IKN tourism title is triggered by the lack of access to information, the facilities that are not optimal, the added value of tourism is not fully prominent, the tariffs are seen as expensive, the market orientation is not aggressive, and the mobility of tourist attractions. Ideally, the essence of tourism is to introduce civilization, share insights, channel local wisdom, and recruit potential human resources to be empowered, so that the degree of tourism in an area can grow competently (Heksarini et al., 2020).

Talking about the millennial generation in making travel decisions is certainly different from other ages. In outline, they are very selective in considering whether a tourist destination is worth visiting or not. The level of knowledge of the millennial generation of tourism conditions is also more complex (Sofronov, 2018). The options for selecting tourist areas are determined by many indicators. One of them is the absolute benefit after traveling (Chen & Petrick, 2016).

The importance of the tourism sector to development is a symbol of the progress of the center of the country. This is because the role of tourism can create much integration of vital sectors, including financial services, transportation services, hotel accommodation and trade. If the tourism cluster is not covered optimally, it can isolate the enthusiasm of the visitors. Based on the combination of the external and internal pillars described above, it will affect the existence of

IKN tourism. The objectivity in this scientific work is to identify factors related to tourist attraction in the new IKN.

LITERATURE REVIEW

Tourist Attraction

Balkaran (2013) applying destination attractiveness in the "competitive advantage" literature, where the components that visitors often respond to in the tourism system are competitiveness and the quality of the attractions displayed. In the "tourist preference theory", the most striking primary attributes come from safety, service and information, cost of living, and nominal price (Chang & Chang, 2015).

Specifically, tourist attraction is also constructed by the diversity of festival atmospheres, creativity and characteristics, facilities, service management standards, security guarantees, tourist expectations, and social values embodied in the destination landscape (Li & Yu, 2023). Overall, tourism activity depends on the attractiveness of visitors who react to their ambitions and behavior with the size of the time or duration of the tour (e.g. Botti et al., 2008; Richards, 2002). Moreover, even if an area does not have impressive tourism performance, it can be starting from gradual and revolutionary consistency to produce integrated tourism (Ilmi et al., 2022).

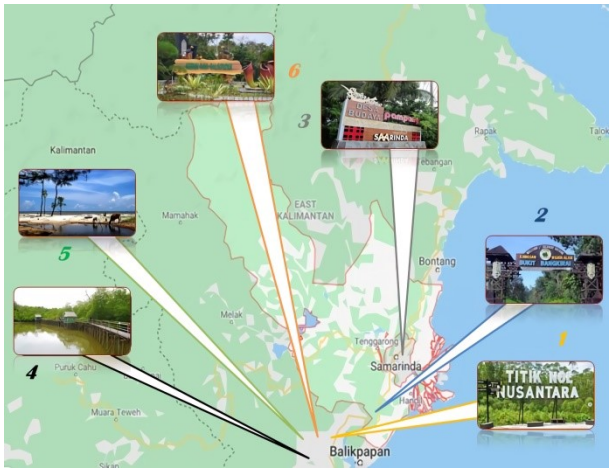


Figure 1: Map of 6 Destinations around IKN
Source: Own

In its development, six tourism points around the IKN area located in East Kalimantan which were highlighted by the government including: Archipelago Zero Point/Titik Nol Nusantara and Mentawir Tourism Village in Sepaku (Penajam Paser Utara), Bangkirai Hill–Samboja (Kutai Kartanegara),

Pampang Cultural Village–North Samarinda (Samarinda), Tanah Merah Beach–Tanjung Harapan (Kutai Kartanegara), and Balikpapan Botanical Gardens–North Balikpapan (Balikpapan). With spatial distances and travel times that are close to each other, it makes it easier for tourists to expose, find sensations, and explore these destinations. The six tourist objects have varied types. Archipelago Zero Point is classified as artificial tourism, Mentawir Tourism Village is categorized as historical civilization tourism, and Pampang Cultural Village is categorized as cultural tourism. Meanwhile, Tanah Merah Beach, Bangkirai Hill, and the Balikpapan Botanical Garden are classified as natural tourist habitats.

Information Access

Access to information in the success of tourism as an inherent key. Its function cannot be separated from one another. Eichhorn et al. (2008), Majeed et al. (2020), and Yen et al. (2021) believes that by activating access to information, it can drive a better tourism scheme. Search for information that is communicative, actual, sophisticated, precise, and meets the requirements, fully enabling access to destinations. Tourist attraction that is poured from the happiness of tourists, generally based on administrative organization and widespread accessibility. That way, the flow of tourism can work efficiently. It is logical to set up the first hypothesis as follows: *Hypothesis 1–Access to information has a positive impact on tourist attractiveness*.

Tourism Facilities

The effectiveness of synergistic facilities automatically increases tourist attractiveness. Ardianto (2019) and Wiweka & Arcana (2019) focusing on the relationship between facility management and tourist hegemony. In practice, this can reduce the tourism acceptance gap, attract interest, and stimulate the majority of visitors to come to the destination. In substance, geographical elements become obstacles if they are not driven by strategic facilities.

The pattern of travel that adopts the distribution and supply of facilities will determine the experience of tourists from where they come from to the destination or vice versa. Tourism service facilities that are concentrated on the involvement and control of architecture, building reconstruction techniques, and atmosphere, are the triggers for tourist arrivals (Lohmann & Netto, 2016; Wang et al., 2023). It makes sense to write the second hypothesis as follows: *Hypothesis 2–Facilities have a positive impact on tourist attractiveness*.

Value Added Tourism

Operationally, Kachniewska (2014) define value added to tourism. In the realization of tourism value creation, the process demonstrates and offers a set of marketing tools.

As an illustration, a destination that is fragmented into a competitive industry has the opportunity to change and open up visitor attractions (Tahar et al., 2018). This opportunity is very flexible with the product characteristics provided by tourist attractions. At the same time, profit and revenue are often the ultimate mission of the tourism business (Boz, 2011). Ultimately, personalization travelers like perceived usability preferences best (Nysveen et al., 2003). Furthermore, the foundation in the third hypothesis is in the following form: *Hypothesis 3–Value added has a positive impact on tourist attractiveness*.

Tourism Tariffs

Issues related to the determination of entrance fees to destinations are often discussed from various papers. Its relevance concerns the value chain and tourism production (Sharpley & Telfer, 2008). For countries that target income based on the tourism structure, of course they depend on the routine benefits of tourists (Eugster et al., 2022). On the contrary, Shimizu & Hisayuki (2022) argues that if the national tourism regulations apply a strict tariff setting pattern, the welfare and wage ratio will actually decline. However, reforms to tourism costs can reduce environmental degradation.

Beladi et al. (2015), Kim et al. (2006), and Mousavi et al. (2021) explained that in economic development, tourism expansion and aspects of tourism tariffs reinforce each other. Tourism tariffs in developing markets, on a small and open scale, will elaborate on consumption, taxes and exchange rates in the contemporary term. Government intervention through the provision of appropriate tariffs can control hotel price monopolies, balance price elasticity, and control the tourism mechanism. The corridor in the fourth hypothesis is presented in the following scenario: *Hypothesis 4–Tariffs have a positive impact on tourist attractiveness*.

Market Orientation

Tourism business orientation can work when it is based on services. Entities in the tourism market are characterized by transitions in the balance of supply and demand that are realized by satisfying the needs of tourists. Within the scope of tourism, services operating in the tourism market must be packaged and diversified in an inclusive manner. Tourism actors must understand all the consequences and reciprocal effects between marketing methods and market implementation. In the topic of tourist satisfaction and behavioral intention, these two situations are either opposite or compatible. Often, the orientation of the tourism market is irrational, where travel agents do not directly mediate the wishes of visitors. Universally, companies convert market orientation into value perceived by tourists (Anabila et al., 2021; Bigné et al., 2005; Jaensson, 2015; Panasiuk, 2021; Polo Peña et al., 2013; Tsiotsou & Vlachopoulou, 2011). Referring to the complications of the concept above, the following hypothesis is

formulated: *Hypothesis 5–Market orientation has a positive impact on tourist attractiveness*.

RESEARCH METHODOLOGY

Data and Sampling

The primary data set is collected from surveys. The interview phase was carried out offline by directly inviting resource persons. The interview equipment consisted of: a questionnaire containing a list of questions, a smartphone to record all conversations and documentation, as well as a notebook to record complementary evidence.

The specified sample is the cluster population. The instrument in the cluster sample is set based on the millennial generation version of foreign and national tourists. From a demographic point of view, this group is aged between 29–42 years or those born in 1981–1994. Other criteria of informants include: being willing to be interviewed, filling out questionnaires without coercion, being verified as having visited all IKN tours, and conducting professional assessments.

Table 1: Estimates on the Sample

Destinations	Sample	Percentage
Archipelago Zero Point	57	13%
Mentawir Tourism Village	30	6.8%
Bangkirai Hill	69	15.8%
Pampang Cultural Village	111	25.3%
Tanah Merah Beach	77	17.6%
Balikpapan Botanical Gardens	94	21.5%
Total (n)	***438***	***100%***

Source: compilation of government publications

The sample volume is 438 units. The proportion of the sample is described in Table 1. Observations follow the trend of the highest level of visits based on official government documents. Concretely, the intensity of tourist visits is most dominant during the holiday season: December 2022 to January 2023.

Parameter

Quantitative approaches are used in the capacity of empirical testing. The variable model is divided into two phases: independent and dependent. Each variable has an articulation that is modified according to the direction of the relationship. The definitions on the variables are summarized in Table 2.

Table 2: Variable Content

Item	Dimensions	Author(s)
Dependent variable		

Tourist attraction	Ancillary services, amenities, accessibilities, and beauty	Balkaran (2013), Botti et al. (2008), Chang & Chang (2015), Ilmi et al. (2022), Li & Yu (2023), Richards (2002)
Independent variable		
Information access	Maintenance of information channels, communicative, complaints skills, protecting tourist identity, and problem-solving	Eichhorn et al. (2008), Majeed et al. (2020), Yen et al. (2021)
Tourism facilities	Travel agent services, tour operators, transportation, hotels, restaurants and bars, clean water installations, places of worship, sports halls, spa, souvenir shops, and health facilities	Ardianto (2019), Lohmann & Netto (2016), Yen et al. (2021), Wiweka & Arcana (2019), Wang et al. (2023)
Value added tourism	Innovation, adaptability, tourism community training, destination certification, return visits, and art festivals	Boz (2011), Kachniewska (2014), Nysveen et al. (2003), Tahar et al. (2018)
Tourism tariffs	Ticket prices, parking fees, pricing, and tariff compliance with the product	Beladi et al. (2015), Eugster et al. (2022), Kim et al. (2006), Mousavi et al. (2021), Sharpley & Telfer (2008), Shimizu & Hisayuki (2022)
Market orientation	Coordination between functions, competitor orientation, promotion, tourist orientation, and promotion commitment	Anabila et al. (2021), Bigné et al. (2005), Jaensson (2015), Panasiuk (2021), Polo Peña et al. (2013), Tsiotsou & Vlachopoulou (2011)

Implicitly, the dependent variable is indicated by the independent variable. The independent variable is transformed and predicts the dependent variable. Each variable is represented by a mutually synchronized relationship.

Analysis Method

After the questionnaire was obtained, the data was extracted via a Likert scale. The psychological perception of the respondents was confirmed into ten points, where 10: "very adequate" to 0: "inadequate". Then, the survey data was extracted using statistical software. Linear regression analysis calculates quantitative findings. In regression interpretation, statistical assumptions are tabulated in 3 steps. First, construct test (reliability), sample comparative test (mean), and test the accuracy or validity (product moment correlation). The second is the model fit test (determination) and the third is the partial test (T–statistics and path coefficient).

ANALYSIS AND DISCUSSION

Table 3 reports the characteristics of informants based on nationality, gender, age, experience of visiting IKN destinations, and work background. In detail, the majority of tourists come from domestic (42.5 percent) and from outside Indonesia or are still within the scope of Asia (23.3 percent). Among them, only a few tourists came from Africa (0.9 percent) and Europe (2.1 percent). This survey is aimed at tourists from seven continents. In fact, tourists at the IKN are dominated by men (55.5 percent) rather than women (44.5 percent).

Table 3: Resource Person Profiles

	Frequency (F)	**Percentage**
Citizenship:	***438***	***100%***
• Domestic	186	42.5%
• Europe	9	2.1%
• Asia (outside Indonesia)	102	23.3%
• South America	29	6.6%
• North America	33	7.5%
• Africa	4	0.9%
• Australia	75	17.1%
Gender:	***438***	***100%***
• Female	195	44.5%
• Male	243	55.5%
Age:	***438***	***100%***
• 29 years	80	18.3%
• 30 years–33 years	41	9.4%
• 34 years–37 years	157	35.8%
• 38 years–41 years	119	27.2%
• 42 years	41	9.4%
Visiting experience:	***438***	***100%***
• < 3x	100	22.8%
• > 3x	338	77.2%
Professional background:	***438***	***100%***
• Employee	195	44.5%
• Entrepreneurship	166	37.9%
• Student	77	17.6%

Source: Own

So far, the most prominent respondents are 34–37 years (35.8 percent), 38–41 years (27.2 percent), and 29 years (18.3 percent). The rest, only 9.4 percent, are aged 30–33 or 42 years. Uniquely, since the destination area has reopened after the lock-down policy which before closed and restricted tourists from January 2021 to December 2022, now the majority of destinations in IKN are favorites. This is evident from the surge in tourists, where 77.2 percent admitted that they had visited more than 3 times. Meanwhile, 22.8 percent of

tourists visited the tourist spot less than 3 times. Table 3 also claims that 44.5 percent of the interviewees have careers as employees, 37.9 percent are entrepreneurs, and 17.6 percent are still school and campus students.

Table 4 corrects the eligibility of the questionnaire referring to the millennial tourist experience. The first evaluation is reliability–mean–validity. The reliability test measures the reliability and consistency of the questionnaire, where the premise is ≥ 0.7. Generally, the two variables exceed the specified reliability limits or tourist attractiveness ($\alpha = 0.739$) and market orientation ($\alpha = 0.775$), so that "reliability is sufficient". Interestingly, the other four variables have an alpha score > 0.8. This suggests that tests on access to information ($\alpha = 0.850$), tourism facilities ($\alpha = 0.896$), value added tourism ($\alpha = 0.812$) and tourism tariffs ($\alpha = 0.867$) consistently present “strong reliability”. In the mean test, visualized ordinal data based on the Likert scale. Tourist attraction is only slightly different from other variables. As a result, the average mean on tourist attraction is *4.96* or "moderate" and it is concluded that it is close to "inadequate". Based on per dimension in tourist attraction, the highest beauty ($\bar{x} = 5.94$) and the smallest is accessibility ($\bar{x} = 4.13$). On the other hand, five variables: access to information ($\bar{x} = 6.55$), tourism facilities ($\bar{x} = 6.28$), value added tourism ($\bar{x} = 6.57$), tourism tariffs ($\bar{x} = 5.99$), and market orientation ($\bar{x} = 6.28$) has a mean score that is close to "very adequate". The peak, from the highest to the lowest dimension based on the five is very varied. For access to information: problem-solving ($\bar{x} = 6.71$) and complaint skills ($\bar{x} = 6.38$), tourism facilities: hospitality ($\bar{x} = 8.50$) and transportation ($\bar{x} = 4.76$), value added tourism destination certification ($\bar{x} = 8.38$) and tourism community training ($\bar{x} = 4.77$), tourism tariffs: pricing ($\bar{x} = 6.70$) and ticket prices ($\bar{x} = 5.23$), and market orientation: competitor orientation ($\bar{x} = 7.92$) and discount ($\bar{x} = 4.89$).

Table 4: Matrix of Questionnaire Eligibility

Item/Dimensions	Reliability (α)	Mean ($\bar{x}$)	Validity (r_{xy})
Tourist attraction:	***.739***	***4.96***	
• Ancillary services		4.31	.888
• Amenities		5.44	.814
• Accessibilities		4.13	.774
• Beauty		5.94	.906
Information access:	***.850***	***6.55***	
• Maintenance of information channels		6.40	.747
• Communicative		6.65	.725
• Complaints skills		6.38	.855
• Protecting tourist identity		6.59	.756
• Problem-solving		6.71	.824
Tourism facilities:	***.896***	***6.28***	
• Travel agent services		6.02	.854
• Tour operators		5.43	.837
• Transportation		4.76	.915

• Hotels		8.50	.904
• Restaurants and bars		7.62	.810
• Clean water installations		5.86	.883
• Places of worship		6.53	.922
• Sports halls		7.14	.756
• Spa		5.55	.931
• Souvenir shops		6.44	.763
• Health facilities		5.25	.814
Value added tourism:	***.812***	***6.57***	
• Innovation		7.64	.879
• Adaptability		6.60	.920
• Tourism community training		4.77	.722
• Destination certification		8.38	.552
• Return visits		4.53	.641
• Art festivals		7.51	.707
Tourism tariffs:	***.867***	***5.99***	
• Ticket prices		5.23	.608
• Parking fees		6.38	.735
• Pricing		6.70	.641
• Tariff compliance with the product		5.66	.706
Market orientation:	***.775***	***6.28***	
• Coordination between functions		5.47	.743
• Competitor orientation		7.92	.838
• Discount		4.89	.794
• Tourist orientation		6.01	.609
• Promotion commitment		7.11	.710

Source: Own

The validity test is to assess the quality of the questionnaire, where the validity must be above the *r–table* (*r–value > 0.119*). Table 4 shows that of the 35 dimensions in the six variables above, it was found that the highest r–value score was spa (r_{xy} *= 0.931*), while the smallest *r–value* was destination certification (r_{xy} *= 0.552*). Even though the points on all dimensions exceeded the threshold, "spa" symbolizes the accuracy of a measuring instrument at the level of mastery in certain materials that is in line with the understanding of tourists. In other words, this dimension is so dominant than the other 34 dimensions.

Figure 2 reflects the causality relationship. The determination test is to calculate the proportion of variation in the dependent variable simultaneously, while the partial test is to determine the individual strength of each independent variable against the dependent. Based on the 5 percent probability level ($\rho <$ *0.05*), confirms that the empirical findings follow the proposed hypotheses 2, 3, 4, and 5, but eliminates hypothesis 1. Referring to the standard *t–table = 1.789*, there is a positive influence between tourism facilities (*t–value = 2.016*), value added tourism (*t–value = 4.431*), tourism tariffs (*t–value = 3.185*) and market orientation (*t–value = 2.088*) on tourist attractions. The strongest linkage is the influence of tourist tariffs on tourist attractiveness, where ρ *= 0.000*. Access to

information has no impact on tourist attractiveness because *t–value = 1.259* or smaller than the provisions. The coefficient of determination (R^2) of *0.937* concludes that the strength of tourist attraction is determined by all variables. The error value outside the discussed model is *0.063*.

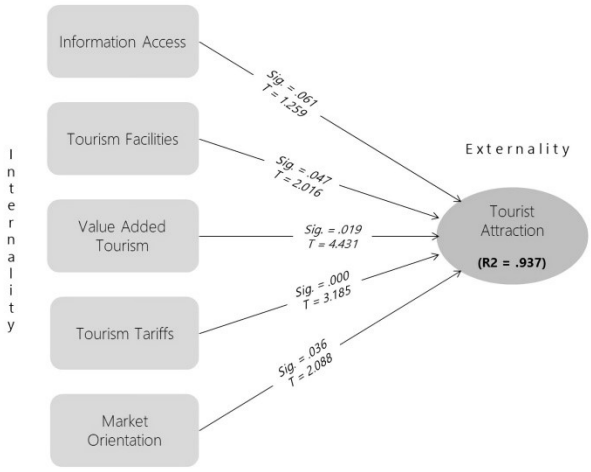


Figure 2: Projection from Regression
Source: Own

Amid the nuances of tourism, Biswas et al. (2020), Genç & Genç (2017), Joseph et al. (2022), Kirom et al. (2018), Panasiuk (2021), Pandža Bajs (2015), Putri et al. (2021), Raimkulov et al. (2021), Vengesayi et al. (2009), and Yen et al. (2021) examines tourist attraction driven by access to information, tourism facilities, value added tourism, tourism tariffs, and market orientation. Simultaneously, openness management influences a large part of the attractiveness of destinations across countries. At Hazrat Shahjalal–Bangladesh International Airport, the gap in tourist satisfaction can be reduced with relevant informational advertising. For the case of backwater tourism in Kerala–India, facility maintenance is able to maintain tourist interest and awareness. The core determinant of the attractiveness of holidaymakers to Zimbabwe, is generally supported by equal and complementary facilities. For example, Croatian tourists' loyalty to destinations in Dubrovnik is fueled by the destination's display of added value. The actions and satisfaction of tourists when visiting Malang–Indonesia are always synonymous with the capital and resources channeled by the tourism ecosystem. The image of the destination and the attractiveness of the price revived the participation of American tourists who repeatedly visited the Silk Road–Uzbekistan tour. One of the motivations for tourists to be interested in visiting the Patuha Mountains–West Java (Indonesia) is dominated by flash packers based on the visiting fee package.

In a tourism market that is oriented towards a global environment, market segmentation is not only focused on innovation, promotion or profit, but on overcoming and maintaining market position. In Poland, for example, tourism services offered and accompanied by appropriate marketing orientation to tourists are the most fundamental things in the liberalization of tour operators.

CONCLUSION

This work investigates the causality between tourism internalities (access to information, facilities, added value, tariffs, and market orientation) to external tourism which implies tourist attraction. Comprehensively, the more tourism facilities, value added tourism, tourism tariffs, and market orientation are leveled, the more positive impact with a significant direction on tourist attractiveness for the long–term. Yet, although access to information has a significant effect, it does not affect tourist attractiveness.

Theoretical implications provide critical input for IKN tourism to upgrade access to information skillfully. Further implications lead to tourism stakeholders who must be sensitive in taking and determining extra policies in handling destinations. Therefore, future research proposes contributions from academics to consider internal risks beyond the discussion highlighted in the sustainability of tourist attractions. In addition to variable dimensions, sample determination also considers and is distributed across tourists.

REFERENCES

Akhmadi, M. H., & Himawan, A. R. (2021). Determination of financial feasibility of Indonesia's new capital road construction project using scenario analysis. *Planning Malaysia, 19*(3), 190–201.

Ardianto, E. (2019). Culture, technology, and tourism (CTT) theory: An ontological perspective. *Global Research on Tourism Development and Advancement, 1*(1), 50-61.

Alvarez-Sousa, A. (2018). The problems of tourist sustainability in cultural cities: Socio-political perceptions and interests management. *Sustainability, 10*(2), 503.

Anabila, P., Achiriga, V., Okpattah, B., & Asare, S. (2021). Market orientation and behavioural intentions of tourists in Ghana's tourist destinations: The mediation role of tourist satisfaction. *Journal of Strategic Marketing, 31*(1), 99-115.

Antara, M., & Sumarniasih, M. S. (2017). Role of tourism in economy of Bali and Indonesia. *Journal of Tourism and Hospitality Management, 5*(2), 34-44.

Balkaran, S. (2013). The application of the theory of visitor attractions and its impact on the competitive advantage of the tourism sector in Durban, South Africa. *Journal of Economics and Behavioral Studies, 5*(8), 546-552.

Beladi, H., Chao, C-C., & Laffargue, J. P. (2015). Tariff and consumption tax reforms in a developing tourism economy. *Journal of International Trade and Economic Development, 24*(6), 822-834.

Bigné, J. E., Andreu, L., Küster, I., & Blesa, A. (2005). Quality market orientation: Tourist agencies' perceived effects. *Annals of Tourism Research, 32*(4), 1022-

1038.

Biswas, C., Omar, H. & Rashid-Radha, J. Z. R. (2020). The impact of tourist attractions and accessibility on tourists' satisfaction: The moderating role of tourists' age. *GeoJournal of Tourism and Geosites, 32*(4), 1202–1208.

Botti, L., Peypoch, N., & Solonandrasana, B. (2008). Time and tourism attraction. *Tourism Management, 29*(3), 594-596.

Boz, M. (2011). Leakages and value added in international tourism revenues; Tourism satellite account as a measurement method. *International Journal of Business and Social Science, 2*(24), 198-206.

Chang, J-R., & Chang, B. (2015). The development of a tourism attraction model by using fuzzy theory. *Mathematical Problems in Engineering, 2015*, 643842.

Chen, C.-C., & Petrick, J. F. (2016). The roles of perceived travel benefits, importance, and constraints in predicting travel behavior. *Journal of Travel Research, 55*(4), 509–522.

Eichhorn, V., Miller, G., Michopoulou, E., & Buhalis, D. (2008). Enabling access to tourism through information schemes?. *Annals of Tourism Research, 35*(1), 189-210.

Endi, F., & Prasetyo, D. (2020). Factors influencing french tourists to visit Bali. *Tourism Research Journal, 4*(1), 25-44.

Eugster, J., Jaumotte, F., MacDonald, M., & Piazza, R. (2022). The effect of tariffs in global value chains. *IMF Working Paper, No. 2022/040*.

Genç, R., & Genç, E. A. (2017). Market-oriented innovations in tourism. *Research in Hospitality Management, 7*(1), 51–58.

Heksarini, A., Maria, S., & Lestari, D. (2020). Knowledge management to organizational innovation tourism development from Samarinda City, Indonesia. *Technology Reports of Kansai University, 62*(9), 5471-5479.

Ilmi, Z., Asnawati, A., Judiarni, J. A. Sampeliling, A., Haribowo, R., & ZA, S. Z. (2022). What drives the tourism industry in Samarinda? an empirical evidence. *GeoJournal of Tourism and Geosites, 43*(3), 976–985.

Jaensson, J. E. (2015). Market orientation in the tourism industry. In: *Noble, C. (eds) Proceedings of the 1999 Academy of Marketing Science (AMS) Annual Conference*. Developments in Marketing Science: Proceedings of the Academy of Marketing Science. Springer, Cham.

Joseph, L. C., Soundararajan, V., & Parayitam, S. (2022). The relationship between attraction, perception of service, opportunities and tourist satisfaction in backwater tourism in Alappuzha district of Kerala in India. *Tourism and Hospitality Research, 22*(3), 314–335.

Kachniewska, M. (2014). Tourism value added creation through a user-centric context-aware digital system. *Ekonomiczne Problemy Turystyki, 4*(28), 103-118.

Kim, H. J., Chen, M. H., & Jang, S. S. (2006). Tourism expansion and economic development: The case of Taiwan. *Tourism Management, 27*(5), 925–933.

Kirom, N. R., Sudarmatin, S., & Putra, I. W. J. (2018). The influence of tourist attractions towards the tourists' satisfaction. *KnE Social Sciences, 3*(3), 270–288.

Li, J., & Yu, G. (2023). Constructing the festival tourist attraction from the perspective of Peircean semiotics: The case of Guangzhou, China. *PloS ONE, 18*(2), e0282102.

Lee, J. W., & Syah, A. M. (2018). Economic and environmental impacts of mass tourism on regional tourism destinations in Indonesia. *The Journal of Asian Finance, Economics and Business, 5*(3), 31–41.

Lohmann, G., & Netto, A. P. (2016). *Tourism theory: Concepts, models and systems*. CABI: Oxfordshire.

Majeed, S., Zhou, Z., Lu, C., & Ramkissoon, H. (2020). Online tourism information and tourist behavior: A structural equation modeling analysis based on a self-administered survey. *Frontiers in Psychology, 11*, 599.

Mousavi, E. S., Hafezalkotob, A., Makui, A., & Sayadi, M. K. (2021). Hotel pricing decision in a competitive market under government intervention: A game theory approach. *International Journal of Management Science and Engineering Management, 16*(2), 83-93.

Noonan, L. (2022). The role of culture as a determinant of tourism demand: Evidence from European cities. *International Journal of Tourism Cities, 8*(4), 965-986.

Nysveen, H., Methlie, L. B., & Pedersen, P. E. (2003). Tourism web sites and value-added services: The gap between customer preferences and web sites' offerings. *Information Technology & Tourism, 5*(3), 165–174.

Pandža Bajs, I. (2015). Tourist perceived value, relationship to satisfaction, and behavioral intentions: The example of the Croatian tourist destination Dubrovnik. *Journal of Travel Research, 54*(1), 122–134.

Panasiuk, A. (2021). Marketing orientation of entities on the tourism market. *Sustainability, 13*(21), 12040.

Polo Peña, A. I., Frías Jamilena, D. M., & Rodríguez Molina, M. Á. (2013). Market orientation as a strategy for the rural tourism sector: Its effect on tourist behavior and the performance of enterprises. *Journal of Travel Research, 52*(2), 225–239.

Putri, D. A., Susilowati, M. H. D., & Semedi, J. M. (2021). Tourist attraction and tourist motivation in the Patuha Mountain area, West Java. *Indonesian Journal of Geography, 53*(1), 95–102.

Raimkulov, M., Juraturgunov, H., & Ahn, Y. (2021). Destination Attractiveness and memorable travel experiences in silk road tourism in Uzbekistan. *Sustainability, 13*(4), 2252.

Richards, G. (2002). Tourism attraction systems: Exploring cultural behavior. *Annals of Tourism Research, 29*(4), 1048-1064.

Shahzalal, M. (2016). Positive and negative impacts of tourism on culture: A critical review of examples from the contemporary literature. *Journal of Tourism, Hospitality and Sports, 20*, 30-34.

Sharpley, R., & Telfer, D. J. (2008). *Tourism and development in the developing world*. Routledge: Abingdon.

Shimizu, T., & Okamoto, H. (2022). Tourism infrastructure and the environment: how does environmental regulation affect welfare, tourism industry, and domestic wage inequality?. *Japanese Economic Review, 74*, 59-85.

Sofronov, B. (2018). Millennials: A new trend for the tourism industry. *Annals of Spiru Haret University. Economic Series, 18*(3), 109–122.

Tahar, Y. B., Haller, C., Massa, C., & Bédé, S. (2018). Designing and creating tourism experiences: adding value for tourists. In: *Sotiriadis, M. (Ed.), The Emerald Handbook of Entrepreneurship in Tourism, Travel and Hospitality*. Emerald

Publishing Limited, Bingley, pp. 313-328.

Tsiotsou, R. H., & Vlachopoulou, M. (2011). Understanding the effects of market orientation and e-marketing on service performance. *Marketing Intelligence & Planning, 29*(2), 141-155.

Van de Vuurst, P., & Escobar, L. E. (2020). Perspective: Climate change and the relocation of Indonesia's capital to Borneo. *Frontiers in Earth Science, 8*, 5.

Vengesayi, S., Mavondo, F., & Reisinger, Y. (2009). Tourism destination attractiveness: Attractions, facilities, and people as predictors. *Tourism Analysis, 14*(5), 621-636.

Viken, A., Höckert, E., & Grimwood, B. S. R. (2021). Cultural sensitivity: Engaging difference in tourism. *Annals of Tourism Research, 89*, 103223.

Wang, S., Wang, J., Shen, W., & Wu, H. (2023). The evaluation of tourism service facilities in Chinese traditional villages based on the living protection concept: Theoretical framework and empirical case study. *Journal of Asian Architecture and Building Engineering, 22*(1), 14–31.

Widanta, A. (2021). Analysis of factors influencing the interest of foreign tourists to revisit Bali. *Jurnal Ekonomi Kuantitatif Terapan, 14*(1), 191-218.

Wiweka, K., & Arcana, K. T. P. (2019). Rethinking the theory of tourism: What is tourism system in theoretical and empirical perspective?. J*ournal of Business on Hospitality and Tourism, 5*(2), 318-336.

Wulung, S. R. P., Yuniawati, Y., & Andari, R. (2021). *Covid-19 and Indonesian super-priority tourism destinations, 1st Edition*. Routledge: Oxfordshire, UK.

Yen, H.-P., Chen, P.-C., & Ho, K.-C. (2021). Analyzing destination accessibility from the perspective of efficiency among tourism origin Countries. *SAGE Open, 11*(2), 1–14.

Received: 28th Feb 2023. Accepted: 31st March 2023

PLANNING MALAYSIA:
Journal of the Malaysian Institute of Planners
VOLUME 21 ISSUE 1 (2023), Page 247 – 261

SAFEGUARDING CULTURAL HERITAGE SITE: COMPARATIVE STUDY FOR ESTABLISHING CONSERVATION INITIATIVES ON INDRAPATRA FORT, ACEH BESAR

Cut Nursaniah[1], Lia Maisari[2], Cut Yusra[3], Lisa Maharani[4], Farah Jubhilla[5], Annisa Qadrunnada[6], Syahrul Aini[7], Brit Anak Kayan[8]

[1,2,3,4,5,6,7]*Faculty of Engineering,*
[1]*Department of Architecture and Planning*,
[2,3,4,5,6,7]*Master of Architecture,*
UNIVERSITAS SYIAH KUALA, INDONESIA
[8]*Faculty of Built Environment, Department of Building Surveying,*
UNIVERSITI MALAYA, KUALA LUMPUR, MALAYSIA

Abstract

The Indrapatra Fort cultural heritage site located in the coastal area of Aceh Besar, Indonesia is a relic of Hindu influence. The condition of the fort is decreasing, so that it has a negative impact on securing this cultural heritage site. The lack of a maintenance strategy, continued neglect, and insufficient preservation work by the relevant government conservation agencies have resulted in almost no conservation initiatives for the fort. This paper attempts to establish appropriate conservation initiatives for fort security. This was carried out based on a qualitative approach with a comparative study of local cultural heritage conservation initiatives at Borobudur Temple and Fort Rotterdam. Primary and secondary data were analyzed using descriptive qualitative methods, providing recommendations for initiatives to preserve Indrapatra Fort that could be implemented practically through tangible and intangible aspects. Tangible initiatives are the reconstruction of damaged fortification structures and elements with similar materials, combined with a sound maintenance strategy. Meanwhile, intangible initiatives include performing arts, annual festivals and providing guides.

***Keywords**:* Cultural heritage site, fort, conservation initiatives, tangible, intangible

[1] Lecturer at Universitas Syiah Kuala. Email: cutnursaniah@unsyiah.ac.id

INTRODUCTION

Indrapatra Fort, located in the Ujoeng Kareng Beach area, Ladong Village, Masjid Raya District, Aceh Besar Regency, is a legacy of the first Hindu period. According to historical records, the Lamuri kingdom built this fort in the 7th century as a place of worship and residence for the king and his family. After the arrival of Islam, specifically during the reign of Sultan Iskandar Muda, this fort was repurposed as a defense against Portuguese attacks. According to Anonymous (2018), Fort Indrapatra stands as a silent witness to Aceh's transition from the Hindu period to the heyday of Islam. However, Indrapatra Fort now only serves as a cultural heritage site.

According to Lasenda et al. (2022), conservation is important to protect the history of the area and restore the old, faded vitality. At Indrapatra fort there is not yet maintenance from related parties and a lack of preservation by the government, the existence of Indrapatra Fort has decreased, leaving this fort empty of visitors (Syafputri, 2012; Nursyafira et al., 2019). According to one resident of Ladong in Syafputri, the condition of the walls of Indrapatra Fort was left to be destroyed, and several forts were also damaged by the impact of the tidal wave and tsunami 2004. Despite the fact that Indrapatra Fort can be used for religious and educational tourism. The Aceh Besar DPRK's Deputy Chairperson also hopes that this cultural heritage site can be preserved yet again (Luwi, 2020).

Due to its location on the coast, the geographical location of Indrapatra Fort makes it a strategic location for tourists. Therefore, based on the description of the previous problem, this paper tries to determine the appropriate conservation initiatives for protecting the fort. Conservation is very important in the field of historic area preservation which aims to improve the physical and non-physical quality of the area (Eriza, 2009). The concept of site management will have a strong influence on tourist satisfaction and environmental issues (Latip et. al., 2020). Adaptive reuse is a conservation method to prevent abandoned, dilapidated buildings and prevent further damage, both interior and exterior, but must consider the transformation of cultural heritage buildings and compliance with conservation regulations (Rani et. al., 2017). The existence of proper excavation efforts at this historical monument can improve social, economic and physical conditions in the long term in accordance with the principles of a sustainable city and society.

LITERATURE REVIEW

Cultural Heritage Site and Conservation: Term Definition

In the Law of the Republic of Indonesia number 11 of 2010 it is stated that cultural heritage sites are cultural heritage objects as a result of human activities and evidence of the past that are on land and or in water. Conservation is an effort

to protect buildings or the environment by regulating their use and directing their development according to current and future needs to preserve their cultural meaning (Rooselvet, in Brinkley & Holland, 2009, Sidharta & Budihardjo, 1989).

The Emergence of Heritage Preservation

Modern heritage conservation practices emerged in 19th century France, due to the decay of old buildings from earlier eras. Conservation was pioneered by the Inspector General of Historical Monuments, M. Viet, by basing the restoration on the principles of Viollet le-Duc, emphasizing the importance of material, artistry and aesthetic values. Every part that is dismantled must be replaced with better materials, using superior engineering, but in the same style as when it was built, with reference to the style that each building has (Viollet-le-Duc, 2007, pp. 79-81). The Burra Charter states that the definition of conservation can include all maintenance activities and is appropriate to local circumstances. Kyle & Walker (1996) in Alvares (2006) said the scope of conservation activities could include preservation, restoration, reconstruction, adaptation and revitalization.

Conservation Purposes

According to Worthing and Bond in Kayan (2015), conservation aims to preserve the meaning of a building, site or place by considering potential and future development. Poinsett (2019) says that the preservation of historical objects is usually carried out with the aim of (i) Education: Historical objects play an important role in the learning process because they will give the current generation a clear picture of the past, in the form of the physical, atmosphere and spirit of the past; (ii) Recreation: Visiting artifacts of the past can be fun while understanding how ancient people created different environments; (iii) Inspiration: Helping to preserve our connection with the past; and (iv) Economy: Initiatives to preserve old buildings by reusing them, with the potential to develop into a sustainable tourism economy.

Conservation Theory

There are two well-known theories related to conservation, namely the theory from Ruskin & Morris (1877) which states "Conserve as found", which means that every heritage building must be stored and maintained as it was found, so that there cannot be the slightest change. Le-Duc (2007) opposes this statement and says something different, namely "Reinstate old buildings in their best condition", which means conservation is restoring heritage buildings in their best condition (caring for, maintaining, reconstructing and replacing materials with those that tend to be similar). Heritage is divided into two perspectives, such as:

West (Europe): Tangible

Traditionally, in Europe, inheritance is defined as something tangible. It has been argued that European views of architecture influenced understandings of 19th century heritage (Byrne, 1991; Harvey, 2001; Smith, 2006). According to critics, inheritance is also a cultural process that is manifested to remember the past and form an identity. Smith (2006) claims that architecture is not an inheritance, but the activities and processes that occur around it.

Non-West (Asia and Islam): Intangible

Asian approach:

The Nara Document on Authenticity (International ICOMOS) aims to challenge conventional thinking in the field of conservation and fully respect social values, cultural diversity, and all aspects of belief systems, including form and design, materials and substance, use and function, traditions and techniques, location and setting, as well as desires and feelings. The Hoi An Protocol was introduced by UNESCO Bangkok in 2005 as a project aimed at enhancing the Nara Document, by ensuring and maintaining the authenticity of Asian cultural heritage sites.

Islamic approach:

In the Islamic Approach, intangibles are based on myth, religion (god), and scholasticism, which refer to the Qur'an and Hadith.

RESEARCH METHODOLOGY

This research took place at Fort Indrapatra, Krueng Raya, Aceh Besar District, Aceh. The research uses a qualitative approach with a comparative study method, namely comparing two or more conditions, events, activities, programs (Sukmadinata, 2012). This study attempts to compare conservation initiatives at Borobudur Temple and Fort Rotterdam (secondary data). A comparative study comparing tangible and intangible conservation initiatives at the two study locations. Comparative research also provides an overview of the variables studied in each group of research subjects being compared. Documentation of data that is sufficiently complete to allow wide-scale and meaningful comparative analysis is an important consideration in the case study approach (Borobudur Temple & Rotterdam Ford), thus allowing high validity in testing the proposed model (Knight and Ruddock, 2008). The results of this comparison are then analyzed descriptively which provides a more detailed description of a symptom or phenomenon (Setiawati and Murwadi, 2019).

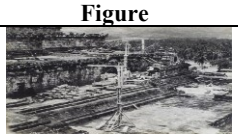
Sources of data in this study are primary and secondary. Primary data were obtained from observations of Indrapatra fort objects, interviews and documentation, while secondary data were obtained from literature studies of scientific journals and books related to research topics.

ANALYSIS AND DISCUSSION

Case Study on Borobudur Temple

Borobudur Temple is located in Magelang, Central Java. Borobudur is a stupa-shaped temple founded by Mahayana Buddhists around the 8th century, during the reign of the Syailendra dynasty. Since the Dutch colonial period, Borobudur Temple has been conserved several times to maintain it in a sustainable manner, as shown in the table 1 below.

Table 1: Conservation initiatives in Borobudur Temple

Aspect	Figure	Description
Tangible	 	Initially conservation was carried out by the Dutch colonial government: (i) dismantling all parts of the rudhatu (the five levels of the rectangle above the foot of the temple); (ii) cleaning and preserving the stones that are unloaded one by one; (iii) installing reinforced concrete foundations to support the temple at each level, while providing waterways within the construction; (iv) and rearrangement of stones that have been cleaned of dirt and microorganisms (moss, fungi, and other microorganisms) in their original places.
	  	The Borobudur stupas and statues were damaged by terrorist bombing on January 21, 1985. The conservation team immediately replaced the damaged stones with new ones that had been adjusted in size, color and type, the day after the bombing. According to Ismijono (2013), the restoration uses andesite stones which are reprinted from previous stones, made as closely as possible to the original arrangement, size and shape. Radea (2020) said that the difference between the new and old construction on the stones of the Borobudur Temple is evidenced by the difference in carving (the original stone is smoother, the new stone carving is deliberately made rough).
		Officers from the Conservation Center use two methods to remove volcanic ash from the Borobudur Temple building, namely a brush or suction tool and water.
	 	**Borobudur Annual Festival** The annual Vesak celebration by Buddhists in Indonesia, which is centered nationally in the Borobudur Temple complex, is one of the intangible conservations of Borobudur Temple. This celebration typically begins at Mendut Temple, then proceeds to Pawon Temple, and finally to Borobudur Temple, the main venue. This festival has the potential to draw tens of thousands of tourists to Borobudur Temple. Even though it occurs only once a year, the existence of this festival ensures that the intangible tradition is preserved.

Intangible	 	**Borobudur Masterpiece Ballet** The Borobudur Masterpiece Ballet involving 200 artists tells the story of the construction of Borobudur in the 8th century during the reign of Maharaja Samaratungga. This dance genre is a cultural heritage originating from the Ancient Mataram era in the seventh century, aiming to attract tourists.
	 	**Borobudur Nite** Borobudur Nite: Music, Lantern & Pray is an annual event held by PT Taman Wisata Candi Borobudur, Prambanan and Ratu Boko (PT TWC). Various activities, music concerts, art performances, culinary exhibitions, and other activities. The highlight of this festival is the interfaith prayer and the release of lanterns at the turn of the year. The ticket price to be able to take part in this event is IDR 150,000 for the festival class, and IDR 500,000 for the platinum class.

Source: analysis by authors from various sources, 2022

Case Study on Rotterdam Fort

Rotterdam Fort is a historical site in the kingdom of Gowa-Tallo, located on the coast of the Makassar Strait west of Makassar City, South Sulawesi. The Xth King of Gowa built this fort in 1545 with a rectangular shape and clay material that was later replaced with black onslaught from the Karst Mountains and other materials such as coral stone and brick with lime adhesive and sand. The following year, a second wall near the gate was constructed. Because of the severe damage caused by the VOC invasion, Ujung Pandang Fort fell into the hands of the Dutch, who renamed it Rotterdam Fort.

Rotterdam Fort has changed its function several times throughout its history, until finally in the 1970s the fort was extensively restored. The conservation process can be seen in Table 2 below:

Table 2: Conservation initiatives in Rotterdam Ford

Object	Documentation	Description
Tangible		The Dutch occupation of Fort Rotterdam overhauled the structure and design of this fort by dismantling most of it, leaving several forts to be occupied and adding five bastions on the east side (Amboina and Mandarsyah bastions) and west side (Bacan, Bone and Buton bastions) so that their shape resembles a turtle. The people of Makassar call it Panyyua Fort.
		The fort was restored in 1976 by the Historical and Archaeological Center of Makassar. The walls on the left and right of the fort gate were replaced with exposed natural stone material which previously used plastered bricks. The room on the second floor is currently used as a photo spot. The condition of the roof is so bad that it

		cannot be reconstructed, the results of the reconstruction cannot be the same.
	 	All Fort Rotterdam buildings are preserved by the Cultural Heritage Protection Agency with reference to indicators of rescue, security, maintenance and restoration. For rescue, every year data is collected on buildings that have begun to experience damage due to human or natural causes, then these structures are restored or preserved to preserve cultural heritage values. Security measures include installing anti-lightning, installing CCTV, making regulations for visitors, making iron fences and security posts, appointing and forming caretakers from ASN and honorary staff. The most recent renovation was done in 2018.
Intangible	 	**Educational Facility** The intangible conservation of Rotterdam Fort includes adaptive reuse or transfer of functions to become a Legaligo museum, art center and tourist attraction, from its previous state while maintaining its cultural characteristic values.
	  	**Art Festival and Exhibition** Various arts festivals are held at Fort Rotterdam, including dances, exhibitions and other art forms that can help develop cultural heritage. Another intangible aspect that is carried out is Fort Rotterdam research which aims to add information about Fort Rotterdam through direct surveys to various valid sources, which are then reviewed, and so on conveying the results of research (information) to the public through outreach, print media (written), electronic (via television, film), and provision of information space related to the history of Rotterdam Fort.

Source: analysis by authors based on data from kebudayaan.kemdikbud.go.id, 2022

Recommendations for conservation initiatives can be classified as tangible or intangible, as summarized in the following table.

Table 3: Conservation Initiatives

Aspects	Description
Tangible	1. Replacing the damaged material with the same or similar new material. 2. Creating supporting facilities that support conservation objects so that they are of interest again. 3. Reconstructing damaged conservation objects based on previously collected reference data.
Intangible	1. Providing historical education about the formation of conservation objects either through print or electronic media.

2.	Establishing a guide or agency for the restoration and maintenance of conservation objects.

Source: analysis by the authors from various sources, 2022

Existing Condition of Indrapatra Fort

The main fort (A) is 70x70 m in size and contains three stupa-like wells (Figure 2). During the Hindu Kingdom, the well was used for prayer. This fort's function has changed several times, most notably during the Hindu period, when it served as a place of worship as well as a residence for the king and his family. After Islam entered, it changed its function as a defense against the Portuguese, and after the emergence of the Aceh Darussalam sultanate, particularly during the reign of Sultan Iskandar Muda (1607-1636), it also served as an arsenal and the main center of defense to repel attacks from the Malacca Straits, and it now serves as a cultural heritage site. But unfortunately, the lack of a good maintenance strategies, continuous neglect and insufficient preservation works by the relevant local government conservation agencies entails to near non-existence of conservation initiatives influenced the existing condition of the fort.

Figure 1. Indrapatra Fort site plan
Source: processed by the author of google earth, 2022

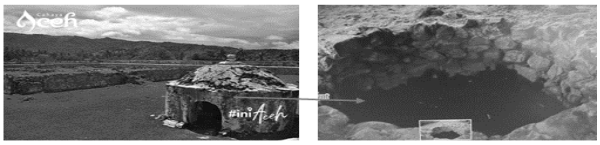


Figure 2. The well inside the fort
Source: youtube and Author's, 2022

At Indrapatra Fort apart from the main fort, there is an additional fort (B) which is used as a place to place cannons and ammunition facing west (figure 1). The building measures 30 x 30 m and consists of 3 bunkers. 2 bunkers are used as a place to place and fire cannons and 1 bunker is used as a storage area for other purposes (picture 3). Apart from the 2 bunkers inside the fort which were used to place cannons and fire shots, there were other small holes in the wall with the same function (picture 3). There are 7 of these holes, 3 on each of the

right and left sides which do not have bunkers and 1 of 2 bunkers. The entire fort was made using adhesive material from calcite type limestone and mollusk shells (Fitri et al, 2016).

Figure 3. Bunker dan holes inside the fort
Source: Author's, 2022

Conservation Action of Indrapatra Fort

Tangible (Physical)

The development strategy is to rearrange Fort Indrapatra to its original form and provide tourism support facilities. According to Wuisang et al. (2019), reviving historical areas can be done by adjusting to the needs of the surrounding community, accompanied by environmental potential. Some of Indrapatra's potentials that can be developed are: (i) the building has historical value which can be used as education for the community; (ii) the location is by the beach; and (iii) there is accessible accommodation at the location (Figure 4). These three potentials can be managed by taking into account social, economic and physical conditions.

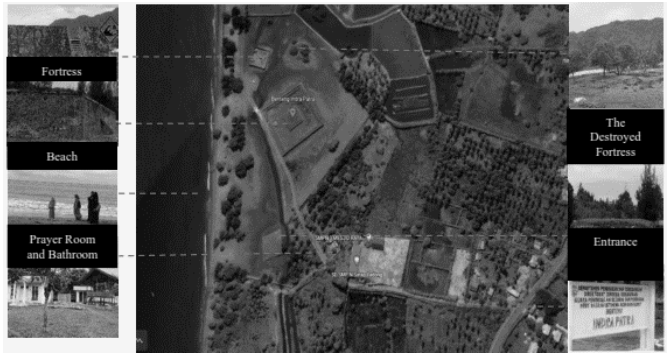


Figure 4. Indrapatra Fort Area Potential
Source: Author's, 2022

Indrapatra's condition was damaged by the tidal wave (Figure 4), so construction repairs were needed. The disaster risk management cycle for cultural heritage sites is risk assessment, risk prevention and mitigation, emergency

preparedness and response procedures, recovery and rehabilitation, maintenance, and damage assessment (Jigyasu, et al., 2010). In line with that, Indrapatra Fort needs restoration, rehabilitation and maintenance. This fort already has prayer facilities, toilets, and selling stalls, but the conditions are not yet fit for use. To increase the number of visitors, the development and improvement of tourism facilities must be supported (Suryani, 2017). According to Parma (2019), a tourist attraction must have the following characteristics: (i) Something to see; (ii) Something to do; (iii) Something to buy. Based on this, the author made a realignment aimed at revitalizing the Indrapatra Fort area, as depicted in Figure 5.

Figure 5. Proposed Revitalization of the Indrapatra Fort Area
Source: Author's, 2022

According to Figure 5, before entering Indrapatra Fort, you will be greeted by a gate which represents culture by exposing bricks (point 1), after which the entrance is divided into two lanes to make it easier for visitors to access and banners giving directions (point 2). Visitors can find early ticket sales, prayer rooms, bathrooms, management areas, and meeting rooms at point 3. The prayer room will have a dome to make it feel more like a place of worship. Visitors will find two-wheeled and four-wheeled parking areas at point 4. In addition, the author provides horses as a mode of transportation. Point 5 describes the three

Indrapatra forts that have been reconstructed, as well as additional supporting facilities, such as tennis courts and basketball courts. Point 6 describes another reconstructed fort near the beach, as well as a market selling souvenirs and culinary delights. Seats are also provided at point 6 for tourists who want to enjoy the beach. A fish pond is also provided in the center of the garden, and its purpose is to help out when the tide is high. This facility will support economic, social and environmental growth.

Indrapatra fort materials replacement

The material used to build Borobudur Temple is andesite stone (Haldoko et al., 2014). Fort Rotterdam is made of black stone (Anzhar, 2017). The Cultural Heritage Conservation Center is still working on using the same materials in the reconstruction of Borobudur and Rotterdam, to maintain consistency with the previous structure. The constituent rocks used in the Indraptra Fortress case study are clastic limestone, non-clastic limestone, andesite, and coral/coral (Swastikawati et al., 2021).

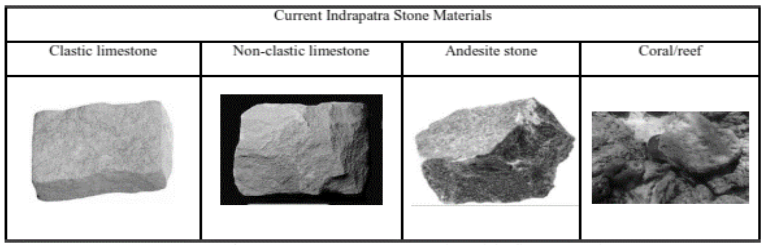


Figure 6. The building blocks for the reconstruction of Indrapatra Fort
Source: Author's, 2022

Furthermore, other conservation initiatives that can be made to safeguarding the cultural heritage value of Indrapatra Fort when referring to comparative studies are:

(i) Choose the same or similar material as the previous one, for example using a river stone of the same size as before. Markers need to be made to remind visitors of the original fort locations/places and locations/places that are no longer original.
(ii) Rebuilding the damaged parts by gluing the material back to its original position so that the building looks like before. Visitors will learn about the history of Indrapatra's physical formation as a result of reconstruction. One example is the fort wall (Figure 7). To get an idea of the form to be reconstructed, reconstruction efforts can refer to valid sources or the results of discussions by historians, one of which is shown in Figure 8.

Figure 7. One of the structure damaged wells
Source: Author's, 2022

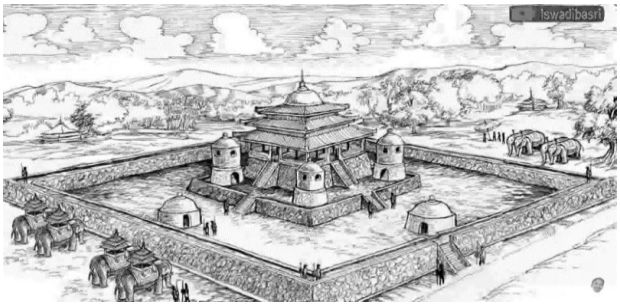


Figure 8. Previous illustration of Indrapatra Fort during The Lamuri Kingdom
Source: https://www.youtube.com/watch?v=Sxsfb-HRYHA&lc=Ugz0XGy4LNXTG7ogl3N4AaABAg.9hatFBT5rEq9kvp3g8o5dt, 2022

(i) Maintain Indrapatra Fort by first recording the damaged parts, replacing them with similar materials, cleaning each part of the fort, and appointing maintenance officers who will routinely carry out their duties to keep the fort in good condition. This is in line with the Burra Charter (1981), that all conservation activities must include maintenance that is appropriate to local conditions and can also include preservation, restoration, reconstruction, adaptation, and revitalization.

Intangible (Non-physical)

Art performance at the indrapatra fort

Fort Indrapatra can carry out intangible conservation initiatives in addition to tangible conservation initiatives, by holding an art performance at Indrapatra Fort with the theme of the history of the fort (Figure 9). Performing arts can include activities such as dance performances, musical plays and storytelling. This activity is expected to attract the attention and interest of the community in order to increase the existence of the Indrapatra Fort site while preserving the local cultural heritage.

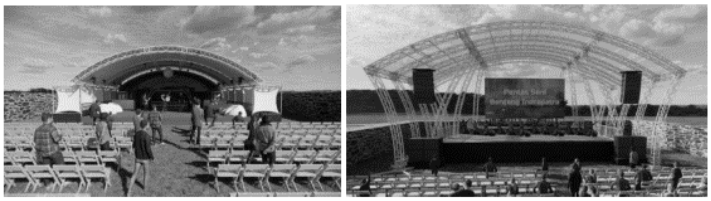


Figure 9. Art Performance of Indraparta Fort
Source: Author's, 2022

Annual indrapatra fort festival
Initiatives that can be carried out are annual events that are expected to attract both domestic and foreign visitors, can be carried out when commemorating important days, such as Heroes' Day, National Awakening Day, and others.

Figure 10. Indraparta Fort Festival
Source: Author's, 2022

Providing a tour guide
The next suggestion for preserving Indrapatra Fort's intangible value is to provide a guide to guide and explain the history of Indrapatra Fort. Hearing the guide's narrative is far more uplifting than simply seeing the photos or writings listed in the courtyard. This oral communication is analogous to hearing stories from ancient ancestors, who also passed down traditions, customs, and folklore through word of mouth. Kotler In Joesyiana (2018) mentions how word of mouth can provide listeners with a sense of satisfaction. Position guides can also be coupled with the use of artificial intelligence to provide more information.

CONCLUSION
In this paper, the author uses the Le Duc principle of maintaining, reconstructing and replacing materials with those that tend to be similar to heritage buildings. The purpose of this conservation is education, recreation, inspiration and the economy.

Based on the results and discussion of the two case studies, recommendations for conservation initiatives for Indrapatra Fort, which, practically can be implemented in two ways, both upon its tangible and intangible aspects.

The recommended tangible initiative is the reconstruction of the damaged fort's structures and elements with similar materials, combined with good maintenance strategies. While the proposed intangible fort initiative includes activities such as the Indrapatra Fort Art Show, the Indrapatra Fort Annual Festival, and the preparation of Indrapatra Fort guides.

The recommendations for this conservation initiative can be an option to be implemented so that the Indraratra landscape remains sustainable in the future as a cultural heritage site.

REFERENCES

Anonymous. (2018). *Benteng Indrapatra Bukti Sejarah Hindu-Buddha di Aceh*: https://ksmtour.com/infor-masi/tempat-wisata/aceh/benteng-indra-patrabuktisejarah-hindu-buddha-di-aceh.html. Diakses pada 25 Oktober 2022

Brinkley, D., & Holland, D. (2009*). The wilderness warrior: Theodore Roosevelt and the crusade for America*. HarperCollins New York.

Byrne, D. (1991). Western Hegemony in Archaeological Heritage Management. *History and Anthropology*, 5, 269-276.

Fitri, N., Yusibani, E., Yufita, E. (2016). Identifikasi Kandungan Material Perekat pada Benteng Purba di Kawasan Aceh Besar Menggunakan XRF. *Journal of Aceh Physics Society,* 5 (2).

Haldoko, L. A., Muhammad, R., & Purwoko, A. W. (2014). Karakteristik batu penyusun candi Borobudur. *Borobudur*, 8(1), 38-47.

Ismijono, I., Mulyono, M., Sumedi, B., & Kasatriyanto, B. (2013). *Tinjauan kembali rekonstruksi Candi Borobudur.* Direktorat Jenderal Kebudayaan.

Jigyasu, R., Professor, U,C., Arora, R, V., Architect, C. (2010). *Disaster Risk Management of Cultural Heritage in Urban Areas*. Research Center of Disaster Mitigation of Urban Cultural Heritage, Ritsumeikan University: Japan.

Kayan, B, A. (2015). Conservation Plan And "Green Maintenance" From Sustainable Repair Perspectives. *Smart and Sustainable Build Environment,* 4(1).

Kiki, J. (2018). Pengaruh word of mouth terhadap keputusan pembelian konsumen pada media online shop shopee di pekanbaru (Survey pada Mahasiswa Semester VII Jurusan Pendidikan Akuntansi Fakultas Keguruan dan Ilmu Pendidikan Universitas Islam Riau). *Jurnal Valuta*, 4(1), 2502-1419.

Knight, A. and Ruddock, L. (2008) Advanced Research Methods in the Built Environment, West Sussex, UK: Wiley-Blackwell.

Latip, M.A. et. al. (2020), Spectacle of Conseration and Tourism in Protected Areas: Analysis of Management, Issues and Tourist Satisfaction. Panning Malaysia Journal Vol. 18 (2020), Issue 4. https://doi.org/10.21837/pm.v18i14.847.

Luwi, A. (2020). Obyek Wisata Benteng Indrapatra Besar Mulai Ramai didatangi Pengunjung. *Serambinews.com*, https://aceh.tribunnews.com/2020/07/26/obyek-wisata-benteng-indrapatra-aceh-besar-mulai-ramai-didatangi-pengunjung. Diakses pada 25 Oktober 2022.

Morris, W. (1877). Manifesto of the Society for the Protection of Ancient Buildings (SPAB). In L. Smith (Ed.), *Cultural Heritage: Critical Concepts in Media and cultural Studies* (pp. 111-113). New York: Routledge.

Nursyafira., Mauhida, F., Vahreza, A., Syukri, M. (2019). Mengungkap Kembali Eksistensi Benteng Indrapatra dengan Metode Ground Penetrating Radar (GPR). *Jurnal Ilmiah Penalaran dan Penelitian Mahasiswa*.

Parma, I, P, G. (2019). Pariwisata dan Pengembangan Sumber Daya Manusia, https://ejournal.undiksha.ac.id/index.php/JMPP/article/view/22088/13695

Radea, P. (2020). Anastilosis : Cara Memahami Pemugaran Candi. https://jernih.co/potpourri/anastilosis-cara-memahami-pemugaran-candi/. Diakses 04 November 2022.

Smith, L. (2006). *Uses of Heritage*. London and New York:Routledge.

Sukmadinata, N., & Alexon, A. (2012). The Development Of Culture-Based Integrated Learning Model To Improve Students'appreciation On Local Culture (The Study Of Elementary School Social Study Subject). *International Journal of Education,* 6(2), 129-142.

Suryani, A,I. (2017). Strategi Pengembangan Pariwisata Lokal. *Jurnal Spasial,* https://media.neliti.com/media/publications/131668-ID-strategi-pengembangan-pariwisata-lokal.pdf.

Syafputri, E. (2012). Benteng Peninggalan Sejarah Aceh Terbengkalai. *Antaranews.com*, https://www.antaranews.com/berita/292047/benteng-peninggalan-sejarah-aceh-terbengkalai . Diakses pada 25 Oktober 2022.

Viollet-le-Duc, E. E. (2007). Defining the Nature of Restoration. In L. Smith (Ed.), *Cultural Heritage: Critical Concepts in Media and cultural Studies* (pp. 76- 93). New York: Routledge.

Wuisang, C.E.V., Sutrisno, A., & Sondakh, J.A.R. (2019). Strategi Revitalisasi Kawasan Heritage di Pusat Kota Lama Kota Manado. *Prosiding Temu Ilmiah IPLBI* 8, December, A103–A110. https://doi.org/10.32315/ti.8.a103.

Rani, P., Putri, C., & Devina, A. (2017). Transforming Heritage Building for Commercialisation. *Planning Malaysia Journal*, Vol 15 (2017), Issue 3. https://doi.org/10.21837/pm.v15i3.304.

Setiawati, E., & Murwadi, H. (2019). Studi Komparatif Ornamen Rumah Adat Lampung Studi Kasus: Rumah Adat Lampung Saibatin Lampung Barat. *Jurnal Arsitektur*, *9*(1), 33-44.

Received: 28th Feb 2023. Accepted: 31st March 2023

PLANNING MALAYSIA:
Journal of the Malaysian Institute of Planners
VOLUME 21 ISSUE 1 (2023), Page 262 – 273

THE EFFECT OF VEGETATION AND WATER BODY ON THERMAL COMFORT IN BANTENG CITY PARK, JAKARTA

Dina Nur Ramdiana[1], Lin Yola[2]

[1,2] *Urban Studies Department, School of Strategic and Global Studies,*
UNIVERSITAS INDONESIA, JAKARTA, INDONESIA

Abstract

City park plays significant role for city green area and accommodating the social outdoor activities for urban dwellers. Jakarta has initiated the enhancement of its' city parks to provide the comfortable outdoor public area. This study examines the effects of vegetation and water body on the microclimate and thermal comfort in Banteng City Park, Central Jakarta. This study uses Envi-Met 3.1 urban simulation. The result present that the vegetation reduces the air temperature (Ta) and prevent the concrete pavement from the solar radiation exposure, while water body is functions as the cooling agent as it increases the relative humidity. The finding this study is recommend for urban planners and decision makers in designing and strategizing the city parks to achieve the better thermal comfort in the tropical open spaces.

***Keywords**:* city park, vegetation, water body, Envi-met simulation

[1] Corresponding Author

INTRODUCTION

City park is crucial to maintain a balance of environmental feature in a developed urban area, as it plays the important functions related to ecological, socio-cultural, and aesthetic aspects (Imansari dan Khadiyanta, 2015). Ecologically, city park function as climate controllers, namely as oxygen producers, noise control, as well as visual control through the shadowing affects from the the reflection of sunlight. City park reduce the urban air temperature rise and urban heat island (Ulfiasari and Yola, 2022a; Ulfiasari and Yola, 2022b). Socio-culturally, city park accommodates space for social interaction for urban dwellers. Aside from social space, it also facilitates a recreation, sports, educational facility, or culinary activity center. City park also encourage the pedestrian walkability and the promotion of public transportation (Purwoko et al., 2022; Arif and Yola, 2022; Ashri and Yola, 2022; Marpaung and Yola, 2022) Furthermore, city park increases thermal comfort, beautify the city environment and stimulate the creativity or productivity of city dwellers.

Outdoor thermal comfort is one of the key factors to encourage outdoor social activities of urban dwellers (Ashari and Yola, 2023; Chen, 2012; Effendy and Aprihatmoko, 2018; Hidayah et al., 2020) especially in hot and humid region (Yola and Siong, 2016; Gupta 1984), therefore the consideration of strategizing the maximum level of thermal environment in the process of structuring and designing a city park is important. Thermal comfort can be understood as the way people react to the air temperature around them through their sense of taste (Karyono, 2001). The consideration of the use of various hard scape and soft scape elements is needed in the arrangement and design of city parks (Sastrawan, et al 2018). Therefore, studies (Yola et al., 2023; Erell et al., 2011; Givoni, 1998; Ng, 2010; Oke, 1997; Oke 1979) have highlighted range of strategies in maximizing the role of city parks through the sustainable and climatically responsive urban design and urban planning (Yola et al., 2020)

Jakarta as a high dense metropolitan area, experiences the critical issue of lacking the public open green space due to the rapid development (Hidayah et al., 2020). It brings the problem of increase of air temperature, environmental degradation and lacking of public open spaces in the city. Thus, Jakarta local city authority seeks to strategies in enhancing the existing public open spaces especially the big city parks. Banteng City Park is no exception. As one of the city parks in Central Jakarta, Banteng City Park has social benefits for the community as a place to play, exercise, gather, socialize, rest and enjoying the fresh air in the city center. Banteng City Park has been going through great process of revitalization which has been open again for public in 2018 (Figure 1). In general, Banteng City Park is categorized into three zones for public use. The first zone is the sports zone which is located on the north side, the second zone is the conservation/main zone which is located in the middle of the Banteng City Park, and the third zone is the urban forest or green zone which is located on the

south side. Generally, there are variations in land cover in Banteng City Park , in the sports zone it is covered by grass, in the conservation/main zone it is covered by concrete pavement, and in the urban forest zone, it is a combination of concrete pavement and grass.

Figure 1: Site Situation of Banteng City Park in Jakarta

Though the social mobility was restricted during the pandemic, Jakarta urban dwellers were encouraged to visit the public open spaces with some health protocols (Mogot et al., 2021). Technically, the Banteng City Park visitors tends to be more focused on the conservation/main zone with more tree area, meanwhile other sides tend to have less used by visitor. As Banteng City Park is one of Jakarta local authority's priority and main concerned city parks, this issue was the background of furthering the empirical research on the effect of land cover and vegetation on thermal comfort in Banteng City Park. The finding of this study is expected to be great recommendation for urban planners and designers, as well as the Jakarta local authority in strategizing, managing and designing the Banteng City Park to support sustainable and climatically responsive urban environment.

LITERATURE REVIEW

This study investigates the thermal performance of land cover materials and vegetation. Susanti et al (2006) emphasized that each surface material has a different albedo, in this case changing the fraction of solar radiation that is reflected or absorbed by the surface. The albedo of urban areas ranges from 10-15% (snow albedo is higher than 80%), this can also mean that the greater the incoming solar energy absorbed by a city. On the other hand, building materials used in urban construction are generally synonymous with high heat capacity and conductivity. The combination of low albedo with high heat capacity is an anthropogenic factor that produces a special character in the atmospheric conditions above urban areas.

Vegetation in urban areas provides many benefits such as reducing the urban heat island effect, reducing air conditioning costs in buildings, improving air quality, and providing a psychologically superior setting for human activities (Zhao et al., 2018). The presence of trees in urban areas can affect air temperature at a range of spatial scales, from individual roads to urban scale modifications. Trees reduce not only solar radiation intensity in the urban surface, but also longwave radiation from the ground, building surfaces, and the sky (Erell, 2011).

Vegetation also influences surface temperature. Vegetation is one of the natural components that can cause the comfort level of air to remain comfortable (Susanti et al, 2006). When a city promotes green open space, the temperature in the city can be reduced by 0.2°C to 0.5°C (Effendy, 2007).

According to Erell (2011), there is a strong relationship between temperature variations, vegetation cover, and thermal stress. Erell (2011) illustrates the potential of urban vegetation to moderate thermal stress. It was further explained that the yard covered with earth or grass or concrete paving is planted with shade trees (mesquite and rosewood), allowing for reduction of daytime thermal stress.

According to Gomez et al. (2004), there is a relationship between temperature variation, vegetation cover, and thermal comfort. It is further emphasized that the vegetation zone affects the albedo and the amount of solar radiation reaching the metropolitan area significantly. There is a favorable relationship between human comfort and comfort index.

RESEARCH METHODOLOGY

The method used in this study is an experimental and simulation method using the Envi-Met 3.1 computer application. Earlier studies stress the urban simulation is a reliable approach to investigate the micro urban microclimate and thermal comfort (Yola et al., 2022; Elnabawi et al 2013). In this research will be divided into three stages of research. The first data collection on the existing conditions of the microclimate in the existing site, as well as additional data covering the condition of vegetation and land cover in the study area. The second stage is to carry out the Envi-met 3.1 simulation on the existing site conditions on January 18, 2023, from 07.00 a.m to 06.00 a.m next day. Third, carry out the simulation data extraction and analysis using the existing site configuration data and microclimate that has been obtained with the receptor height at the average height of the Indonesian pedestrian, and the location of the receptors or observation locations in the simulation is in the pavement circulation area without vegetation shade, pavement circulation area with shade vegetation, as well as in the amphitheater area adjacent to the water pool. Observations and measurements of the microclimate and thermal comfort data in the Banteng City Park were carried out at two times, namely at 10.00 and 16.00 western Indonesian time, as at these

particular times the solar radiation were high and the density of visitors were maximum.

ANALYSIS AND DISCUSSION

To simulate the existing conditions in the Banteng City Park, the data needed include pavement typology, building height, type, and density of vegetation. As a basis for the simulation, data on microclimatic conditions are needed. The microclimate data needed includes data on air temperature, air humidity, and wind speed. In this study, the configuration microclimate data was referred from the National Climatic Data Center (NCDC) data at the BMKG Kemayoran station or from the Central Statistics Agency (BPS).

This simulation was carried out for 24 hours using ENVI-met 3.1 to determine the effect of vegetation and water on air temperature or thermal comfort in Banteng City Park site (Figure 2). The urban configuration simulation was held on 18 January 2023. The ENVI-met configuration editor data includes the physical and climate data, as follows:

- Windspeed: 3 m/s
- Wind direction: 220°
- Relative Humidity: 66%
- Initial temperature atmosphere: 304,15° K

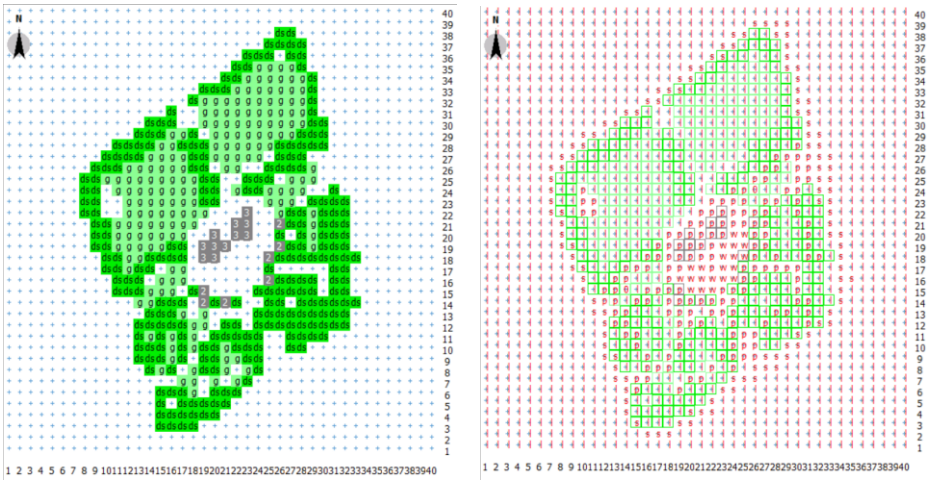


Figure 2: Site Domain in Envi-Met Model

The wind speed felt at the receptors located in the pavement circulation area with vegetation shade is higher (1.22 m/s) compared to the pavement circulation area without vegetation (0.64 m/s) and the pavement circulation area

adjacent to water (0.97 m/s). Pavement circulation areas with shaded vegetation have higher wind speeds, especially in the west area. This condition is due to the corridor of this area has an orientation close to the same direction as the inlet wind direction. Whereas on the east side or pavement circulation areas without vegetation tend to have low wind speeds due to the blocking of surrounding dense buildings.

Relative humidity (qrel) in the pavement circulation area with vegetation shade is higher (73.26%) compared to the pavement circulation area without vegetation (71.98%) and the pavement circulation area adjacent to water (72.56%). Relatively low humidity is found in the pavement concrete circulation area without vegetation shade, this occurs because the heat generated by the road material affects the temperature value to be higher and causes water vapor to decrease. Circulation areas that have vegetation have higher relative humidity due to the evaporation process from the evapotranspiration of vegetation by solar radiation, increasing relative humidity.

The temperature (Ta) felt by receptors located in the circulation area of the pavement with vegetation shade is lower (22.23°C) compared to the circulation area of the pavement without vegetation (22.37°C) and the circulation area of the pavement adjacent to water (22. 31°C). The air temperature in the pavement circulation area with vegetation tends to be lower because it is covered in shadows due to the vegetation canopy. Vegetation plays a role in reducing the absorption of pavement concrete material (road material that is directly exposed to solar radiation). There is a shadowing condition from the vegetation canopy touching each other, resulting in lower heat absorption. Vegetation also helps reflect solar radiation, so the surface material beneath absorbs little solar radiation. Figure 3 presents the mapping of the air temperature distribution at 10.00 and 4.00 by using Leonardo 2D graphic.

The mean Radiant Temperature (Tmrt), in the pavement concrete circulation area, reaches a high value because the area's pavement material is exposed to direct solar radiation. Based on pavement material, the circulation area with pavement concrete material type land cover has the highest MRT value, namely 14.18 – 14.62 °C, while pavement concrete with vegetation shade and pavement concrete adjacent to water has a lower MRT value of 13.08 – 13.30 °C. Areas with vegetation tend to have lower values because they are covered in shadows due to the vegetation canopy. It can be further explained that the presence of the water element as part of the outdoor space element can be useful as a cooling element during hot weather because water can increase humidity and the larger the water area, the greater the impact that may occur on the

microclimate (Laurie, 1986). Figure 4 presents the mapping of the mean Radiant Temperature distribution at 10.00 and 4.00 by using Leonardo 2D graphic.

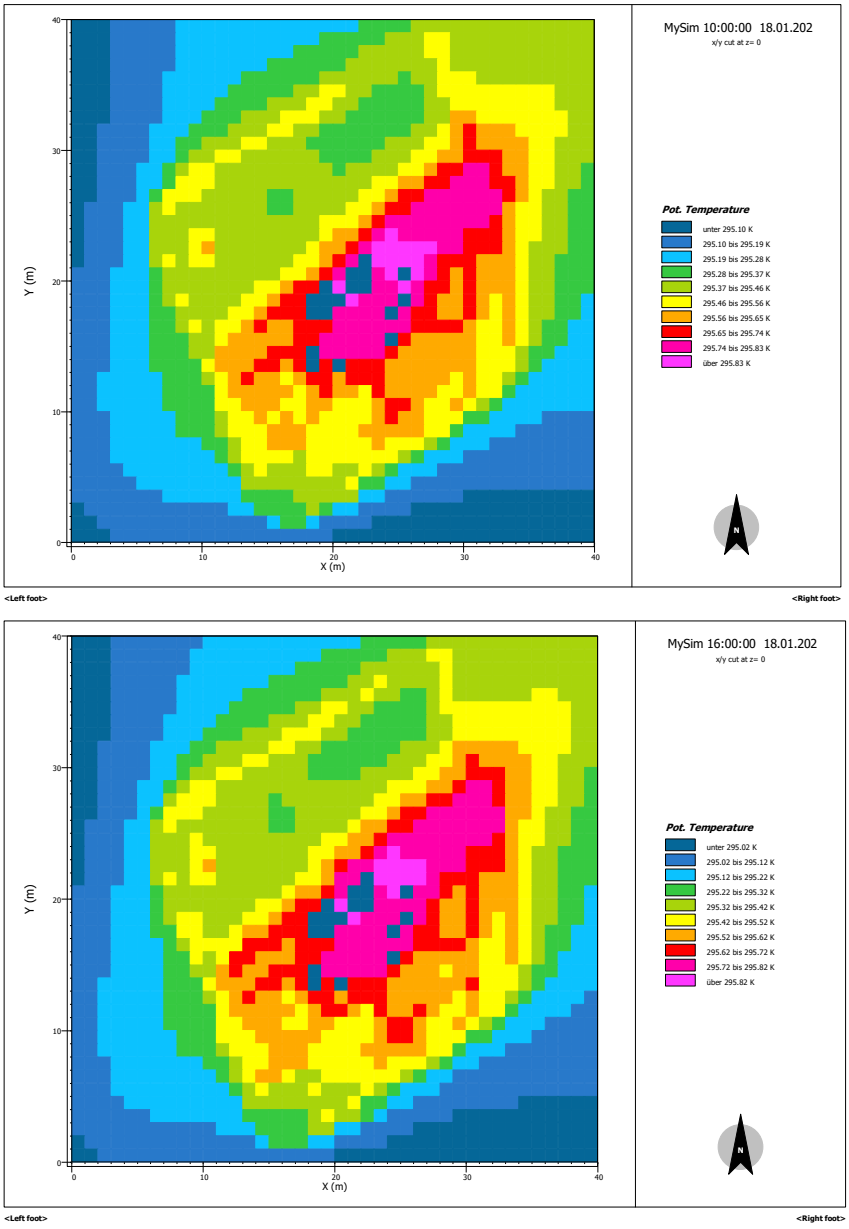


Figure 3: Mapping of the air temperature distribution at 10.00 a.m (top) and 4.00 p.m (buttom)

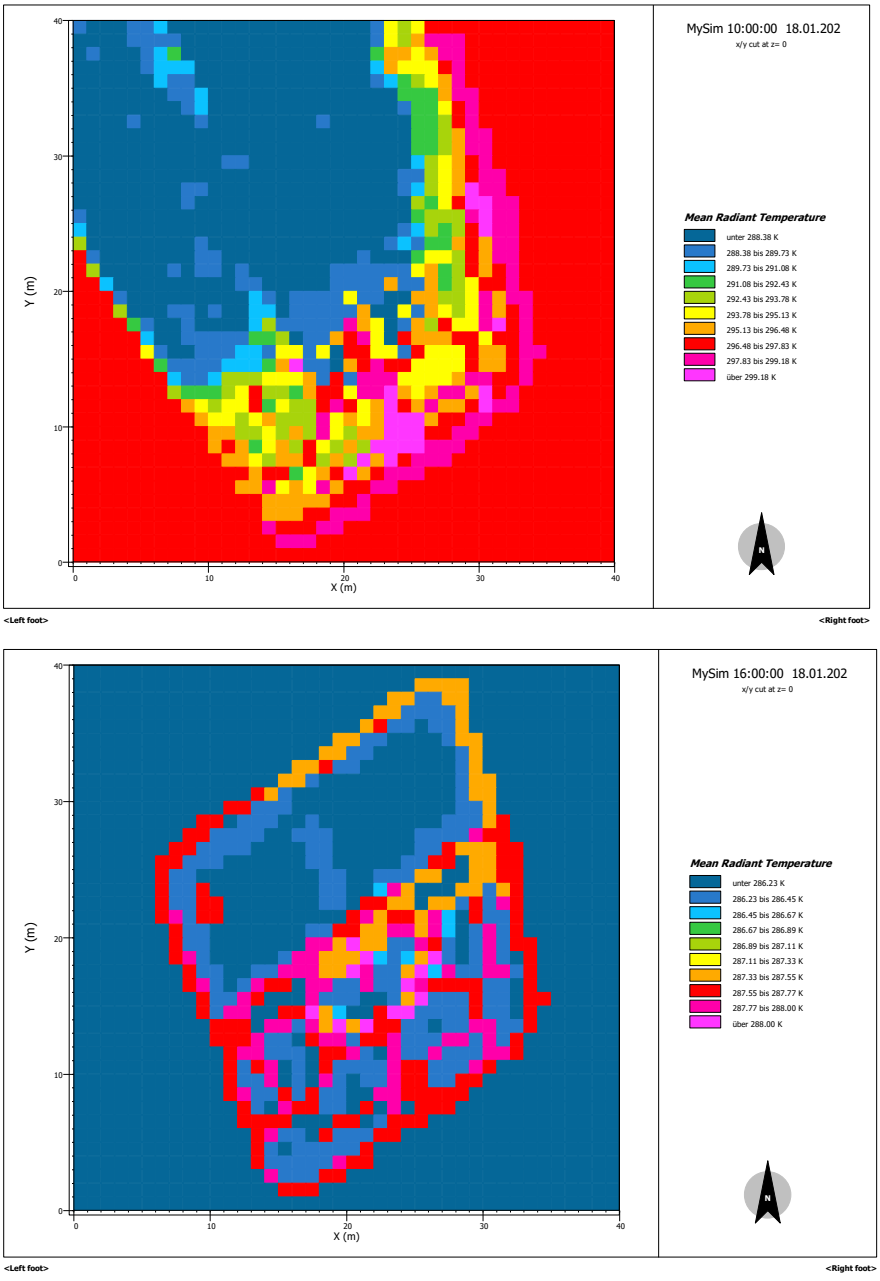


Figure 4: The mapping of the mean Radiant Temperature distribution at 10.00 (top) and 4.00 (buttom) by using Leonardo 2D graphic

According to Lippsmeier (1997), to obtain thermal comfort in the context of a microclimate in a humid tropical climate is determined by three parameters, namely:

a. Air Temperature: standard criteria for thermal are divided into comfortable cool (20.5°C – 22.8°C), optimal comfort (22.8°C – 25.8°C), and comfortably warm (25.8 °C – 27.1°C).
b. Air Humidity: comfort criteria range from 40% to 70%.
c. Wind Direction and Speed: ranges from 0.1 m/s to 0.5 m/s

Referring to the parameters put forward by Lippsmeir (1997), it is known that the entire area of Banteng City Park (the pavement circulation area with vegetation, the pavement circulation area without vegetation, the pavement circulation area adjacent to water) is classified as comfortable cool.

CONCLUSION

Public green open space plays a crucial role in balancing the ecology and environmental character of dense urban area. This study raises the urgent need for maximizing the great role of public green open spaces by strategizing the microclimate and thermal comfort to accommodates the climatically responsive urban design by considering both green and social concern. The simulation finding of this study present that in Banteng City Park, the promotion of vegetation was able to reduce air temperature (Ta) and reduce exposure to pavement concrete from solar radiation as the source of the outdoor heat stress. Meanwhile the water body functions strongly as a cooling element during hot weather as it increases the humidity. The finding of this study and the strategy on vegetation and water body applied in Banteng city park master plan is recommended for urban planners or designers as well as decision maker in strategising a climatically and sustainable city parks in Jakarta or a hot and humid city context.

ACKNOWLEDGEMENTS

This research and publication were supported by Universitas Indonesia. The Authors therefore, gratefully acknowledge the financial and technical support

REFERENCES

Adityo. 2016. Peningkatan Kenyamanan Termal Koridor Jalan melalui Desain Tata Vegetasi berbasis Simulasi (Studi Kasus : Jalan Supadi, Kotabaru, Yogyakarta). *Jurnal Arsitektur KOMPOSISI*, Volume 11, Nomor 3, April 2016

Arif, V., Yola, L. (2022). The Impact of Sky View Factor on Pedestrian Thermal Comfort in Tropical Context: A Case of Jakarta Sidewalk. In: Yola, L., Nangkula, U., Ayegbusi, O.G., Awang, M. (eds) *Sustainable Architecture and Building*

Environment . Lecture Notes in Civil Engineering, vol 161. Springer, Singapore. https://doi.org/10.1007/978-981-16-2329-5_4

Ashari, M.A., Yola, L. (2023). Effects of Microclimate and Public Perceptions on Outdoor Thermal Sensation in the Dense Area of Jakarta. In: Nia, E.M., Ling, L., Awang, M., Emamian, S.S. (eds) *Advances in Civil Engineering Materials*. *Lecture Notes in Civil Engineering*, vol 310. Springer, Singapore. https://doi.org/10.1007/978-981-19-8024-4_41

Ashri Prawesthi, D., Yola, L. (2022). Pedestrian and Bicycle Lanes in Transit Oriented Development Area of Dukuh Atas, Jakarta. In: Yola, L., Nangkula, U., Ayegbusi, O.G., Awang, M. (eds) *Sustainable Architecture and Building Environment Lecture Notes in Civil Engineering*, vol 161. Springer, Singapore. https://doi.org/10.1007/978-981-16-2329-5_5

Chen, L.; Ng, E. (2012). Outdoor thermal comfort and outdoor activities: A review of research in the past decade. *Cities 2012*, 29, 118–125.

Effendy, S., & Aprihatmoko, F. (2018). Kaitan Ruang Terbuka Hijau Dengan Kenyamanan termal perkotaan. *Agromet*, 28(1), 23. doi:10.29244/j.agromet.28.1.23-32

Effendy, S. 2007. Keterkaitan Ruang Terbuka Hijau dengan Urban Heat Island Wilayah Jabotabek. *Disertasi: Institut Pertanian Bogor*. Bogor (ID), p. 127

Elnabawi, M. H., Hamza, N., & Dudek, S. (2013). Use and evaluation of the Envi-MET model for two different urban forms in Cairo, Egypt: Measure-ments and model simulations. *Building Simulation Conference Proceedings*. doi:10.26868/25222708.2013.1237

Erell, Evyatar, David Pearlmutter dan Terry Williamson. 2012. Urban Microclimate: Designing the Spaces Between Buildings. *London : Routledge*

Erell, E.; Pearlmutter, D.; Wiliamson, T. Urban Microclimate: Designing the Spaces between Buildings; *Earthscan: London, UK*, 2011.

Givoni, B. Climate Considerations in Buildings and Urban Design; Van Nostrand *Reinhold: New York, NY, USA*, 1998.

Gupta, V.K. Solar radiation and urban design for hot climates. *Environ. Plan. B Plan. Des. 1984*, 11, 435–454.

Imansari, Nadia dan Parfi Khadiyanta. (2015). Penyediaan Hutan Kota dan Taman Kota sebagai Ruang Terbuka Hijau (RTH) Publik Menurut Preferensi Masyarakat di Kawasan Pusat Kota Tangerang. *Jurnal Ruang Volume 1* Nomor 3, 2015, 101-110

Groat, L dan Wang, D. 2002. Architectural Research Method. *New York: John Wiley & Sons, Inc*

Hidayah, A.F., Yola, L., Irwansyah, E. (2022). Identification of Public Open Green Space (RTH) and the Needs for Funding Alternative in DKI Jakarta. In: Yola, L., Nangkula, U., Ayegbusi, O.G., Awang, M. (eds) *Sustainable Architecture and Building Environment. Lecture Notes in Civil Engineering, vol 161*. Springer, Singapore. https://doi.org/10.1007/978-981-16-2329-5_23

Laurie, M. (1986). Pengantar Kepada Arsitektur Pertamanan. Bandung : Intermatra

Lippsmeier, Georg. (1997). Bangunan Tropis. Jakarta: Erlangga

Marpaung, B., Yola, L. (2022). Walkabilty Study on Pedestrian Path in the Rawamangun Velodrome Area, East Jakarta. In: Nia, E.M., Farshchi, I., Yola, L., Awang, M.

(eds) Sustainable Development Approaches. *Lecture Notes in Civil Engineering, vol 243.* Springer, Cham. https://doi.org/10.1007/978-3-030-99979-7_18

Mogot, P. J. A. V., Barus, L. S., & Yola, L. (2021). The impact of COVID-19 on the mobility of Transjakarta passengers. *IOP Conference Series: Earth and Environmental Science,* 716(1), [012135]. https://doi.org/10.1088/1755-1315/716/1/012135

Ng, E. Designing for Daylighting—Designing High-Density Cities for Social and Environmental Sustainability; Earthscan: London, UK, 2010.

Oke, T.R. Review of Urban Climatology, 1973–1976; WMO Technical Note No. 169, WMo No. 539; World Meteorological Organization: Geneva, Switzer-land, 1979.

Oke, T.R. Urban Environments. In The Surface Climates of Canada, (303–327); Bailey, W.G., Oke, T.R., Rouse, W.R., Eds.; McGill-Queen's University Press: Montreal, Canada, 1997.

Purwoko, B. A., Chotib., & Yola, L. (2022). Willingness To Modal Shift from Private To Public Transportation In Jakarta Metropolitan Area. *Planning Malaysia*, 20(21). https://doi.org/10.21837/pm.v20i21.1089

Sastrawan, I Wayan Wirya dan Ni Wayan Meidayanti Mustika. (2018). Persepsi Tingkat Kenyamanan Termal Ruang Luar Pada Ruang Publik Perkotaan (Studi Kasus: Taman Kota Denpasar Di Lumintang, Denpasar). *UNDAGI Jurnal Arsitektur*, *Volume 6*, Nomor 1, Bulan Juni, Tahun 2018 (Halaman 23 – 31)

Sastrawan, I Wayan Wirya dan I Gede Surya Darmawan. 2018. Simulasi Kenyamanan Termal Model Rekomendasi Taman Air Berarsitektur Tradisional Bali Pada Taman Kota I Gusti Ngurah Made Agung di Denpasar. *Jurnal Anala Vol.2* No. 18 / Pebruari 2018

Susanti, I., Harjana, T., & Pengantar, A. 2006. Aspek Iklim dalam Perencanaan Tata Ruang. Edisi IPTEK, 8

Ulfiasari, S., Yola, L. (2022a). Towards Climate Change Adaptive Spatial Planning: Urban Heat Islands Distribution in Jakarta Metropolitan Area. In: Nia, E.M., Farshchi, I., Yola, L., Awang, M. (eds) *Sustainable Development Approaches. Lecture Notes in Civil Engineering, vol 243*. Springer, Cham. https://doi.org/10.1007/978-3-030-99979-7_13

Ulfiasari, S., Yola, L. (2022b). How Does Urban Development Contributes to Urban Heat Island: A Decade Increase of Urban Heat Intensity in Jakarta Metropolitan Area. In: Yola, L., Nangkula, U., Ayegbusi, O.G., Awang, M. (eds) *Sustainable Architecture and Building Environment . Lecture Notes in Civil Engineering, vol 161*. Springer, Singapore. https://doi.org/10.1007/978-981-16-2329-5_9

Yola, L.; Adekunle, T.O.; Ayegbusi, O.G. The Impacts of Urban Configurations on Outdoor Thermal Perceptions: Case Studies of Flat Bandar Tasik Selatan and Surya Magna in Kuala Lumpur. *Buildings 2022*, 12, 1684. https://doi.org/10.3390/buildings12101684

Yola, L., Siong, H. C., & Djaja, K. (2020). Climatically responsive urban configuration in residential area: Research gaps. In E. Kusrini, & I. G. D. Nugraha (Eds.), *4th International Tropical Renewable Energy Conference, i-TREC 2019* [0700141] (AIP Conference Proceedings; Vol. 2255). American Institute of Physics Inc.. https://doi.org/10.1063/5.0013796

Yola, L., & Chin Siong, H. (2016). Solar Radiation and Urban Wind Effect on Urban Canyon in Hot, Humid Regions. *Environment-Behaviour Proceedings Journal*, 1(4), 220-229. https://doi.org/10.21834/e-bpj.v1i4.384

Yola, L., Ayegbusi, O.G., Saiya, H.G., Djaja, K. (2022). Empirical and Numerical Approaches in Urban Microclimate Modeling: Investigation on the Reliability. In: Yola, L., Nangkula, U., Ayegbusi, O.G., Awang, M. (eds) *Sustainable Architecture and Building Environment. Lecture Notes in Civil Engineering, vol 161*. Springer, Singapore. https://doi.org/10.1007/978-981-16-2329-5_7

Zhao, Q.; Sailor, D.J.; Wentz, E.A. Impact of tree locations and arrangements on outdoor microclimates and human thermal comfort in an urban residential environment. Urban For. *Urban Green. 2018*, 32, 81–91.

Received: 28th Feb 2023. Accepted: 31st March 2023

PLANNING MALAYSIA:
Journal of the Malaysian Institute of Planners
VOLUME 21 ISSUE 1 (2023), Page 274 – 298

GREEN CAMPUS IMPLEMENTATION IN THE MALAYSIAN PUBLIC UNIVERSITIES: CHALLENGES AND SOLUTIONS

Ahmad Afiq Mohd Muhiddin[1], Haryati Mohd Isa[2], Siti Rasidah Md Sakip[3], Othman Mohd Nor[4], Daljeet Singh Sedhu[5]

[1]*Building Lindungan Sdn Bhd,*
[2,3,4] *College of Built Environment Studies,*
UNIVERSITI TEKNOLOGI MARA, MALAYSIA
[5] *Academy of Language Studies,*
UNIVERSITI TEKNOLOGI MARA, MALAYSIA

Abstract

Green initiatives had been taken seriously by all parties including higher education institutions. Many researchers believed that university is an essential institution to find solutions to the complexities of current global environment issues. Indeed, university should be the key hubs for innovation and environmental education, as well as the execution of human behavioural change towards sustainability. Most universities worldwide nowadays including Malaysia starts to implement various green campus initiatives to combat global warming and fostering sustainable campus growth. However, there are several challenges encountered throughout the implementation. Thus, this research attempts to examine on the current green campus implementation practices in the Malaysian public universities. Three Malaysian public universities participating in the UI GreenMetric 2021 World University Ranking had been chosen as the case study. Each university is represented by a senior representative to participate in the semi-structured interview conducted. The interview questions were constructed based on the most common and relevant chosen indicators from all six categories of UI GreenMetric. The research findings revealed that although most Malaysian public universities had implemented green initiatives as outlined in the UI GreenMetric, numerous challenges occurred. But there are solutions to push green campus initiatives to the forefront. The university management and the communities should play major roles towards realizing Sustainable Development Goals, as well as assuring more sustainable practices in the future.

Keywords: Green Campus Initiatives, UI GreenMetric, Sustainability, Challenges

[2] Corresponding Author

INTRODUCTION

Green Campus rewards long-term obligation to continuous environmental improvement from the campus community. Green Campus status is attained by making significant improvement in across campus community collaboration under one or several of the themes outlined in The Universitas Indonesia GreenMetric Rankings. According to Omar et al., (2010) green campus refined the quality of human life while living within the carrying capacity of supporting ecosystems. Its implementation in higher education institutions can give many benefits to the campus community by living in a harmonious environment and green lifestyle. Indeed, universities hold responsibility in implementing sustainable universities on campus to promote sustainability culture among their students and staff.

Besides the 17 pillars of Sustainable Development Goals (SDGs), the Malaysian Green Technology Master Plan 2017-2030 is among Malaysia government strategies to further endeavour sustainability. One of its main goals is improving sustainable construction with major collaborations with higher institutions in building capabilities through the university's Centre of Excellence. The Ministry of Higher Education Malaysia through Conducive Ecosystem in Public Sectors urges immediate efforts to be taken by Malaysian public universities towards green campus initiatives. Echoing into this, numerous leading universities across the world including Malaysia have been actively implementing this agenda (Mohd Isa et al., 2021; Gholami et al., 2020; Gomez et al., 2019; Marrone et al., 2018; Benjaoran and Parinyakulset, 2018). However, despite several green campus initiatives taken, there are also challenges.

This research aims to examine the current green campus implementation practices in the Malaysian public universities. Two research objectives were established (1) to examine the challenges in implementing green campus in the Malaysian public universities and (2) to propose possible solutions towards green campus implementation in the Malaysian public universities. The research will assist green campus practitioners to enhance the sustainability of campus towards a healthier lifestyle among campus communities as well as reducing global warming effects and harmful waste within the campuses. Moreover, it also highlights on the current issues regarding green campus implementation to be acknowledged by the relevant authorities, education ministry and other related government bodies.

LITERATURE REVIEW

Definition and the Importance of Green Campus

Most researchers have similar definitions on green campuses. Green Office Movement (2021) view green campus as an educational institution that fulfils its natural resource demands, such as energy, water, and materials, without jeopardizing people's capacity in other nations and future generations to satisfy

their own. Green campus seeks to build university campuses with tangible effects on the environment, economy, and society towards as reducing negative impacts on environment pollution and human health to promote environmental sustainability (Ribeiro et al., 2019; Uche et al., 2013; Omar et al., 2010). These effects will be attained through campus community participation, sustainable infrastructures, education, research, management, and outreach. Meanwhile, Hosna (2014) and Husaini and Jusoh (2017) defined green campus as a condition in which people and nature can exist productively, permitting social, economic and environment to advance. Kay et al., (2012) stated that education for sustainable development also empowers individuals to build up the learning, value and aptitudes to make decisions on the method in which they were done by an individual or grouping, locally or globally that enhance personal satisfaction without harming the planet. Concurring into this, Xiong et al., (2013) emphasized that knowledge and information about green campuses can be distributed to all individuals through a green curriculum. Universities should map their curriculum against the SDGs pillars towards a world class programme. Agreeing to this, Du et al., (2013) and Castro et al., (2013) added that green curriculum requires alternate teaching approaches such as online learning rather than traditional, lecture-based pedagogy and commitment from the university administration. Likewise, Ragazzi and Ghidini (2017) added that in promoting green campus, the university should use their resources and experiences in teaching, research, and stewardship in approaches to enable society to make changes to a green lifestyle.

There are several benefits in implementing a green campus as stated by many scholars. According to Yiing, et al., (2013) and Sahoo (2008) green campus initiatives confirm the well-being of humans by integrating economic viability, conservation and protection of environment and social equity throughout construction, operation design, maintenance and waste. In addition, green campus will also minimise negative environment, economic, society, and well-being impacts of the campus communities towards a better practical lifestyle (Kristanto et al., 2017; Ragazzi and Ghidini, 2017; Foo, 2013) as well as engaging with others to implement and execute sustainable development (Yuan et al., 2013). Sustainable campus can create teaching future experts and improve skills and knowledge on sustainability development. It also enhances energy proficiency on campus, moving to renewable energy, food and other possessions used on and off campuses. Mongkoldhumrongkul and Sukkanta (2022) added that by understanding trends and important aspects helped a green university operate well to plan and enhance performance for optimum effectiveness.

University Sustainability Ranking System: UI GreenMetric

There are various global sustainability rating tools available such as GREENSHIPS, The Sustainability, Tracking, Assessment and Rating System (STARS), The College Sustainability Report Card @ Green Report Card and UI

GreenMetric. Amongst these rating tools, UI GreenMetric is the most widely used in Asian, European and U.S. universities (Lauder et al., 2015). Ragazzi and Ghidini (2017) also acknowledged that this is the most important global sustainability ranking for universities as it allows universities to share their experience and best practices on sustainability issues, as well as to measure their sustainability policy, facilitating a comparison between them.

UI GreenMetric was created by Universitas Indonesia in 2010. Its ranking instrument was based on the 3E's of sustainable development concept: Environment, Economics and Social (Suwartha & Sari, 2013) and (Benjaoran & Chunko, 2018). There are six categories used in the ranking with their weighting and indicators. A total of 39 indicators are provided for the categories and a specific score is assigned to each indicator. These are (i) Setting and Infrastructure (*Weighting*-15, 6 indicators), (ii) Energy and Climate Change (*Weighting*-21, 8 indicators), (iii) Waste (*Weighting*-18, 6 indicators), (iv) Water (*Weighting*-10, 4 indicators), (v) Transportation (*Weighting*-18, 8 indicators) and (vi) Education (*Weighting*-18, 7 indicators). The final score is the sum of the scores achieved for each indicator.

Green Campus Implementation in The Malaysian Public Universities

Green campus initiatives have generally been adopted by most Malaysian universities. There are 17 out of 20 Malaysian public universities participating in the UI GreenMetric 2021. Table 1 presents the list of Malaysian public universities that participate in the UI GreenMetric World University Rankings 2021. The top five ranked Malaysian public universities are Universiti Putra Malaysia (8425 points), Universiti Malaya (8375 points), Universiti Malaysia Sabah (8025 points), Universiti Utara Malaysia (7725 points) and Universiti Teknikal Malaysia Melaka (7700 points).

Each university practices different green campus approaches (A.Afiq, 2022; Mat Taib, 2022; Gholami et al., 2020; Gomez and Yin, 2019). These universities strive toward sustainability and conduct several strategies that can accommodate the need to become greener and more sustainable. Among the universities and their strategies are:

Table 1: List of Malaysian Public Universities Participated in UI GreenMetric World University Rankings 2021

No	World Rank	Malaysian Rank	Institution
1	27th	1st	Universiti Putra Malaysia
2	32nd	2nd	Universiti Malaya
3	67th	3rd	Universiti Malaysia Sabah
4	109th	5th	Universiti Utara Malaysia
5	110th	6th	Universiti Teknikal Malaysia Melaka
6	128th	7th	Universiti Malaysia Pahang
7	149th	8th	Universiti Teknologi Malaysia

8	150th	9th	Universiti Teknologi MARA Shah Alam
9	165th	10th	Universiti Tun Hussein Onn Malaysia
10	168th	11th	Universiti Sains Malaysia

Source: Universitas Indonesia, 2021

a) Universiti Sains Malaysia - implemented a future sustainable platform to support the major international goals such as the Millennium Development Goals and Education for Sustainable Development. In doing so, the university opted to venture forward based on the "Blue Ocean Strategy", which requires a unique and innovative way of thinking, taking actions and setting goals compared to the norms.
b) Universiti Utara Malaysia - won the global gold medal at the Green World Award 2016 for education and training and is known as the Ambassador of Green World 2016/2017. The university had implemented Electric Pedal Assisted Bicycles as its initiative towards promoting a green campus.
c) Universiti Teknologi Malaysia - introduced preservation policy and framework of a comprehensive programme to give ordinary balance on the environment, reduce carbon, practice to protect resources, waste/garbage reduction and increase recycling.
d) Universiti Teknologi MARA - has established the Institute Sustainable Initiatives UiTM, which consists of ten faculties and 39 excellence entities to initiate Greenation @ UiTM. This institute was undertaken to stimulate and encourage students and visitors on sustainability, experience, and interaction toward a healthy lifestyle.
e) Universiti Putra Malaysia - owns a reserve forest named Sultan Idris Shah Forest Education Center (SISFEC) as a centre for research and Education, organise tree plantation programme, rainwater catchment reused for watering plants and cleaning works, fully equipped with LED lighting with sensor system, utilises timer system for power cut off system of HAVC, solar energy, initiated greenhouse gas emission reduction programmes, Biorefinery@UPM to treat organic waste, Waste Bank@UPM, Red Cube recycling centre, promotes recycling campaign, implemented water reservoir system, water filtration system and water harvesting system, shuttle service in the campus, car-free day and car-pooling campaign, provide efficient pedestrian facilities and offers sustainability-related courses/syllabus/programmes.
f) Universiti Malaya - develop a green space i.e Rimba Ilmu, organise tree planting programme, underground flood retention pond in the campus to reduce the risk of flooding and improve water absorption system, replacing all lighting appliances into LED bulbs and LED street lighting, utilise Variable Refrigerant Volume (VRV) for HAVC system, smart building systems, greenhouse gas emission reduction programme, clean biomass, wind and hydropower, solar, UM Eco Campus Blueprint, UM Zero Waste Campaign, Takakura Composting, collaborating with other institution, cash or redeem

Mesra Card points for waste recycle, UM Safety Handbook on managing toxic waste in the campus, providing adequate number of recycling bins, double-sided printing policy, displaying water usage bills and records in the website, water harvesting system, UM Water Warriors initiatives, shuttle service in the campus, bicycle and electric scooters rental, MRT feeder bus, efficient pedestrian facilities, organise programs/events related to sustainability.

g) Universiti Sains Islam Malaysia - USIM's Smart University Blueprint (2018-2025), tree planting programme, had its own team responsible for the landscape and biodiversity in the campus, maintaining existing forest and lake on the campus, PTJ Lestari project, solar, launched Go Green Ambassador and Green Caliphs programme, emphasise on Maqasid Syaria', collaborating with an external organisation, adequate recycle bin, cooking oil recycling project and biodiesel project, water harvesting, shuttle service, double-sided printing policy, water harvesting system, shuttle service in the campus, bicycle and electric scooters rental, efficient pedestrian facilities, organise programs/events related to sustainability.

This notable strategy is an effort made by the universities not only to improve or achieve a high sustainability level, but also to improve the university's ecosystem and environment and to educate future generations to become more aware of sustainability practices (Dagiliūtė et al., 2018; Sahoo, 2013; Alshuwaikhat and Abubakar, 2008). Universities should also encourage students to actively participate or initiate a movement to preserve the environment to the public.

Challenges in Implementing Green Campus

Even though universities worldwide have taken several steps to ensure that their campuses run sustainably, emerging impediments are beginning to develop that provide significant difficulties for practitioners and ultimately prevent their implementation (Gholami et al., 2020). The main obstacles to develop green campus is lack of funds and insufficient administrative experience in carrying out green university incentives (Mongkoldhumrongkul and Sukkanta, 2022; Abubakar et al., 2020; Beringer, 2007). Scott et al., (2012) and McMillin and Dyball (2009) stated that there is lack of a systematic framework for the higher education institutions to accurately measure the campus efforts towards sustainability. In Malaysia, the use of sustainability gage is still new and very uncommon in practices (Darus and Atikah, 2012). Thus, most initial strategies to address sustainability in higher education vary substantially and remain fragmented. There is also a lack of construction standards and authority oversight to maintain a sustainable environment and manage high maintenance costs. Amaral et al., (2015) added that the university is shortage of professionals to provide green initiatives input for the university to implement. Individuals are

also not being rewarded for participating in sustainable activities, thus decrease community motivation to implement green campus agenda (Abubakar, 2020). Horhota et al. (2014) and (Foo, 2013) claimed that lack of campus infrastructure is also another challenges ensued. For instance, campus expansion, had changed the mode of transportation to motor vehicles, thus contributing to traffic congestion, reduction of air quality and unhealthy environment in campus. This gradually affects green spaces in the campus.

Nawi and Choy (2020), Hopkins (2016) and Neumayer (2010) concur that a lack of environmental knowledge and awareness among students and employees also contributes to impediments towards green campus. Likewise, there is also a lack of desire from universities to promote green education and activities to campus communities because they solely focus on research, education, community and operations (Tarigan, Prayogo & Mardiono, 2012). Yuan et al., 2013 stressed that the green campus agenda needs support from all university stakeholders such as the management team, faculty members, staff, students, parents and its alumni. Alshuwaikat et al. (2017) asserted that greening the mentality is the next stage after greening the campus failed to achieve societal transition toward sustainability. Tiyarattanachai and Hollmann (2016) recommended that a green campus may not be the ideal option if the institution is not sufficiently equipped.

Solutions For Challenges on Green Campus Implementation

Sagaran (2022) and Dave et al. (2014) highlighted the needs of a sustainable framework on green campus initiatives. In doing so, universities should incorporate all environmentally friendly practices and education to promote sustainability. The concept of low carbon campus for instance, will provide the university to become the initiator in redefining the current culture towards environment and establish new paradigms through the creation of sustainable solutions for the environment, social, economic and human well-being.

Benjaoran and Parinyakulset (2018) suggested for the universities to place a balanced emphasis between physical development and people's engagement to keep those green initiatives going. More interesting strategies regarding environmental and sustainable education such as green workshop, green curriculum and appointing an experienced committee in sustainability should be planned ahead. With these efforts it will significantly increase their awareness as well as the public towards a more sustainable lifestyle. Osman (2022) emphasized on the benefits of farming and agriculture activities in the campus such as economic, job/professions, sustainable food supply and technological opportunities to improve the environment towards sustainability.

Mohd Taib (2022) outlined several suggestions on the roles of universities on sustainable education. He suggested for energy efficiency, waste, transportation and water conservation to be included in green education. The

universities should enhance education and training programs that incorporate transdisciplinary and upskill/reskill programmes, research orientation on solving the operational activities and city's needs, students' transformation on habit shifting and becoming agent changer in community and expanding networking with other organizations and public. It is critical for the university to develop a green programme that everyone in a community can participate in to improve the quality of the environment. Nawi and Choy (2020) and Hooi et al. (2012) stated that the emphasis on the necessity of sustainable practices will be met if university community and stakeholders play their responsibilities in making it happen.

RESEARCH METHODOLOGY

This research employs the qualitative research approach. Three Malaysian public universities participating in the UI GreenMetric 2021 World University Ranking had been chosen as the case study. Each university is represented by a senior representative to participate in the semi-structured interview conducted. The interview questions were constructed based on the most common and relevant chosen indicators from all six categories of UI GreenMetric. The six categories are (i) Setting and Infrastructure (SI), Energy and Climate Change (EC), Waste (WS), Water (WR), Transportation (TR) and Education and Research (ED). The data from the semi-structured interviews were analysed using content analysis.

ANALYSIS OF FINDINGS

Findings for this research can be divided into two sections: (1) challenges of implementing green campus initiatives and (2) solutions to overcome the challenges. These are explained further in the following sections.

Challenges of Implementing Green Campus Initiatives in The Malaysian Public Universities

Setting and Infrastructure (SI)

Challenges in implementing initiatives to increase forest and plant vegetation area

The most common challenges to increase forest and plant vegetation areas on the campus is lack of finance. The respondents highlighted that the cost of implementing this initiative is very expensive. However, there is limited funds provided by the university to increase and improve nature and green areas in the campus. Thus, the universities decided to only preserve and sustain the well-being of the existing campus green areas as the university's budget is only allocated for maintaining the current landscape, forest and plant vegetation area in the campus.

Table 2: Challenges in implementing initiatives to increase forest and plant vegetation area

Respondents	Feedbacks
R1	Limited availability of land areas and funds. However, the university has a special project regarding forest and plant vegetation initiatives.
R2	Limitation of spaces and areas in the campus as well as the university's current financial situations. Currently, the university intends to preserve and maintain the wellbeing of existing green areas in the campus.
R3	Lack of cost and budget. The cost for implementing an initiative to improve forest and plant vegetation is quite high. Furthermore, the university's budget allocation is limited and only to maintain or to preserve plant vegetation in the campus.

Another constraint highlighted for SI is limited spaces and lands to be developed, particularly in urban campuses. However, one of the universities has its own reserve forest that executes numerous research projects towards forest and plant vegetation.

Energy and Climate Change (EC)

a) Challenges in implementing energy saving initiatives

Despite agreeing on full utilisation of renewable energy sources on the campus will maximise energy saving and is a good investment for the university, the respondents also highlighted several challenges faced in implementing this initiative. Although the university is fully equipped with energy saving systems and appliances, R1 and R3 affirmed that excessive energy usage could still occur due to lack of awareness among campus communities on effective ways to consume energy.

R3 also highlighted that the main issue in educating people is that it requires a lot of effort, time, support and cooperation from the campus community itself. Hence, the universities are working tremendously to educate and raise awareness of their communities on energy-saving initiatives.

Table 3: Challenges in implementing energy saving initiatives

Respondents	Feedbacks
R1	Although most of the electrical equipment in the university is energy saving certified, the staff and students are mostly unaware of the importance of minimising the usage of electrical consumption. Hence, the university is working tremendously towards educating the campus community to use energy wisely.
R2	Energy efficiency and energy saving in the campus has not become a major problem with all the energy saving initiatives that have been implemented so far. However, in terms of renewable energy, there is still quite a room for improvement because there is lack of buy-in and support for renewable energy initiatives in the campus.
R3	The main challenge to educate the community is it requires a lot of time, effort, support, and cooperation. Even if the latest technology for energy

	saving is available but the users are not aware or have no concern about energy saving, the energy wastage will still happen.

Meanwhile, R2 claimed that energy efficiency and energy saving are not a significant issue in the university due to the availability and implementation of their current energy-saving initiatives. The only problem they are facing is improving renewable energy generation and usage on campus, as there is a lack of buy-in and support from the university's top management and stakeholders.

b) Challenges to achieve targeted carbon footprint

R1 and R2 indicated that the major challenge towards achieving targeted carbon footprint is the limitation of finance. However, they will continue the efforts to reduce the carbon footprint through its affordable initiatives.

Table 4: Challenges to achieve targeted carbon footprint

Respondents	Feedbacks
R1	Limitation of finance. However, the university is constantly striving to achieve best results in reducing carbon footprint through doable and affordable initiatives
R2	Limitations of funding. Thus, the university is continuing the effort in a more creative and innovative way towards it.
R3	Awareness and knowledge of the campus community on carbon footprint. The university has not yet figured out the best approach to educate the campus community on reducing the carbon footprint since they are relatively new on a green campus. However, the university is working tremendously towards it.

R3 highlighted the issue of lack of awareness and knowledge among the campus communities on carbon footprint. Moreover, the university is relatively new in green campus initiatives. Thus, they have yet to find the best approach to educate their staff and students to reduce carbon footprint. Nevertheless, the university is working tremendously on it.

Waste (WS)

Challenges to improve the effectiveness of waste treatment in the university

R1 explained that the main challenge in waste treatment initiatives faced by the university is the current waste disposal culture practices among staff and students. Furthermore, there is also a lack of waste management policy especially for inorganic waste treatment in the university.

Table 5: Challenges to improve the effectiveness of waste treatment in the university

Respondents	Feedbacks
R1	The current waste management culture and practices among campus communities and lack of waste disposal policy in the campus. The

	management and treatment of inorganic waste treatment must be improved to ensure that it is well separated when transported from the campus.
R2	The implementation of the waste treatment initiatives is already applied and working. However, there is a lack of a well-coordinated team to continuously maintain the current waste treatment initiatives.
R3	The cooperation and contribution from the campus community to manage and treat waste in a more sustainable means

On the other hand, R2 mentioned that although the waste treatment initiatives are currently working well, there is a lack of well-coordinated teams in continuing the efforts of waste treatment projects. R2 also opined that, to improve waste treatment initiatives in the campus, the university needs more funding to enhance and upgrade the existing waste treatment approach.

Meanwhile, R3 highlighted the lack of support and contribution from the staff and students on waste treatment initiatives. There is also lack of coordination and interest among their communities to manage their own wastes in a more sustainable means. He believed that to increase the effectiveness of sustainable waste treatment requires collaborative support and participation from every single person in the campus.

Water (WR)

Challenges in improving the usage of water in the university

R1 and R2 concur on the lack of awareness on water saving practices in the university among their staff and students resulting in high monthly water bills.

Table 6: Challenges in improving the usage of water in the university

Respondents	Feedbacks
R1	The awareness of minimising water usage and water saving practice among campus communities is still lacking. Hence, the university faces difficulties in reducing water bills due to ineffective water usage among students and staff in the university.
R2	The only challenge faced by the university is there is still a need of efforts to raise awareness among campus communities on how to use water wisely.
R3	The cost of acquiring water saving equipment or technology is quite high and there are limited types of affordable water saving systems technology available in Malaysia. The current system used is expensive and uneconomical.

On the contrary, R3 highlighted the expensive and uneconomical initial cost to obtain water saving technology and equipment as the main challenges for this initiative. This is due to limited economical options available for these systems in Malaysia.

Transportation (TR)

a) Challenges to reduce the amount of gas vehicle in the university

R1 and R3 stated that the strict policy regarding bringing vehicles is difficult to be imposed on the staff since the majority of them depend highly on their own vehicles. This also may be due to the uncertainty of weather conditions in Malaysia.

Table 7: Challenges to reduce the amount of gas vehicle in the university

Respondents	Feedbacks
R1	Strict regulation regarding gas vehicles is quite difficult to be impose to the university's staff because they are still heavily reliant on driving their own gas vehicles
R2	Lack of funding, buy-ins, and bureaucracy, it is challenging to implement them.
R3	Generally, Malaysians prefer to use their own gas vehicles to commute rather than walking, cycling or using public transports. Other than that, the uncertainty of Malaysian weather and conditions also causes the people to use cars commuting to the university.

R2 mentioned that although several proposals regarding the use of electric powered vehicles in the campus have been brought forward, there are several obstacles such as lack of funding, buy-ins, and bureaucracy. Consequently, the proposals are to be put on hold until now.

b) Challenges in promoting cycling and walking in the campus

R1 explained that lack of interest among campus communities on cycling and walking is one of the challenges towards promoting cycling and walking practice. There might be students and staff who do not know how to cycle, or they are physically unable to ride or walk for a long distance due to health problems or unfit to do so. Moreover, the uncertain climate and weather conditions make cycling or walking to be impractical. Similarly, this is also faced by R3. He mentioned that due to their busy schedule, most students and staff agree that cycling and walking is time consuming and they prefer to commute using their own vehicles.

Table 8: Challenges in promoting cycling and walking in the campus

Respondents	Feedbacks
R1	Promoting cycling and walking in the campus is quite a challenge to the university as cycling and walking is deemed to be an activity that requires determination and effort. Other than that, another challenge is the uncertainty of Malaysian climate and weather which makes cycling to be impractical at certain times.
R2	The challenge in promoting cycling and walking in the campus is more towards the infrastructure initiatives to encourage cycling. The university also intends to promote the use of bicycle and walking in the campus with several innovative strategies under the latest university transformation plan.

R3	It is quite challenging to attract the community in the campus to commute by walking or cycling. Moreover, most of them opine that walking and cycling is time consuming as most of them have a busy daily schedule.

R2 explained that the university is unable to provide adequate safe bicycle lanes since there are limited spaces in the campus. Renovating the existing structures in the campus is deemed to be uneconomical and impractical. As of now, the university can only encourage cycling safely and impose strict regulation for other vehicles to ensure the safety of cyclists and pedestrians in the campus. R2 also added that the university is suggesting several initiatives and strategies to promote cycling and walking in the campus under the university transformation plan.

Education (ED)

Challenges faced to educate the campus community on environment and sustainability

R1 revealed that the main challenge to educate the students and staff is lack of interest and engagement among them to participate in education programmes regarding sustainability and environment. They found that educational programmes tend to be less appealing compared to other types of programmes in the university.

Meanwhile R2 mentioned the challenge in re-coordinating the hierarchy and management in certain departments especially faculties and departments that always have frequent restructuring of personnel, subordinates and top management positions. Thus, this makes the continuation of ongoing sustainability programmes in the campus to be quite challenging.

Table 9: Challenges to educate the campus community on environment and sustainability

Respondents	Feedbacks
R1	There is a lack of interest and engagement on educational programmes among the campus communities.
R2	Frequent restructures or changes of personnel and positions makes the continuation and operation of campaigns, events and activities regarding environment and sustainability becomes quite challenging.
R3	To make sustainable education much more systematic is through the top-down approach. There is a lack of education initiatives on environment and sustainability. Lack of funding from the government to carry out educational activities regarding sustainability such as increasing the research grants awards and projects to the public universities in Malaysia is also among the problems that arise.

R3 stated that there is a lack of policies regarding education for sustainability and environment from the Ministry of Higher Education for the universities to follow. In addition, lack of financial allocation from the ministry

to perform better educational programmes regarding sustainability and environment is also one of the critical factors to be considered.

Solutions Towards Green Campus Implementation in The Malaysian Public Universities

Setting and Infrastructure (SI)

R1 stated that the university should consider systematic planning towards green buildings and facilities for future developments in the university. They should also execute more tree planting programmes to increase plant vegetation area as well as improving the landscape in the campus.

Table 10: Innovative solution to improve setting and infrastructure

Respondents	Feedbacks
R1	If there is a need for a new building, it should consider thoroughly planning and developing a much greener building to improve the current setting and infrastructure towards a green campus. Other than that, the tree planting programme is also an innovative way to increase the plant vegetation area as well as improving the landscape in the campus.
R2	Public universities should encourage collaboration and cooperation with outside organisations and the industry to allow for more exchange of ideas and innovations to improve the setting and infrastructure towards green campus especially in the aspect of human capital development and future leaders for sustainability.
R3	The government should provide more budgets to improve setting and infrastructure towards green campus implementation

Based on the university's experience, R2 recommended public universities to look for more opportunities in partnership programmes with various organisations to enhance sustainability. Indeed, it could also improve the individual development of students and increase the student's employability when they graduate. R3 insists for the government to provide more financial assistance to the universities to improve the setting and infrastructure towards green campus.

Energy and Climate Change (EC)

Effective ways to maximise energy saving in the university

R1 and R2 believed that universities should enhance the campaign towards energy saving awareness among students and staff and the impacts of not using energy wisely. R2 also added that, energy saving initiatives and sustainable practices among campus communities should go side by side to ensure the maximum results on energy saving efforts in the university.

Table 11: Effective ways to maximise energy saving

Respondents	Feedbacks
R1	To improve the way of educating the campus community's awareness on the impact of excessive energy usage and how to minimise them in their daily lives.
R2	Education and awareness of the campus community should be the university's focus to maximise energy saving. Lack of education and awareness among campus communities can cause the implementation of latest technology to be pointless for energy saving.
R3	The best way to inculcate energy saving initiatives is to increase the use of renewable energy such as solar energy in the campus to reduce the energy bills. The government must accelerate the implementation of renewable energy initiatives in public universities by providing financial support in terms of research and development projects at university levels. Other than that, the government and university could also perform collaboration MoUs or MoAs with the industry and manufacturers to make the renewable energy system and technology more accessible and affordable.

R3 mentioned that the most effective way of energy saving is through the implementation of renewable energy initiatives. However, it is quite challenging because there is limited funding to kick start this initiative. Thus, the government should initiate more incentives towards the innovation of affordable technology for renewable energy generation in university levels as well as collaboration and support from the local renewable energy industry players or manufacturers.

Waste (WS)

Effective Ways to manage and dispose waste in the university

According to R1, one of the most effective and affordable ways for the university to manage and dispose of waste is by turning the wastes such as agricultural waste, food waste, sewage, and livestock manure into various biomass products or renewable energy sources. Apart from this, the university should also strengthen the reduce, reuse, and recycle campaigns and programmes in the campus.

Table 12: Effective ways to manage and dispose waste in the university

Respondents	Feedbacks
R1	One of the affordable ways for the university to manage and dispose of waste is by implementing biomass initiatives in the campus. Other than that, the university should enhance the reduce, reuse, and recycle programme as the world is becoming more polluted with wastes and landfills every day.
R2	The most effective way for efficient waste management in the university is education and awareness. The campus community should understand their roles in sustainable waste management and be aware of the impact of poor waste management on the environment.

R3	Public universities should venture with other recycling companies to improve their waste management and disposal in the campus.

R2 stated that to improve waste management initiatives, the university should educate the campus community on how to manage waste in a more environmentally friendly approach as well as understand the impacts of bad waste management to the environment. On the other hand, R3 believed that joint ventures with sustainable waste management companies will be very beneficial to the university. These companies could offer better environmentally friendly waste management services, thus could attract and increase interest in sustainable waste management among university students and staff.

Water (WR)

Effective ways to improve the usage of water saving initiatives

All respondents agreed that the universities should enhance the efforts of educating and raising awareness among campus communities on how to use water wisely and the impacts of water wastage. Universities should also encourage students and staff to conduct research and invest in an in-house rainwater harvesting system as this will not only provide a main water source for the campus but also contribute towards the local industry and university recognition at various levels.

Table 13: Effective ways to improve the usage of water saving initiatives

Respondents	Feedbacks
R1	The university should enhance the efforts of educating and raising awareness among campus communities on how to use water wisely and the implications of water wastage. The university could also encourage students and staff to invent and develop in-house rainwater harvesting systems to maximise rainwater collection as a main water source in the campus. Research projects on how to treat rainwater is also highly recommended.
R2	As for water saving initiatives, the most user-friendly way to promote water saving in the campus is through knowledge and awareness besides the application of latest technology as it may cost a lot to the university.
R3	Apart from implementing technology on water saving that is high in cost and requires funding, the university can improve water saving initiatives through water saving campaigns, water saving technology innovation competition, seminars and research projects.

In addition, various education programmes regarding water saving among the campus communities can be organised to promote the knowledge on the sustainability practices for water management.

Transportation (TR)

Effective ways to encourage more students to use bus, cycling and walking to reduce private gas vehicles inside campus

All respondents agreed for their respective universities to strengthen the policies and regulations for using private gas vehicles into the campus especially among students. R1 also mentioned several other initiatives that can be implemented to reduce private gas vehicles into campus such as restriction and reduction of parking spaces, improving the facilities for walking and cycling inside the campus and providing bicycle purchase discounts and rebates voucher for bicycle purchase among students.

Table 14: Effective ways to encourage more students to use bus, cycling and walking to reduce private gas vehicles inside campus

Respondents	Feedbacks
R1	The university should strengthen the regulations on using own motor vehicles inside the campus. The university should also improve the facilities for walking and cycling such as providing covered walkways for pedestrians, safe bicycle lanes, bicycle rental service, and effective bicycle parking. Other than that, the university can provide bicycle purchase discounts and rebates for students to buy their own bicycles.
R2	The university should strengthen the regulations and the criteria for eligibility of using private gas vehicles on campus among students. They should also strengthen the security and monitoring of vehicles and traffic in the campus, utilisation of campus bus as a free transportation and provide adequate facilities for pedestrians and non-gas vehicles
R3	The university can also utilise the university's buses as public transport for students with a cheaper ticket price or even for free. Other than that, universities should introduce a student cab programme that allows students to offer hailing service inside the campus.

R2 suggested for the university to strengthen the security and monitoring of vehicles and traffic in the campus, utilisation of available campus bus to offer free shuttle service and improve facilities provided for pedestrians, cyclists, scooters, and small electric vehicles. R3 opined on introducing an official student cab or hailing service in the campus to reduce gas vehicles in the campus.

Education (ED)

Effectives ways to educate and increase awareness on sustainability among university community and surrounding society

All respondents agreed that the university should not only focus on educating the students and staff in the university but also to educate the outside community regarding sustainability and environment. R1 and R2 concurred that universities should fully utilise digital media and platforms to promote awareness and education on sustainability as this approach is proven to be much cheaper than

conducting physical activities or campaigns. R2 added that the university should encourage the campus community to take part in sustainability related programmes and competitions that are organised by other organisations to improve their own personal skills and experiences.

Respondents	Feedbacks
R1	The university should fully utilise various internet mediums to promote and educate their students and staff as well as the public on sustainability.
R2	The university should emphasise more on education for sustainability not only to the campus community, but also to the public. University should also consider to fully maximise the use of social media which is becoming very accessible to promote knowledge and awareness regarding sustainability and environment. On the other hand, the university should encourage the campus community to take part in any competition or event regarding sustainability
R3	The university can appoint leaders in green initiatives to educate and increase awareness on sustainability among campus communities and surrounding societies. They should also encourage community engagement through sustainability related events that involve not only the campus community but opens for other neighbouring communities. Other than that, the university should have good policies and blueprints that include sustainability in education.

R3 suggested for other universities that are moving towards green initiatives to appoint green leaders to lead other communities on sustainable lifestyle as well as to educate them regarding sustainable practices. The university should also have a well-established green campus blueprint and policies that include sustainable education in the long term.

DISCUSSION

a) Challenges in implementing green campus initiatives in the Malaysian public universities

Generally, there are several common challenges faced by all the three universities. Limitation of finance is the most recurring challenge faced by the universities in multiple categories namely SI, EC, TR and ED. This is aligned with Hopkins (2015) and Elliott and Wright (2013). The second most common challenge is knowledge and awareness which is mentioned in EC, WS and WR categories. Concurring to this, Velazquez et al (2005), Nejati et al. (2011) and Nur et al. (2019) highlighted the lack of knowledge, awareness and engagement by the campus communities on green campus initiatives. Another common challenge towards green campus implementation is cost barrier. This challenge appears in several categories namely SI and WR. In SI, U3 highlighted the expensive cost of forest and plant vegetation improvement. In WR, the university

also mentioned the expensive cost for water saving appliances and technology acquisition and also added that there are limited choices of affordable water saving technologies. According to several scholars, the costs towards green campus initiatives implementation might be unbearable for some universities (Beringer, 2007; Hoffman, 2008; Horhota et al., 2014 and Hopkins, 2015).

Other than that, another challenge that can be perceived as a common challenge is lack of participation and engagement from the campus community especially in WS and ED. Specifically, in WS, U3 outlined the lack of contribution and cooperation from the campus community in waste management initiatives. Meanwhile in the ED category, U1 stressed on the lack of interest and engagement among campus communities in educational programmes towards sustainability. Nifa et al. (2016) mentioned that campus sustainability has become difficult to achieve since it necessitates the active engagement and cooperation of various stakeholders, notably the campus community. Velazquez et al. (2005) also highlights the lack of engagement from the campus community to be challenging in green campus implementation. Adding to this, participation should be the main focus towards green campus implementation (Kantamaturapoj et al., 2012) and (Benjaoran and Parinyakulset, 2018).

U2 also highlighted the lack of buy-ins and support from the university bureaucracy, management and stakeholders in EC and TR which refer to renewable energy initiatives and electric vehicle initiatives, respectively. Velazquez et al. (2005) and Hopkins (2016) stated that another impediment to the green campus strategy is a lack of understanding and awareness of sustainable development among university managements. Tiyarattanachai and Hollmann (2016) mentioned that if the university is not adequately prepared, a green campus may not be the best solution. Adding to this, the green campus agenda must be supported by all university stakeholders, including administration, professors, staff, students, parents, and alumni (Yuan et al., 2013).

Apart from that, there are also different challenges towards the implementation of green campus initiatives. In *SI category*, U1 and U2 stressed about the limitation of land area and space in the campus. It has prevented them from improving and increasing the green spaces especially forest and plant vegetation area. According to Nifa et al. (2016), the framework suggests that universities should consider green spaces. This is also agreed by Foo (2013) and Brandli et al., (2020) which stated the importance of green spaces in the campus towards ecological balance and human well-being. The depletion of green spaces in urban areas reduces opportunities for future generations to interact with nature and share their experiences and knowledge (Speake et al. 2013). Under EC category, U3 mentioned the lack of approach to educate and raise awareness of carbon footprint emissions among campus communities. This is due to the fact that most initial approaches to address sustainability in higher education differed greatly and are still often led by individuals (Scott et al., 2012) or fragmented to

this day (McMillin and Dyball, 2009). Concurrently, Alshuwaikat et al. (2017) stated that greening the mentality is the next step after greening the campus proved insufficient to bring about societal transformation towards sustainability.

Another challenge that needs to be stressed in the WS category is lack of waste disposal policies which are claimed to be occurring at U1. Velazquez et al. (2005) stated that, there is a lack of policies in promoting green campus implementation. Likewise, Hopkins (2016) also mentioned numerous obstacles that obstruct the implementation of green campus policies in universities. Moreover, the majority of the universities that successfully enlisted in the UI GreenMetric World University Rankings have worked hard and given continuous efforts towards sustainability and environmental policy at their respective campuses (Suwartha and Sari, 2013).

There are also several noteworthy challenges in the *TR category*. U1 and U3 faced a similar challenge in reducing the amount of gas vehicles in the campus i.e., high dependency and preference on using gas vehicles to commute to the campus. As for challenges in promoting cycling and walking in the campus, the majority of the universities agreed that the uncertainty of weather and climate conditions contributes towards lack of interest in cycling and walking in the campus among campus communities. Concurring to these challenges, Shields et al. (2014) stated that lack of environmental interests among students and staff contributes to the barriers towards green campus efforts. Nawi and Choy (2020) also added that the presence of different interests on environment and sustainability leads to different levels of knowledge and awareness among campus communities. Nevertheless, UM stressed on the lack of facilities for cyclists and pedestrians causing the encouragement of cycling and walking to be challenging. According to the framework by Nifa et al. (2016), the universities should consider planning for facilities, improvement of public space, increase accessibility and recreational space. Thus, the presence of adequate facilities and infrastructure can motivate campus communities to practise sustainability (Horhota et al., 2014).

In the ED category, the challenge that is worth to be highlighted is frequent restructuring and change in university's departments and bureaucracy that leads to the challenges in executing continuous efforts on sustainability in education. Without strong management and administration in universities, the implementation of green campus initiatives could be challenging (US EPA, 2008). According to Dacin et al. (2002) frequent changes in the organisational setting can clash with existing institutional settings and culture. Thus, the process of modifying the organisation's norms, regulations, culture, and routines must be examined.

b) Possible solutions towards green campus implementation in the Malaysian public universities

From findings, it is clearly shown that there are several common solutions and strategies towards green campus implementation and is suggested by the universities in multiple categories. The suggestion on partnership and collaboration towards green initiatives between universities and third parties are suggested in SI, EC and WS. In SI, UM suggested collaboration with other organisations to improve the settings and infrastructure of the university particularly towards human capital development. USIM suggested this strategy on EC category i.e., to develop affordable technologies on energy saving initiatives, specifically renewable energy generation in the campus. Meanwhile, in the WS category, USIM also suggested the universities to collaborate with recycling companies to improve waste management initiatives in the campus. The green campus framework by Nifa et al. (2016) specifically in sustainable collaborative procurement strategy, encourages the collaboration of universities and local suppliers or contractors to accelerate green campus implementation. Adding to this, SDSN Australia/Pacific (2017) also mentioned that SDGs allow universities to interact and collaborate with various industries and organisations to develop new research and education collaborations towards sustainability.

Another common suggestion that can be implemented in several categories namely EC, WS and WR is the enhancement of knowledge and awareness among campus communities. It is suggested that to improve the effectiveness of energy saving initiatives in campus, UPM and UM stated that universities should put extra effort in educating and raising awareness among campus communities on the energy saving practices and implications of energy wastage towards the environment. UM also stressed this matter into the initiatives of waste management towards waste reduction in the campus. Other than that, in terms of water saving initiatives, all universities also recommended the same strategy to improve water consumption in the campus. Mohd Isa (2016) and Benjaoran and Parinyakulset (2018) stated that awareness, knowledge and implementation of sustainability principles must be integrated into green campus. It is also added that, universities should conduct and encourage participation in sustainability related campaigns, offline/online events and activities, competitions, innovations, research, exhibitions as well as utilisation of internet mediums. These strategies were suggested as an effective solution towards multiple categories i.e., WS, WR and ED. UPM suggested universities to enhance reuse, reduce and recycle programmes as a solution towards the implementation of green campus initiatives under the WS category. Under WR category, UPM and USIM suggested the innovation and research programmes to be conducted among students and staff towards water saving and effective water management initiatives in campus. As for ED category, UM and USIM proposed universities

to encourage and attract the campus communities to participate in various sustainability related events and programmes to increase the level of knowledge and awareness, as well as gaining personal and university's achievements. Nejati et al. (2011) and Yarime and Tanaka (2012) emphasises that the university is the most strategic place to conduct various sustainable related activities, programmes and education. According to the US EPA (2008) and Mohd Isa et al. (2021), universities should conduct various sustainability related events, activities and campaigns to increase the awareness and engagement of the campus community towards green campus initiatives. Aziz and Said (2018) also added that competition-based programmes and initiatives are also effective strategies towards green campus implementation.

Other than that, another solution towards green campus initiatives implementation is for the government to provide support in terms of finance to speed up the transformation of public universities into green campuses. From the findings, the finance support from the government is important in several categories namely SI, EC and ED which is stressed by the representative from USIM. To improve the university's setting and infrastructure, the government should provide a budget and allocation for the universities to improve current buildings and infrastructures into much greener and environmentally friendly. In EC, it is also stressed that government finance support is required to accelerate the implementation of energy saving initiatives, especially research and development project grants. According to Najafian and Karamidehkordi (2018), developing renewable energy in campuses for the future remains a problem that requires both creativity and investment. Meanwhile in the ED category, government funding is also required to conduct educational activities towards sustainability and environmental awareness. Elliott and Wright (2013) highlighted that, in order to ensure the universities to prioritise sustainability over other operations and planning, financial support from the government is crucial. Cai et al. (2009) and Tan et al. (2014) also added that financial support from the government is important towards sustainable development.

There are also several different strategies suggested by the universities. In SI, UPM and USIM suggested that universities should outline necessary and strategic planning in improving their setting and infrastructure towards green campus. The universities require systematic planning towards the development of green campus (Nifa et al., 2016). Mohd Isa et al. (2016) stated that universities play a role in sustainable development through the processes of management and planning. Other than that, UPM also suggested tree planting programmes to increase and improve green areas in the campus. In EC category, USIM emphasised on the implementation of renewable energy in the campus. Sahoo (2008) stated that the implementation of renewable energy could significantly improve the energy efficiency in campus. Apart from the above, renewable energy can also help to reduce carbon dioxide emission (Fairuz et al., 2013).

Concurring to this, Mat Taib (2022) suggested that the universities should invest in renewable energy initiatives as soon as possible due to the long-term rewarding benefits in terms of cost, environmental and human well-being.

There are also numerous noteworthy solutions recommended in the TR category. It is found that the most common suggestion to encourage cycling and walking in the campus and reduce the amount of gas vehicles in the campus is by establishing or imposing stricter policies and regulations on bringing own vehicles in the campus among campus communities. In UI GreenMetric guidelines, transportation policies in campus are an important matter to be fulfilled by the participating universities, specifically, transportation policy designed to limit the number of motor vehicles used on campus (Suwartha and Sari, 2013). Nifa et al. (2016) also highlighted the transportation policies to be included in the framework of green campus.

Under the same category, UM and USIM suggested enhancing shuttle service, especially free bus shuttle service for campus communities. Benjaoran and Parinyakulset (2018) suggested that smart mobility on public transportation and shuttle services should be considered to reverse the current trend of personal vehicle usage in the campus. UPM and UM also suggested that facilities for cyclists and pedestrians be improved to encourage cycling and walking in the campus. According to Krizek et al. (2007), suitable infrastructure such as pavements, public areas, broad curb lanes, bicycle routes, safe parking, and office showers are required to promote walking and cycling.

Other than that, these universities also suggested other several unique solutions to encourage recycling and reducing gas vehicles in the campus. UPM suggested that the university should consider reducing the amount of car parking in the campus and provide rebates and discounts for bicycle purchases. Meanwhile, UM suggested enhancing and strengthening the security and monitoring of vehicles and traffic in the campus. Finally, USIM proposed a student cab programme which refers to hailing service to be conducted in the campus for students.

CONCLUSION

The present study has addressed the challenges and solutions on green campus implementation in the Malaysian public universities. It is notable that the most common challenge in increasing forest and vegetation areas on campus is lack of funding. It is hoped that the relevant authorities do give their attention in ensuring the importance of the sufficient fund. Thus, universities should be given sufficient funds to maintain and enhance the pivotal process of maintaining and implementation of a green campus environment. Furthermore, another major challenge which was addressed in this study was to educate the campus community on environment and sustainability. As this these are important parties in ensuring the process of implementation of the green campus goes on smoothly.

The present study has addressed a solution which is setting and infrastructure, whereby in the long term these two factors play an important role to ensure the sustainability of a green campus process continues. The present study recommends a different methodology being used to look in an in depth manner on the challenges and solutions on green campus implementation in the Malaysian public universities in a large-scale manner.

REFERENCES

Berglund, E., Westerling, R., & Lytsy, P. (2017). Housing Type and Neighbourhood Safety Behaviour Predicts Self-rated Health, Psychological Well-being and Frequency of Recent Unhealthy Days: A Comparative Cross-sectional Study of the General Population in Sweden. *Planning Practice & Research*, *32*(4), 444–465. https://doi.org/10.1080/02697459.2017.1374706

Darul Nafis Abas, Rozana Zakaria, Eeydzah Aminudin, Nurul Asmiera Ab Lah, Nur Syafiqah Aini Mohamad Nor Sharin, & Shaza Rina Sahamir. (2021). Issues and challenges of joint management body in high-rise residential facilities management: The developers. *Civil Engineering and Architecture*, *9*(5), 33–40. https://doi.org/10.13189/cea.2021.091304

Evans, G. W., Kantrowitz, E., & Eshelman, P. (2002). Housing Quality and Psychological Well-Being Among the Elderly Population. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, *57*(4), P381–P383. https://doi.org/10.1093/geronb/57.4.P381

Hashim, H. A., Sapri, M., & Shareena Azis, Ab, S. (2019). Strategic Facilities Management Functions For Public Private Partnership (Ppp) Healthcare Services In Malaysia. *Journal of the Malaysian Institute of Planners*, *17*(1), 35–47. https://doi.org/10.21837/pm.v17i9.584

Khalid, M. S., Ahmad, A. H., Zakaria, R., Rozita Arshad, & Pon, Y. (2017). Towards Strengthening Building Maintenance and Management by Joint Management Bodies (Jmb) in High Rise/Stratified Housing in Malaysia. *International Journal of Social Science and Humanity*, *7*(4), 239–242. http://www.ijssh.org/vol7/827-HI0004.pdf

KPKT. (2017). *Laporan Tahunan COB PBT 2017*. https://www.kpkt.gov.my/kpkt/resources/user_1/GALERI/PDF_Penerbitan/Laporan_Tahunan_COB/Laporan_Tahunan_COB_2017.pdf

KPKT. (2018). *Laporan Tahunan COB PBT 2018*. https://www.kpkt.gov.my/kpkt/resources/user_1/GALERI/PDF_Penerbitan/Laporan_Tahunan_COB/LAPORAN_TAHUNAN_COB_2018.pdf

KPKT. (2019). *Laporan Tahunan COB PBT 2019*. https://www.kpkt.gov.my/kpkt/resources/user_1/GALERI/PDF_Penerbitan/Laporan_Tahunan_COB/LP_COB_PBT_STRATA2019.pdf

KPKT. (2020). *HANDBOOK PENGURUSAN STRATA VERSI_1.0* (1.0). Kementerian Perumahan dan Kerajaan Tempatan. https://www.kpkt.gov.my/kpkt/resources/user_1/PROGRAM KPKT/2020_STRATA/GP/Strata_Handbook_2.0.pdf

Mohd Tawil, N., Yusoff, Y., Che-Ani, A., Goh, N., & Surat, M. (2012). A Study of

Management Corporation Financial in High Rise Residential with Correlation of Management Fund and Facilities Provided. *International Business Management*, *6*(3), 304–307. https://doi.org/10.3923/ibm.2012.304.307

Noor Suzilawati, R., Mariana, M. O., Muhammad Faris, A., Zakiah, P., & Izlan Fitri, A. A. (2021). Issues Faced By Tenants In High-Rise Strata Residential: Case Study Of Klang Valley. *Planning Malaysia*, *19*(5), 180–191. https://doi.org/10.21837/pm.v19i19.1070

Peterson, K. E. (2010). Security Risk Management. In *The Professional Protection Officer* (pp. 315–330). Elsevier. https://doi.org/10.1016/B978-1-85617-746-7.00027-4

Wong, J. Z. (2019). Towards Enforceable Standards, Rules and Rights in Strata Management: An Analysis. *IIUM Law Journal*, *27*(2), 397–446. https://doi.org/10.31436/iiumlj.v27i2.433

Received: 28th Feb 2023. Accepted: 31st March 2023

PLANNING MALAYSIA:
Journal of the Malaysian Institute of Planners
VOLUME 21 ISSUE 1 (2023), Page 299 – 313

SIMULATION OF PUBLIC ROADSIDE PARKING TARIFFS AS AN EFFORT TO ELEVATE REGIONAL RETRIBUTION

Rochmat Aldy Purnomo[1], Adi Santoso[2], Indah Puji Astuti[3], Dhutarso Aviantoro[4], Aulia Hapsari Juwita[5], Farah Binti Zaini[6], Richard Tomlins[7]

[1,2]*Faculty of Economy,*
[3]*Faculty of Engineering,*
UNIVERSITAS MUHAMMADIYAH PONOROGO, INDONESIA
[4]*Revenue, Financial and Asset Management Agency,*
PONOROGO, INDONESIA
[5]*Faculty of Economics and Business,*
UNIVERSITAS SEBELAS MARET, INDONESIA
[6]*Faculty of Social Sciences and Humanities,*
UNIVERSITI MALAYSIA SARAWAK, MALAYSIA
[7]*Faculty of Business and Law,*
COVENTRY UNIVERSITY, UNITED KINGDOM

Abstract

In the Ponorogo Regency RPJMD (Local government medium-term development plan) 2016-2021, the vision and policy direction taken by the local government is to increase people's welfare based on religious and cultural values. Regarding regional taxes and regional retribution (PDRD), regional autonomy can be implemented accurately, broadly, responsibly, and independently for government financing, and regional development can be adequately realized through local own-source revenue (PAD). On local own-source revenue, one of the sources of retribution is the public roadside parking tariff. In this case, Ponorogo Regency has a long road, which requires an effective and efficient parking arrangement. This study, therefore, aims to simulate and analyze parking retribution in Ponorogo Regency. The research method used descriptive quantitative and was carried out in several parking zones in Ponorogo Regency. The simulation employed a comparison between fixed, progressive, incidental, and a combination of the three. The simulation results uncovered that weekday retribution includes a fixed tariff at 21.38%, the combined tariff at 32.08%, and the incidental tariff at 46.52% of the total retribution revenues. On weekdays, there was a potential difference between fixed and combined tariffs of 10.69%, and the difference in potential retribution between combined and incidental tariffs was 14.44%. In addition, the parking tariff retribution during incidental activities revealed a fixed tariff of 21.43%, a combined tariff of 32.14%, and an incidental tariff of 46.41% of the total retribution revenues for incidental activities. The difference in potential retribution during incidental activities between fixed and combined tariffs was 10.71% and between combined and incidental tariffs was 14.27%.

Keywords: Parking, Parking Tariff Simulation, Ponorogo Regency Regional Retribution

[1] Corresponding Author

INTRODUCTION

Every year, an area must experience an increasing number of vehicles, likewise in Ponorogo Regency. Based on data from the Samsat (One-stop Administration Services Office) of Ponorogo Regency, the number of motorized vehicles by type in the sequence was 394,947 units in 2017, 426,768 units in 2018, and 491,778 units in 2019. Pasha Mahessa (2021) also explained that the number of motorized vehicles recorded in Samsat Ponorogo had increased yearly, especially on two-wheeled and four-wheeled vehicles. With the increase in the number of vehicles that are not matched by the number and area of parking spaces, it will undoubtedly create a condition where "parking becomes difficult and irregular." This phenomenon will impact traffic congestion on the road, reduce the quality of the city's aesthetic beauty in Adipura's assessment, and even reduce people's enthusiasm to go out of the house. The gap between the increasing number of vehicles and parking conditions will create a problem that needs to be analyzed thoroughly and systematically.

Based on Law Number 28 of 2009 concerning Regional Taxes and Regional Retribution, Ponorogo Regency Regional Regulation Number 3 of 2016 concerning Public Service Retribution, and Ponorogo Regent Regulation Number 95 of 2017 concerning Changes in Parking Service Retribution Tariff on Public Roadside, one of the agendas is an effort to increase the local own-source revenue (PAD) in the sector. As a result, Ponorogo Regency will explore and develop the supporting sector as a potential that needs to be organized. In this case, the service of providing a parking space is part of one of the conveniences for motorists/drivers. In addition, the collection of taxes and retribution in accordance with established regulations can be carried out evenly and not burden the community, especially in Ponorogo Regency.

However, the regulations made do not always go according to plan. In implementation and practice, obstacles and problems can arise. Obstacles emerge due to the parking management process, problems related to tariff differences, and differences in the potential and realization of retribution revenue receipts at each place when operating in the field. Here, parking management can be one of the functions that can reduce the level of difference between the potential and the realization of the parking retribution revenue. In urban areas with congested road conditions, new challenges will certainly show up, including concerns for urgent vehicles that do not need to park, but on the other hand, it is necessary to utilize and maximize parking space.

Research (Muzhar, 2020) elucidated that providing suitable parking spaces can reduce traffic flow disturbances and lower congestion on urban roads. Related to that, on-street parking is a major problem often encountered on urban roads. This phenomenon is also common in urban streets in the City of Al-Najaf, Iraq. In addition, the types of parking facilities are divided into on-street and off-

street parking. Besides, unlimited parking spaces can be done with free parking, while limited parking is usually controlled parking. Furthermore, on-street parking can cause a decrease in road capacity in two ways: narrowing the width of the road so that traffic flow is limited and causing a loss of road capacity that leads to congestion in urban areas. On-street parking can also be one of the causes of danger and risk for road users. Therefore, it is necessary to have strategies and programs that refer to the use of more well-organized parking resources. These challenges require adjustments in parking prices or tariffs and can even lead to an idea of real-time parking pricing considered more effective.

Moreover, related to government revenues in the economic sector, parking activities are one of the potential sources of city revenue. Since parking conditions on the side of the road can lead to reduced road capacity and decreased traffic segments, thereby lowering the speed of vehicles, it is necessary to determine the obligation to pay (retribution) for vehicles parked on the side of the road. It is under the Ponorogo Regency Regulation Number 3 of 2016 and Ponorogo Regent Regulation Number 95 of 2017. For this reason, this study aims to analyze and simulate parking tariff schemes, divided into fixed, progressive, combined, and even when in incidental conditions. Later, the expected benefit of this research is to contribute ideas and recommendation options for policymakers.

LITERATURE REVIEW

Parking Space

Based on Article 1 point 15 in Law Number 22 of 2009 concerning Road Traffic and Transportation, parking includes: "Parking is a condition where the vehicle stops or does not move for a while and is left by the driver." In Law Number 28 of 2009 concerning Regional Taxes and Regional Retribution (Law No. 2/2009), article 1 number 32 reads: "Parking is a stationary state of a vehicle that is not temporary."

Concerning the previously described law, parking tariffs are also referred to as parking retributions, which are included in the type of public service retribution, as stated in Article 110 paragraph (1) letter e of Law No. 28/2009, namely “Retribution for Parking Services on Public Roadside.”

Meanwhile, Article 109 of Law No. 28/2009 reads: "The object of public service retribution is a service provided by the local government for public interest and benefit and can be enjoyed by individuals or entities." Furthermore, Article 115 of Law No. 28 of 2009 explains that "the object of retribution for parking services on a public roadside, as referred to in Article 110 paragraph (1) letter e, is the provision of parking services on the public roadside determined by the local government in accordance with the provisions of the legislation." However, in the parking tariff stated in Law No. 28 of 2009 Article 127 letter e,

the type of retribution for business services includes the retribution for special parking spaces.

In the Government Regulation of the Republic of Indonesia Number 43 of 1993 concerning Road Traffic and Infrastructure, it is further explained that the determination of the location and construction of parking facilities for the public is carried out by taking into account the following matters: first, the general plan for regional spatial planning; second, safety and smooth traffic; third, environmental sustainability; fourth, convenience for service users. The implementation of parking facilities for the public is carried out by the government, Indonesian legal entities, and Indonesian citizens. The operators of public parking facilities may charge fees for the use of facilities on the condition that they must always try to maintain order, security, smooth traffic, and environmental sustainability. Besides, parking vehicles on the road can be done parallel or at an angle according to the traffic direction. Meanwhile, the parking space unit (SRP) measures the effective area for placing a vehicle (passenger car, bus/truck, or motorcycle), including free space and the door opening width for four-wheeled vehicles. A parking space unit is also a unit of measure needed to park vehicles according to various forms of provision. The parking space size can be affected by a. standard vehicle dimensions, b. free space for parking vehicles, and c. width of the vehicle door opening.

Parking Tariff Scheme

Peak hour traffic is the traffic volume that occurs during the busiest hours. The most active hours arise at different times, such as morning, afternoon, and evening. Vice versa, non-peak hour volume is when it occurs during off-peak hours (Wang Yan-ling, Wang Xin, 2016). Various studies on the scheme have been carried out (Dale, S., Frost, M., Ison, S., Quddus, M. and Warren, 2017) on the workplace parking levy (WPL) scheme by increasing the non-domestic private parking levy provided by entrepreneurs. In this regard, the city in England, i.e., Nottingham, in April 2012 became the first city to implement such a scheme. An autoregressive time series model that considers the impact of exogenous variables was used to evaluate the impact of introducing WPL on congestion. Subsequent research (Carvalho e Ferreira, D., and de Abreu e Silva, 2017) used a proposed online system, namely curb parking. In this case, on-street parking can also be referred to as curb facilities. A curb is a row parking by providing a side along the roadside, either one side or two sides of the road. The row can be an unlimited facility if the duration of parking is free, while it can also be a limited facility if the maximum duration for parking is determined. Limited facilities may be provided to avoid obstacles and problems due to parking.

In his research, Muzhar (2020) focused on two traffic jams in Al-Rawan and Al-Iskan to investigate the characteristics of on-street parking. Data were

collected directly in the field utilizing drones, video cameras, and manual calculations. The data included average parking turnover, waiting time, and type of parking. The results of his research uncovered that the waiting time for most of the parking vehicles at both locations was more than 80% for 30 minutes, so it can be concluded that illegal parking behavior is typical in these locations, both on weekdays and weekends. The suggestion is a more structured parking arrangement and provides a particular parking location even though it is off the road. Here, parking management is the best solution to the parking problem. Parking management with a specific plan can provide various economic, social, and environmental benefits. Thus, the application of parking management is recommended not to park on roads close to specific locations, such as pedestrian crossings, intersections, schools, and others. For this reason, an effective type of parking management is smart parking. Smart parking systems reflect modern and easy methods of handling information collected from sensors and then translated into commands and information by management systems via mobile applications or variable messages. The management system includes reducing vehicle mileage search time and can also reduce pollution. With parking management, it is hoped that it can create convenience for customers.

Furthermore, research (Chu et al., 2017) studied the substitution effect on parking costs to set parking prices. The results of the five scenarios showed that the optimal parking costs at least vary in time efficiency. The results revealed two innovative strategies for pricing parking tariffs based on origin and destination. These strategies include destination parking pricing (DPP) and original destination parking pricing (ODPP). Then, the study recommends adding a general function of parking tariffs for car users. Pricing is also carried out (H. Wang, Li, Cara, & Shang, 2020), and parking pricing is considered a tool to improve parking management and reduce traffic congestion. Their study examined the effect of time-varying prices, including parking duration and turnover, on off-street parking characteristics in Nanning City, China. The results demonstrated that parking duration decreases as parking prices increase (the elasticity relationship increases).

The research is supported by Mo, Kong, Wang, Cara, & Li (2021), who also scrutinized the effect/impact of pricing policy interventions for on-street parking management and user satisfaction with Regression Discontinuity Design (RDD), Structural Equation Model (SEM), and Binary Logistic Regression (BLR). The results exposed that the increase in parking tariffs significantly reduced parking volume by about 20% and parking duration by about 10%. Policy adjustments also led to higher parking prices, shorter parking distances to destinations, and more empty parking spaces. After the policy intervention, users were less sensitive to price but more to improve the overall quality of parking satisfaction. In this regard, J. Wang, Wang, & Zhang (2020) examined optimal

parking pricing with a parking permit distribution strategy to eliminate additional costs arising from competition for parking spaces. Their research proposed a hybrid management scheme with parking prices and parking permits. The results also showed that the hybrid scheme (combined) on parking prices is more effective than the pure parking scheme.

Then, Gore, Dave, Shah, Arkatkar, & Pulugurtha (2021) examined the effect of on-street parking on pedestrian characteristics to design efficient pedestrians. The research sites were in three areas of the central business district (CBD) of the main metropolitan city of Gujarat, India. Based on videography techniques, the investigation revealed that the effect of vehicles parked on the pavement surface (PSF) could reduce the speed and density of pedestrians by 14% compared to non-parked pavement surfaces (NPSF). In Indian cities, on-street parking requests are governed by an odd-even date scheme, and different pavement surfaces are developed for parking and pedestrian services. Meanwhile, in their research (Assemi, Baker, & Paz, 2020), they assessed the effect of parking habits and parking search times in three central business districts (CBD) of Brisbane, Australia. The results uncovered that around 80% of users who parked daily in the CBD found a parking space of fewer than three minutes, while almost 50% of users who occasionally parked in the CBD had to find a parking space of five minutes longer. It is concluded that the purpose of the trip also affected the time to find a parking space; there was a negative relationship between traffic volume and search time. Thus, the suggestion given is that users will tend to avoid peak traffic and provide real-time parking information to avoid congestion.

Moreover, the study by Lu, Huang, Guo, & Xiong (2021) also analyzed daily commuter trips following the same city's morning and evening departure schedules. Based on the Nash balance principle, it is to determine the parking location and choice of commuter departure time in the morning or evening. Parking fees will vary depending on location and time. Parking fees are also differentiated based on the order of arrival of commuters. The concept of this research is the same as Fu, Wang, Liu, & Huang (2021), who explained that parking density and price could significantly influence commuter arrival time choices. Thus, the solution offered is to provide a discounted parking fee scheme for ridesharing, thereby saving 50% of the cost.

In Indonesia, (Prasetyo, 2017) researched the title *"Analysis of public roadside parking and tariff simulations for increasing retribution for Magelang City."* The analysis and simulation of parking retribution were carried out at the study locus of 11 parking blocks in Magelang City with quantitative descriptive research methods sourced from secondary data. Furthermore, the simulation compared fixed tariff levies, progressive tariffs, and a combination of both. The simulation results then produced fixed tariff retribution of 16.71% of the total retribution revenue, while with the combined tariff, the potential value of 57.95%

was obtained, or there was a difference in the potential retribution of 41.24% when using a combined tariff.

RESEARCH METHODOLOGY

This study employed mixed data analysis methods, i.e., descriptive, quantitative, and qualitative. The data sources used were primary data, with surveys and interviews as data collection methods from parkir attendant and policymakers. The data collection technique was accidental sampling in 3 zone (Zone A, Zone B, Zone C). The mapping of roads used as on-street parking activities is divided into three zones with several parking sections, as displayed in Table 1 below:

Table 1: Ponorogo Regency On-street Parking Zone

Parking Zone	Street	Parking Location
Zone A-1	Jl. Hos Cokroaminoto	Tk. Mas Dewi - Tk. Roti sekar jaya, TK. Mas Mahkota candra until Omega Jaya and SMPN 1, Tk. Murni II (Jl. Thamrin), in front of BNI, Tk. Sinar Jaya siang, Tk. Sinar Jaya until nasi pecel malam, Tk Sinar Jaya Pagi, Tk. Sampurna, Tk. Harapan, Tk. Abadi, Swalayan Surya, Populer, Tk. Sumber murni, Ngepos, PKL Utara Pertigaan Ngepos, and in front of Toko Mas
Zone A-2	Aloon-Aloon	Jl. Aloon-Aloon Timur, Jl. Aloon-Aloon Barat, Es oyen aloon-aloon selatan, Jl. Aloon-Aloon Selatan, and Jl. Aloon-Aloon utara.
Zone B-1	Jl. Soekarno Hatta	Praktek Dokter Puspa/ pagi + Dr. Ruli, Soto Lamongan in front of the building of bakti/plastic, Pasar Stasiun, Tk. Moroseneng - Tk. Morodadi, Tk. Saerah, Tk. Prima Jaya / TK Irian, Tk. Star - Tk. Kalisa, Ruko Jarakan, Tk. ACC, and Mbok Rah.
Zone B-2	Jl. Gajah Mada	Tk. Angkasa, Queen salon, Tk. Murah, Ruko BCA, in front of BCA until Agus jaya foto II, Roda 4 Taman in front of BCA, TK. Raya - TK. Jaya Saksi, Naavagreen, TK. Laris Manis, TK. Gatotkaca until Kurnia Diesel, Ruko Ngepos, Bank Danamon, Tk. Nabila, Tk. Lancar jaya, and in front of STMJ.
Zone B-3	Jl. Jend. Sudirman	Tk. Matahari - Sate Gule, Tk. Tosana and Tk. Sumber Murni, Tk. Niki motor until Tk. Tas Lumayan, Tk. Matahari - Depot madiun, Tk. Abadi, Tk. Sami Jaya, Sate Gule in front of DPD Golkar, Tk. Agung, Tk. Sophie Martin, Soto Ali, BRI Jend. Sudirman + Rocket Chicken, Soto Borang Aloon-Aloon, and WOW Coffee.
Zone B-4	Jl. KH. Ahmad Dahlan	Semar, Tk. Inti Aroma, Tk. Ratna sari, and Luwes

Zone C-1	Jl. Sultan Agung dan Jl. Basuki Rahmat	Pos Mode, Tk. Delta foto, Joglo manis, Bebek Goreng Depan Joglo, Dunia mainan, Sukses Susu, Latare cafe/maret, TK. Karunia Foto, Jet Print, BRI Sarpon, Ayam Goreng Okas, Tk. Semangat and Bakso mandala, TK. Agya, Pasar Tonatan, Warung Bu Ayu, Apotik Bening, Fresh Mild Suromenggolo, Pertokoan Jeruksing, Puskesmas Jenangan, Gule in front of PCC, TK. Ratna Sari Panci, and Mie in front of PCC.
Zone C-2	Jl. Gatot Subroto	Tk. Talangagung, Tk. Besi Muda Makmur, Tk. Sumber sehat until Baru Motor, and TK. An Motor
Zone C-3	Jl. Diponegoro dan Jl. Trunojoyo	Tk. Angkasa Motor, Sumber Makmur, Dinamika ternak, Artomoro cellular, Apotek Karya Husada, Toko Sumber Jaya-Depot Ayam Bakar, TK. Benang Kencana, Mie Ayam Pak Mo Barat Aloon-Aloon, Salon iin, in front of Masjid Jami`, in front of Masjid Jami` (East Road), TK. Sabar Jaya Cell, in front of Pegadaian, TK. Kencana, TK. Mahkota, Tk. Bima Motor - in front of RSU Aisyiyah, in front of BRI, Trunojoyo diesel, and Sate Gule Trunojoyo.

Source: Department of Transportation, 2023

Then, the scope and respondents targeted in this study were the number of public roadside parking in Ponorogo Regency. The data obtained included the location of three parking zones in Ponorogo Regency, the number of vehicles parked at peak hours, non-peak hours, and in incidental conditions, details of the percentage of parking vehicles, both two-wheeled and four-wheeled, and the amount of parking revenue in the parking zone under study. Then, the data obtained were analyzed and simulated using a comparison between retribution and fixed tariffs, progressive tariffs, and a combination of the two.

ANALYSIS AND DISCUSSION

To develop the transportation system, the Ponorogo Regency Government arranges development that creates smoothness, order, security, safety, and comfort. The primary road network system developed includes arterial (national), collector (provincial), and local (urban) roads. Public roads are in the secondary road network system within the regency and strategic roads. Based on Law Number 3 of 2004, Government Regulation Number 34 of 2006 concerning Roads, and Ponorogo Regency Regional Regulation Number 1 of 2020 concerning Road Implementation and Traffic Management, the road network system is a unified road network that connects and binds growth centers with areas under the influence of their services in a hierarchical relationship. In the

development area unit, this road network connects continuously between first-level cities, second-level cities, third-level cities, and others. In addition, it also connects the first level city with the first level city between development area units.

Specifically, the population of Ponorogo Regency in 2020 reached 949,320 people with an area of 5,119,905 ha. Ponorogo Regency also has the advantage of a strategic location, which is located as the center of regional activities in Madiun - Pacitan - Trenggalek - Wonogiri (Central Java) - Magetan, so it has a vital role both as a collection center and as a distribution center for its hinterland areas. The total length of roads according to the level of government authority in Ponorogo Regency in 2021 was 1002.35 km, each of which was divided into three parts: state roads with a length of 42.83 km, provincial roads with a length of 43.41 km, and regency/city roads with a length of 916.11 km. In addition, the Ponorogo Regency's road network pattern is radial, and some of it is a grid pattern. It is beneficial if it is associated with a rapid and equitable urban growth system. The road network that passes through Ponorogo Regency consists of provincial, regency, and urban roads. The provincial road in the north connects Ponorogo Regency and Madiun City, while the south connects Pacitan and Trenggalek Cities. The overall length with secondary and primary functions based on the RUTR (General Spatial Planning) of Ponorogo Regency, which does not include secondary local roads and the environment, is 73,737 meters. Furthermore, the local road network functions as a liaison between the centers of the smallest residential units (hamlets) with cities or regions with a higher regional level. Local roads are spread evenly throughout Ponorogo Regency. Besides, the Ponorogo Regency transportation sector arrangement is regulated by the Ponorogo Regency Transportation Service. The complete and detailed position of the parking zone can be seen in the map in Figure 1 below.

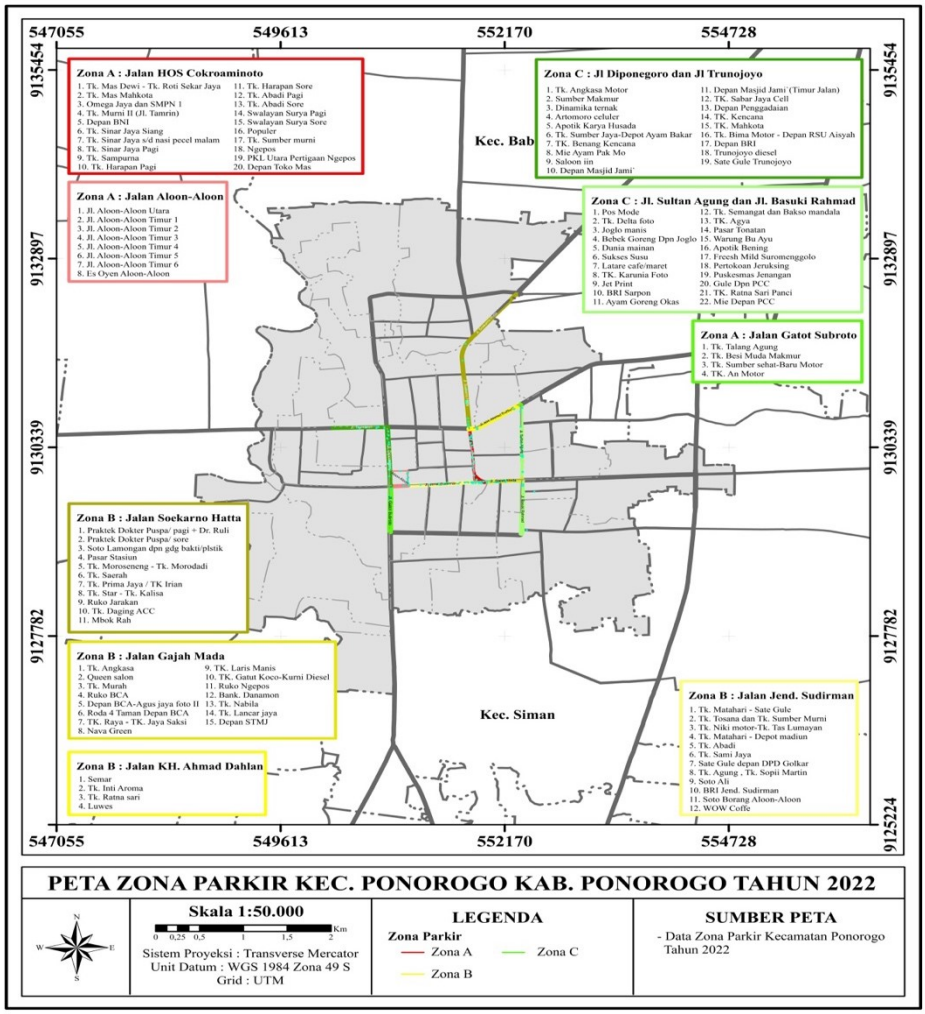


Figure 1: Map of Ponorogo Parking Zone in 2023
Legend: Parking zone Zone A, B, C

On-street parking has two categories: roadside areas without parking controls and roadside areas with parking controls. Roadside areas without parking control are the most common type of parking, and the arrangement is not controlled, causing traffic flow disturbances. It is different in areas with parking control, where service facilities are more regular, and the flow of vehicles in and out conditions are more controlled. Even though the area is on the road, it will still interfere with the smooth traffic flow.

The determination of the tariff scheme is carried out in four categories, including a) fixed tariffs, based on payments during peak hours and non-peak hours, with the same amount of value paid, and a payment system for tariffs that does not differentiate the length of time parking for a vehicle; b) progressive tariffs, based on peak hours, with different payment values determined in the first time unit and the next time unit; it means that the payment system for the amount of the tariff takes into account the length of time a vehicle has been parked; c) a combination of fixed and progressive tariffs; d) incidental tariffs, based on certain conditions, or there is an ongoing activity/implemented in that place, with temporary activities in nature and not exist all the time. Based on the tariff categories, the tariff simulation at the beginning of Table 1 regarding the tariff potential can be shown.

Table 2: Conditions of Peak Hours, Non-Peak Hours, and Revenue per Day (Weekdays-IDR)

Zone	**Weekdays**			
	Number of Parking Vehicles			**Revenue per Day (IDR): Bike IDR500, Motorcycle IDR1,000, and Car IDR2,000**
	Peak Hours	**Non-Peak Hours**	**Total**	
Zone A-1	1,008	732	1,740	2,100,000
Zone A-2	992	368	1,360	782,500
Zone B-1	152	104	256	318,000
Zone B-2	224	132	356	448,000
Zone B-3	256	72	328	144,000
Zone B-4	452	20	472	590,000
Zone C-1	1,232	256	1,488	1,854,000
Zone C-2	400	152	552	504,000
Zone C-3	1,072	196	1,268	1,488,000
Total Revenue in One Day				8,228,500

Source: Research data, processed

In Table 2, the results showed that each part had a different quantity of parking vehicles in each parking zone. Zone A part 1 is an economic activity block located on the Hos Cokroaminoto road section as one of the new tourism icons of Ponorogo Regency, while the lowest n9 umber of parking vehicles was in the position of Zone B part 3, namely Jalan Jend Sudirman, which became the fast lane when the one-way road was started. The parking tariffs in Table 4 were calculated based on the multiplication of the number of parking vehicles with the tariffs for IDR500 for bikes, IDR1,000 for motorcycles, and IDR2,000 for cars.

The tariff conditions were used as fixed tariffs during peak and non-peak hours, regardless of the quantity. Table 4 also describes the number and revenue of parking during weekdays. However, in Ponorogo Regency, there are also certain incidental conditions. Incidental activities include commemoration of holidays, community activities, government activities, and others, which certainly have different parking tariffs. The results of parking tariffs during incidental conditions are shown in Table 3.

Table 3: Conditions of Peak Hours, Non-Peak Hours, and Revenue per Day (Incidental Activities-IDR)

Zone	Incidental Activities (Holidays, Community Activities, and Others)			
	Number of Parking Vehicles			Revenue per Day (IDR): Bike IDR500, Motorcycle IDR1,000, and Car IDR2,000
	Peak Hours	Non-Peak Hours	Total	
Zone A-1	4,032	2,928	6,960	8,400,000
Zone A-2	3,968	1,472	5,440	3,130,000
Zone B-1	608	416	1,024	1,272,000
Zone B-2	896	528	1,424	1,792,000
Zone B-3	1,024	288	1,312	576,000
Zone B-4	1,808	80	1,888	2,360,000
Zone C-1	4,928	1,024	5,952	7,416,000
Zone C-2	1,600	608	2,208	2,016,000
Zone C-3	4,288	784	5,072	5,952,000
Total Revenue in One Day				32,914,000

Source: Research data, processed

The calculation results of parking tariffs during incidental activity conditions showed a drastic increase in daily revenue. It is because many people came out with vehicles to see performances, for example, *grebeg suro*, heritage carnivals, concerts, and others. Zone A part 1 was a block for organizing activities that pass through the Hos Cokroaminoto road section, while the lowest number of parking vehicles was in the position of Zone B part 3, namely Jalan Jend Sudirman, which is a fast lane and limited parking locations. Parking tariffs in Table 3 were calculated based on the multiplication of the number of parking vehicles with the tariffs IDR500 for bikes, IDR1,000 for motorcycles, and IDR2,000 for cars. In fact, parking tariffs that might be charged during incidental activities were mostly not based on the Regent's Regulation tariff (tariffs outside the Regent's Regulation), namely IDR1,000 for bikes, IDR2,000 for motorbikes,

and IDR5,000 for cars, and some even charged IDR3,000 for motorbikes and IDR10,000 for cars.

Meanwhile, the results obtained between the combined (progressive) tariff and the incidental tariff were IDR10,414,000 per activity. It signifies that if the assumption of one year is calculated the same as the calculations made in the final PAD report, the parking space belonging to the Ponorogo Regency Road in 2021 was 312 working days. Therefore, if accumulated, the potential retribution revenue was IDR 3,249,168,000, IDR 2,607,888,000 more than the calculation results in the final report on PAD for parking spaces belonging to Ponorogo Regency in 2021. Then, the revenue still had to be reduced by the cost of operating personnel (parking attendants) in one year so that the potential revenue was IDR 7,321,392,000 when using a combined tariff, and the potential incidental tariff obtained was IDR 10,570,560,000, or there was still potential revenue of 18.16% from the combined tariff scenario.

CONCLUSION

The simulation results analysis showed that the weekday fixed tariff retribution was 21.38% of the total retribution revenue. The combined weekday tariff earned a yield of 32.08%, and the incidental tariff on weekdays was 46.52% of the total retribution revenue. On weekdays, there was a potential difference between fixed and combined tariffs of 10.69% and a difference in potential retribution between combined and incidental tariffs of 14.44%. In addition, the parking tariff retribution during incidental activities with a fixed tariff was 21.43%, the combined tariff was 32.14%, and the incidental tariff was 46.41% of the total incidental activity retribution revenue. The difference in potential retribution during incidental activities between fixed and combined tariffs was 10.71%, and the difference in potential retribution between combined and incidental tariffs was 14.27%.

In this case, the combined and incidental tariffs have the potential to be applied, but a parking regulation policy is needed to find an agreement/compromise between the number of parking spaces designated for moving vehicles (arranging existing zones). In technical parking, it is also necessary to make provisions for parking with the function of delivery vehicles, both short and long parking in each available parking zone. It helps provide public services to increase user (community) satisfaction. Therefore, it is necessary to design parking lots and driveways in such a way that they do not interfere with road traffic, especially in zones where the intensity of the number of parking vehicles is high and the road conditions are not wide enough. Moreover, information technology intervention is required to ensure and support that the interests of the existing business units along the road can be improved by a neat, beautiful, and good parking arrangement. In zones close to public transport

access, it is necessary to ensure that parking and public transport transit policies are complementary; for example, car parking facilities adjacent to express bus routes will improve the passenger rate of public transport. In addition, monitoring and evaluation need to be carried out to maintain the surrounding environment's character by limiting parking and enforcing land use control. In this regard, it is also necessary to study efforts to control the supply and demand for parking through tax mechanisms, encourage short-time parking, and limit long parking. Thus, it can function to improve the main trading area because the character of parking in Ponorogo Regency tends to be in certain zones, which have relatively high economic activity and community activities.

REFERENCES

Assemi, B., Baker, D., & Paz, A. (2020). Searching for on-street parking : An empirical investigation of the factors influencing cruise time. *Transport Policy*, *97*(July), 186–196. https://doi.org/10.1016/j.tranpol.2020.07.020

BPS, P. (2021). Kabupaten Ponorogo Dalam Angka 2022 (Ponorogo Regency in Figures). *BPS-Statistics of PONOROGO*, *35020.2003*, 275.

Bupati Ponorogo Provinsi Jawa Timur. (2020). Salinan Peraturan Daerah Kabupaten Ponorogo Nomor 1 Tahun 2020 Tentang Penyelenggaraan Jalan Dan Pengaturan Lalu Lintas.

Carvalho e Ferreira, D. and de Abreu e Silva, J. (2017). 'Tackling cruising for parking with an online system of curb parking space reservations,' Case Studies on Transport Policy. *World Conference on Transport Research Society*, *5(2),* 179–187. https://doi.org/doi: 10.1016/j.cstp.2016.11.004.

Chu, C. P., Wang, C. Y., & Hu, S. R. (2017). ScienceDirect ScienceDirect ScienceDirect Application of E-Tag in Pricing Road Tolls and Parking Fees for Traffic Congestion Mitigation Application of in Pricing Road Tolls and Parking Fees for Traffic Congestion Mitigation, *00*. https://doi.org/10.1016/j.trpro.2017.05.286

Ciptakarya. (2020). Profil Kabupaten / Kota Kota Ponorogo Jawa Timur.

Dale, S., Frost, M., Ison, S., Quddus, M. and Warren, M. P. (2017). 'Evaluating the impact of a workplace parking levy on local traffic congestion: The case of Nottingham UK. *Transport Policy. Elsevier Ltd*, *59(Septemb*, 153–164. https://doi.org/doi: 10.1016/j.tranpol.2017.07.015.

Departemen Perhubungan Direktur Jenderal Perhubungan Darat. (1996). Pedoman Teknis Penyelenggaraan Fasilitas Parkir, *1*(1), 41.

Fu, Y., Wang, C., Liu, T., & Huang, H. (2021). Research in Transportation Economics Parking management in the morning commute problem with ridesharing. *Research in Transportation Economics*, (July 2020), 101037. https://doi.org/10.1016/j.retrec.2021.101037

Gore, N., Dave, S., Shah, J., Arkatkar, S., & Pulugurtha, S. (2021). Case Studies on Transport Policy Effect of On-Street parking on pedestrian flow characteristics and level of service - an Indian viewpoint. *Case Studies on Transport Policy*, *9*(3), 1386–1398. https://doi.org/10.1016/j.cstp.2021.07.012

Lu, X., Huang, H., Guo, R., & Xiong, F. (2021). Linear location-dependent parking fees

and integrated daily commuting patterns with late arrival and early departure in a linear city. *Transportation Research Part B*, *150*(June), 293–322. https://doi.org/10.1016/j.trb.2021.06.012

Mo, B., Kong, H., Wang, H., Cara, X., & Li, R. (2021). Impact of pricing policy change on on-street parking demand and user satisfaction : A case study in Nanning, China. *Transportation Research Part A*, *148*(November 2020), 445–469. https://doi.org/10.1016/j.tra.2021.04.013

Muzhar, A.-J. and. (2020). ScienceDirect ScienceDirect ScienceDirect in a changing world Characteristics of On-street Parking On-street Parking in Al-Najaf City Urban Characteristics of On-street Parking On-street Parking in Al-Najaf City Urban Streets. *Transportation Research Procedia*, *45*(2019), 612–620. https://doi.org/10.1016/j.trpro.2020.03.050

Ponorogo, B., Jawa, P., Peraturan, T., Ponorogo, B., Perubahan, T., Retribusi, T., … Republik, L. N. (2017). S a l i n a n.

Pasha Mahessa, C. (2021). Pengaruh Pengetahuan Pajak dan Akuntabilitas Pelayanan Publik terhadap Kepatuhan Wajib Pajak dalam Membayar Pajak Kendaraan Bermotor dengan Sanksi Perpajakan sebagai Variabel Moderating. *Universitas Muhammadiyah Ponorogo*, (Skripsi S1).

Prasetyo, A. (2017). Parking of General Road And Simulation of Tariff to Improve Magelang City Retribution. *Jurnal Penelitian Transportasi Darat*, *Volume 19,*(Desember 2017), 263–272.

Wang, H., Li, R., Cara, X., & Shang, P. (2020). Effect of on-street parking pricing policies on parking characteristics : A case study of Nanning, *137*(March 2017), 65–78. https://doi.org/10.1016/j.tra.2020.04.003

Wang, J., Wang, H., & Zhang, X. (2020). A hybrid management scheme with parking pricing and parking permit for a many-to-one park and ride network. *Transportation Research Part C*, *112*(August 2018), 153–179. https://doi.org/10.1016/j.trc.2020.01.020

Wang Yan-ling*, Wang Xin, Z. M. (2016). Current Situation and Analysis of Parking Problem in Beijing. *Procedia Engineering*, *137 (2016*, 777 – 785.

Received: 28th Feb 2023. Accepted: 31st March 2023

PLANNING MALAYSIA:
Journal of the Malaysian Institute of Planners
VOLUME 21 ISSUE 1 (2023), Page 314 – 328

THE ISLAMIC ART AND DESIGN ELEMENTS APPLIED IN THE ISLAMIC CITY, A CASE STUDY OF PUTRAJAYA ISLAMIC CITY

Ziad Baydoun[1], Nawal Abdulrahman Alghamdi[2], Zumahiran Kamarudin[3]

[1,3]*Kulliyyah of Architecture and Environmental Design,*
UNIVERSITI ISLAM ANTARABANGSA MALAYSIA
[2] *Faculty of Design and Art Department of Visual Art,*
UNIVERSITY OF UMM AL QURA

Abstract

It is supposed to have three art components giving an Islamic identity: geometric, floral, and Islamic calligraphy. Putrajaya is created to present the Islamic city in Malaysia. The Islamic art components are highly applied to the buildings' motifs and ornamentations. However, the element of calligraphy is missing in the overall features of the Islamic city patterns. Therefore, this study aims to identify the Islamic components in Putrajaya's administrative public buildings. Then, to analyse the Islamic decorative elements and highlight the importance of calligraphy in determining the building's character and identity as one of the main elements that should be applied to Putrajaya's administrative public buildings. This paper analyses a few important buildings in the city of Putrajaya. Most of the required data were collected by doing photographic documentation and on-site studies besides semi-structured interviews with the government. The researcher chose Putrajaya city to be the selected research area, focusing on the public and administrative buildings. The researcher picked a few examples of public buildings for the study. In each building, the researcher recognizes the applied Islamic element that can be found in it. These buildings are the Moroccan pavilion, Putra Mosque, The Ministry of Finance, Masjid Tuanku, Mizan Zainal Abidin, and Complex Islam Putrajaya. The analyses determine several types of elements and components with tangible and intangible qualities that articulate their compositional order. Each type of component carries a special meaning and symbolization of Islamic culture. it is essential to apply calligraphy to represent the complete form of Islamic heritage. Further research is essential to create a guideline to help the designers and architects by providing the Islamic city's best image.

***Keywords**:* Islamic elements, calligraphy, administrative building, Putrajaya

[1] Corresponding Author

INTRODUCTION

Putrajaya city in Malaysia was created to be an administrative centre of the country where a diversity of powers from different ethnicities came together. It was needed in the colonial era to represent the trend of borderer's development in Southeast Asia. Putrajaya puts religious issues, identical nations as well as globalization into a city scale (Moser, 2010).

Putrajaya represents several Islamic elements in the decorative exterior envelopes and its impressive interiors. The usage and instalment of Islamic architectural elements differ based on the type of the building and the number of occupants that can host (A. I et al., 2016; King, 2007; Morris et al., 2016). There are two Islamic decorative elements applied in Putrajaya city: the floral motif and geometrical design patterns. Those elements gave Putrajaya the name of the brand-new Islamic town inspired by the Middle East's sophisticated designs and taken from a diversity of sources such as Ottoman, Safavid, Central Asian, Iraqi, Persian, Moorish, and Mughal architecture, resulting in an eclectic assortment of recognizably "Islamic" architecture and urbanism (Moser, 2010). Putrajaya is designed entirely in-house, creating a local functional character with an aesthetically appealing Islamic building.

Putrajaya's unique ceremonial space and the architecture's symbolism have drawn upon diverse influences resulting in impressive 'Malaysian-Islamic' buildings in character and universal in outlook (A. I et al., 2016).

Recently, cultural values became the focus for identical and sustainable modern buildings, giving a special effort to apply Islamic decorative elements in the design of the administrative and public buildings in Putrajaya. Strong visual images borrowed for public art in Putrajaya help to facilitate a unique structure and give the city its identity (Bunnell, 2002; King, 2007). This paper discusses the application of Islamic decorative elements in chosen public administrative buildings in Putrajaya and the percentage of elements used in Putrajaya overall. Therefore, this research aims to analyse the Islamic decorative elements and highlight the importance of calligraphy in determining the character and identity of the building as one of the main elements that should be highly applied to public buildings in Putrajaya.

LITERATURE REVIEW

This section analyses several buildings' decorations in Putrajaya regarding the three Islamic decorative elements: floral design, geometrical design, and calligraphy, with more focus on Islamic calligraphy as one of the main elements of the Islamic building design (Bunnell, 2002; Moser, 2010). This section contains relevant recent research and studies that support the subject area and its analysis. In the meanwhile, the paper aims to spotlight on the research gap in this research field.

Islamic components of architectural buildings

Islamic buildings are covered with types of decorations and colours (Kamarudin, Baydoun, et al., 2020). They are usually ornamented from their exterior and interior, while the building's internal part got more decoration than the exterior. The external decoration can mostly be seen in the structural element, such as the domes, arches, and gates. There are three different components of Islamic design (King, 2007). These three components include calligraphy that comes with different scripts, organic or floral patterns that come into vegetal abstract patterns, and geometric design in an angular and linear form for repeated patterns. All three types of designs are usually distinguished from the arabesque, a term used to describe decoration in Islamic Art (Moser, 2013). These components started to be used in mosques and architectural buildings as art and appreciation of Islam as a religion and culture. They were applied as decoration and expression elements with other various purposes such as shading or breathing envelope. Hence, the three Islamic art components are significant to be utilized to create a complete cultural and Islamic identity for the buildings of Putrajaya.

Islamic artistic traditions rely heavily on the utilization of geometric, floral, and calligraphy patterns because the Prophet Muhammad warned against adding figurative art which is against Allah worship (Kamarudin, Baydoun, et al., 2020; Moser, 2010). This is understood as a prohibition of using animal and human forms in texts, textiles, and architecture.

The floral design of the Islamic decoration is representative of nature. It was the Muslim artists' focus that they invented different motifs inspired by the shapes and colours of flowers and trees to decorate art pieces and architectural envelopes and interiors. European and Persian floral art was the most famous art developed into various art types around the world (Kamarudin, Baydoun, et al., 2020; Yahya & Embi, 2013).

Floral design is a smooth decorative element that is applied on the surfaces creating a beautiful intricate decoration. It can come along with the geometric element or can come separately but framed with geometry (A. I et al., 2016). Floral design was also heavily applied in Putrajaya, especially in the roundabout landscape, Fences shape, Lamps form, outdoor benches decoration, building concrete Blinds, and most of the building interior, especially masjids and public spaces.

Another architectural element in Islamic architecture is the use of geometrical patterns. The patterns vary in complexity from simple to highly sophisticated designs.

Figure 1 : Exterior of the Dome at the Royal Mosque, Isfahan, Iran
Source: (Wade,2020)

This mode of decoration relies heavily on the art of repetition and symmetry to generate patterns. The architects skillfully integrate geometrical shapes to produce unique patterns and symbols used in buildings (See Figures 7 & 9). Geometrical patterns facilitate connectivity between different sections of a building (Moser, 2010). They also add aesthetic value to the structure. Geometry is also believed to be the source of calligraphy patterns; geometrical design is another Islamic architectural element. It can be applied in a simple form as well as in a richly complicated design. Geometric patterns contain several repeated geometric elements, they are designed to be in two dimensions, and they are always characterized as having a background and foreground pattern (Baydoun & Kamarudin, 2017). As the geometrical designs are conspired to be the frame of the floral calligraphy design, they are not designed to fit within a frame (A. I et al., 2016). The geometrical designs commonly come into symbolic forms and unique patterns of repeated pointed stars based on the usage philosophy and its concept. The shapes also vary in different textures and patterns, creating high flexibility in their application in construction and building design. It connects all building parts in an envelope; for that reason, geometry is highly used in Putrajaya building structures as one of the richest Islamic design components; it acts as double skin blinds for the buildings to filter light to welcome the breezes. Calligraphy played an essential part in Islam, mainly because of its use in writing the Quran. Under this role, it is regarded as one of the most critical elements in Muslim art (Blair, 2006; George, 2017). Calligraphy is used to make a simple inscription on the wall's Muslim buildings such as palaces, mosques, and domestic houses. The descriptions often carry religious messages sourced from

the Quran or Mohammedan teachings. Scholars link calligraphy to the geometrical style of art that was common with Islamic decorations (Saberi et al., 2016). The symbols are often inscribed on the main sections of the building, whether they are visible to many people. Repetition is often used to produce a pattern on the wall.

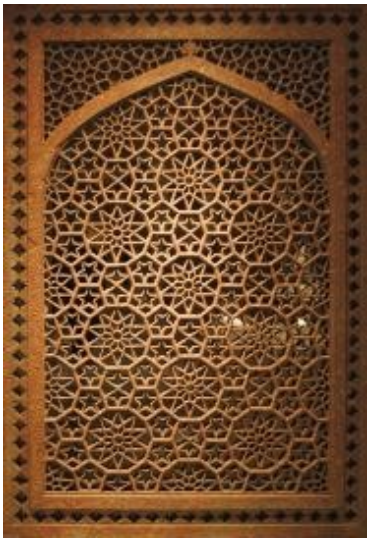


Figure 2: A latticework of Mughal at the Metropolitan Museum of Art, New York

Calligraphy has a great role in defining Islamic art due to its existence as the Quran's language. Calligraphy was utilized to decorate palaces, mosques, and houses of Muslim society (Coleman, 2013; Hamzah, 2012; Kamarudin, Kassim, et al., 2020). Calligraphy mostly comes from pure geometry; every geometric design starts from the circle to frame calligraphy art and floral motifs. The main sections of the building are the most decorated parts to be seen by viewers easily. The produced patterns of the Islamic elements got repetition as the main principle. Many calligraphic inscriptions from Quran verses and Hadith are featured in the Dome of the Rock interior, demonstrating the sacristy of calligraphy.

Figure 3: Interior view of the Dome of rock

METHODS OF RESEARCH

This paper is to examine a few analyses of the city of Putrajaya. Most of the required data were collected by doing photographic documentation and on-site studies besides semi-structured interviews with the government. The aim of conducting documentation on-site was for determining the predominant structure that can be easily noticed on the buildings, which contains one or more Islamic elements in its design such as floral patterns, geometrical patterns, and calligraphy. The researcher chose Putrajaya city to be the selected research area, focusing on the public and administrative buildings. In this paper, the researcher picked a few examples of public buildings for the study; in each building, the researcher focuses on recognizing the applied Islamic element that can be found in it. These buildings are the Moroccan pavilion, Putra Mosque, The Ministry of Finance, Masjid Tuanku, Mizan Zainal Abidin, and Kompleks Islam Putrajaya.
Table 1 summarises the types of Islamic architectural decorative elements found as screening or gateways, or window-like panels in public and administrative buildings regarding the building name, location, placement, function, and element type.

Table 2: Types of Islamic architectural decorative elements

Name	**Exterior/Interior**	**Precincts**	**Type**
Moroccan pavilion	both	Presint 1	Floral, geometric, calligraphy
Putra Mosque	both	Presint 1	floral
The Ministry of Finance	exterior	Presint 2	geometric
Masjid Tuanku Mizan Zainal Abidin	Exterior	Presint 3	geometric
Kompleks Islam Putrajaya	Exterior	Presint 3	geometric

The researcher in this study identified the most used Islamic elements in Putrajaya by conducting a pictorial analysis. The study held a semi-structured interview with the government to support the research with official design documentation. Besides that, the government helps to verify data obtained from the on-site survey. The researcher will be analyzed the government's support and permission and list down the Islamic components to be revealed throughout the site visit and the focus of the interview and documentation.

RESULTS, FINDINGS, AND DISCUSSION

According to the analysis of Putrajaya's master plan, Putrajaya is divided into 20 precincts. Most of the precincts are used for commercial and residential buildings. Few precincts like 1, 2, and 3 are specified for governmental buildings. According to the authority of Putrajaya, the Islamic city concept does not include residential and commercial areas (A. I et al., 2016). Still, it covers the present one as it can be noticed that buildings are built as Islamic buildings. The architecture is like the design of the Islamic city concept.

The main guideline that inspires the architects in designing the Islamic city of Putrajaya is the al Hambra palace due to the three Islamic architectural elements' existence in its interior and exterior design (Yahaya & Mohd, 2013). Putrajaya's Moroccan pavilion, with its floral and geometrical designs and motifs, is the strongest proof of Putrajaya being an Islamic city. A great effort was exerted in it to include the whole Islamic elements and details. From that point, Putrajaya started to apply Islamic motifs richly in any modern or traditional government building. Putrajaya's architecture is full of Islamic signs, which can be embodied in arches, domes, and geometrical patterns (Kamarudin, Baydoun, et al., 2020).

Figure 4: Astaka Morocco, the Islamic calligraphy element
Source (George, 2017)

Putra Mosque (Persiaran Persekutuan) is one of the most prominent buildings that showcase the floral and geometric patterns on its interior and exterior, with the Dome as a very dominant element composed of detailed ornamentations showing the Islamic architectural elements (Moser, 2010). The geometrical pattern is applied respectively on the porous seamless pointed arches along the masjid's walls, acting as a shading and environmental control screen. Geometrical design is also applied to the creation of stained-glass openings and playful natural light penetration in an artistic shade. Furthermore, the landscape around the masjid is also designed in the shape of a flower. The need for calligraphy is quite important in Putra Mosque, defining the building's identity and proving its Islamic base. Having calligraphy in integration with both geometrical and floral can offer a better

Figure 5: exterior view of Putra Mosque
Source :(Adams, 2013)

Figure 6: Floral and geometric integration at the interior and exterior decoration
Source: (Adams, 2013)

Ministry of Finance Putrajaya is one of the prominent buildings in Putrajaya, the detailed repeated indication of contemporary Islamic Malay geometric patterns is applied to the main façade design. It involves the Islamic geometrical patterns and arches mimicking the Moroccan pavilion that is inspired by Alhambra, calligraphy as an important element presented by the Islamic concept will add an identical touch to the building referring to the Islamic design.

Figure 7: Exterior of the Ministry of Finance
Source: (GDP web, 2020)

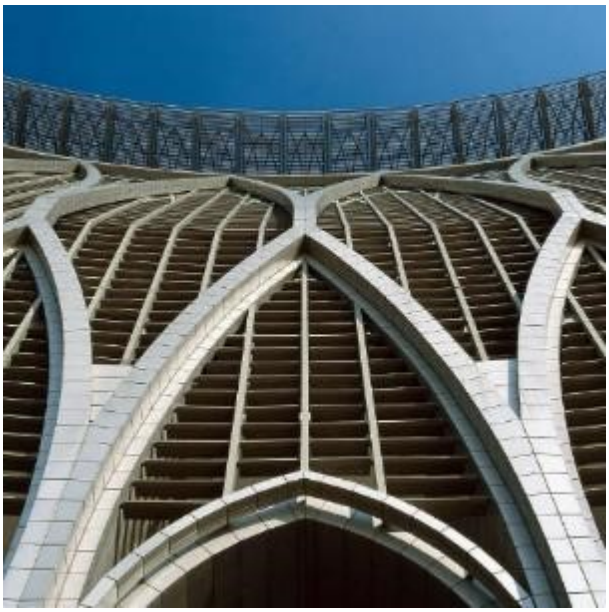


Figure 8: detailed geometrical arches at the main facade
Source: (GDP web, 2020)

Figure 9: Geometric pointed star at the Ministry of Finance entrance
Source: (GDP web, 2020)

At present, 3, Masjid Tuanku Mizan Zainal Abidin is an example of Islamic architecture. The green and organized landscape and the Islamic geometrical patterns on the domes and walls of the masjid building emphasize the architects' role in the application of the Islamic city concept in Putrajaya. The pointed steel arches and the semi-transparent spiral mesh in a rectangular shape represent the Islamic strength through the masjid design. Yet, Islamic calligraphy is applied along with the entry and mihrab of the masjid; it would be a good choice to invest calligraphy as a decorative and functional element on the enhancement façade of highlighting the building function as the masjid.

Figure 10: the exterior of Masjid Tuanku Mizan Zainal Abidin

Source: (Uwe Aranas, 2013)

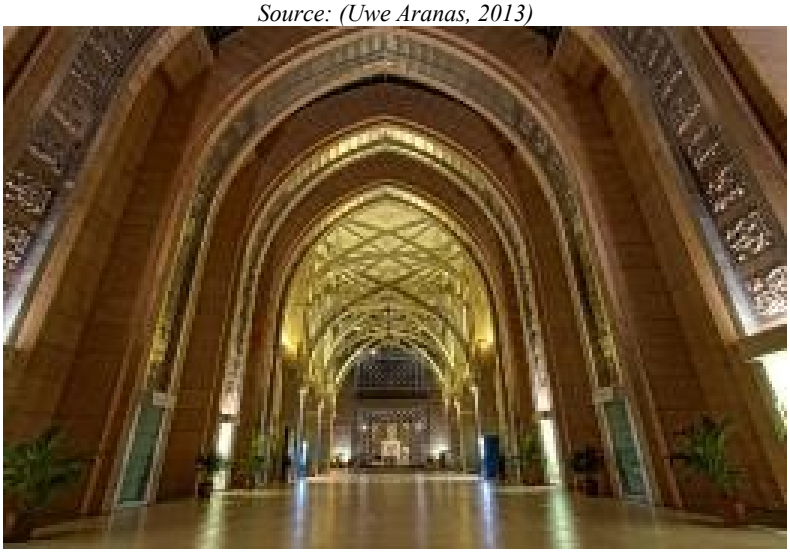


Figure 11: calligraphy along the corridors' highlighted sides
Source :(GKD,2019)

Figure 12: the stainless-steel spiral mesh at the back of the rectangular pattern
Source :(GKD,2019)

Kompleks Islam Putrajaya, with its linear geometry and pointed star geometry, represents a variety of geometric design illustrations. The main canopy of Kompleks Islam Putrajaya with its decorative semi-vaulting steel structure

references the muqarnas, which is one of the important Islamic elements. It can also be seen that there is a lack of using Islamic calligraphy as well.

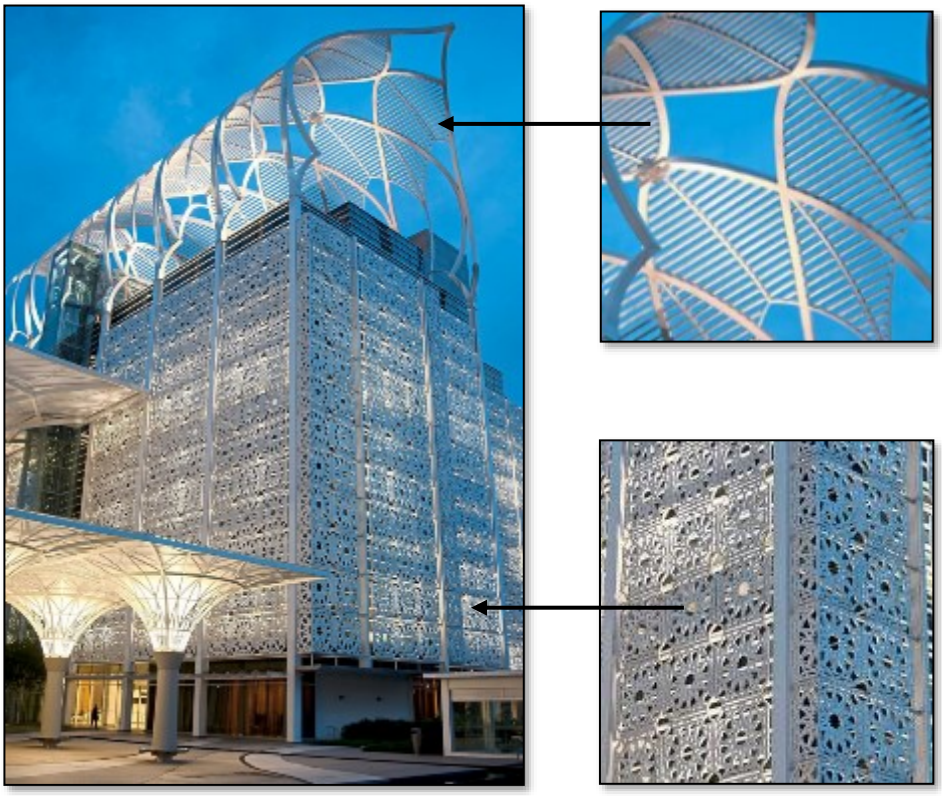


Figure 13: Kompleks Islam Putrajaya, geometrical design

The table shows an analysis of the five chosen case studies explaining their design elements applied in the design internally or externally.

Table 3: Analysis of the five chosen case studies

Name	Element type	Function	Placement
Moroccan pavilion	Floral Geometric Calligraphy	Decorative beatification religious identity symbolism stylizing	Repetitive Horizontal, vertical, and focal on walls, columns, and ceilings internally and externally
Putra Mosque	Floral and geometric	Decorative beatification symbolism	The repetitive pattern on the exterior and interior

		stylizing	of the Dome, arches. openings
The Ministry of Finance	Geometric	Decorative beatification symbolism stylizing shading devices	Repetitive porous arched External skin within the structure
Masjid Tuanku Mizan Zainal Abidin	Geometric	Decorative beatification symbolism stylizing full wall shading devices	Repetitive porous arched and rectangular shape on the External skin within the structure
Kompleks Islam Putrajaya	Geometric	Decorative beatification symbolism stylizing full wall shading devices	Repetitive porous pointed stars and arches skeleton on the External skin structure

After discussions and observation with authorities, and from comparing the Moroccan pavilion with the other governmental buildings, Putrajaya's designs lack the most important Islamic design element. Which is calligraphy, it exists richly in the Moroccan pavilion as a reference to its great importance in the Islamic building's elements. In short, the reviews of related research and literature refer to the lack of calligraphy as an aesthetic architectural element used in the decoration of public buildings in the Islamic city of Malaysia Putrajaya.

CONCLUSION AND RECOMMENDATION

In this paper, the focus is on applying the Islamic architectural decorative elements in the selected public buildings situated in Putrajaya. The study results explain that both floral and geometrical designs are richly and successfully applied to Putrajaya's public buildings. The study found three basic elements that should be integrated to create an Islamic design for the Putrajaya Islamic city. These two different components are placed and applied in various forms and uses in various buildings' typologies such as religious, administrative, and commercial. According to the buildings' forms, the elements' structures are varied and harmonized into the building's envelopes and skins.

In comparison, calligraphy can be noticed as a missing component in the city patterns where calligraphy takes the biggest chance to create an identical scene of the place. Findings from this research would fill in the gap of knowledge regarding the existence of geometrical and floral elements in the architecture of public buildings and introduce calligraphy as an essential element in the design. That enriches the building's identity with high complexity and innovation in designing and stylizing with more sustainability and beautification. The main

importance of Arabic calligraphy lies in its Arabic culture and heritage; it symbolizes Islam. It is also considered a unique expression method that illustrates Islam's history and background and the stages and rules that it went through. The challenge is to invest calligraphy into the Islamic designs of Putrajaya as Arabic calligraphy plays an important part in Islamic art and architecture, with its various and different influences and categories from poetry to decorative patterns in mosques, which has evolved through time and is still meaningful.

ACKNOWLEDGEMENTS

The authors would like to express their gratitude to the authorities of Jabatan Kemajuan Islam Malaysia, and Jabatan Agama Islam Selangor for permitting the use of the data for reference purposes. Appreciations to the calligraphers and Putrajaya urban planning authorities, who provided some valuable and insightful information for this study.

REFERENCES

A. I, I., Shari, Z., & Jaafar, M. F. Z. (2016). Evaluating Natural Ventilation Provisions and Occupants' Ventilation Behavior in Five Terrace Housing Types In Putrajaya, Malaysia [Article]. *ArchNet-IJAR*, *10*(2), 130-152. https://doi.org/10.26687/archnet-ijar.v10i2.868

Adams, E. (2013). The elements and principles of design: A baseline study. *International Journal of Art & Design Education*, *32*(2), 157-175.

Baydoun, Z., & Kamarudin, Z. (2017). 'Ajami As Painted Wooden Wall Paneling For Living Spaces Of Interior Design From Two Master Artisans Perspective.

Blair, S. (2006). *Islamic calligraphy*. Edinburgh University Press.

Bunnell, T. (2002). Multimedia Utopia? A geographical critique of high-tech development in Malaysia's Multimedia Super Corridor. *Antipode*, *34*(2), 265-295.

Coleman, D. Y. (2013). Culture and Arts [Article]. *Egypt Country Review*, 222-223.

George, A. (2017). The Qurʾan, Calligraphy, and the Early Civilization of Islam. *A Companion to Islamic Art and Architecture*, 109-129.

Hamzah, A. R. (2012). *Introduction to Islamic Calligraphy*. Penerbit UTM Press, Universiti Teknologi Malaysia.

Kamarudin, Z., Baydoun, Z., & Mahidin, N. A. M. N. (2020). Profiling of Islamic Calligraphy Scripts Used

for Architectural Decoration of Masjid in Peninsular Malaysia. *PLANNING MALAYSIA*, *18*(14).

Kamarudin, Z., Kassim, P. S. J., & Abdullah, A. (2020). The Variants And Meanings of Malay Motif Ornamentation in The Urban Context: A Case Study of Putrajaya. *PLANNING MALAYSIA*, *18*(12).

King, R. (2007). Re-writing the city: Putrajaya as representation. *Journal of Urban Design*, *12*(1), 117-138.

Morris, K. I., Chan, A., Ooi, M. C., Oozeer, M. Y., Abakr, Y. A., & Morris, K. J. K. (2016). Effect of vegetation and waterbody on the garden city concept: an

evaluation study using a newly developed city, Putrajaya, Malaysia. *Computers, Environment and Urban Systems*, *58*, 39-51.

Moser, S. (2010). Putrajaya: Malaysia's new federal administrative capital. *Cities*, *27*(4), 285-297.

Moser, S. (2013). New cities in the Muslim world: the cultural politics of planning an 'Islamic'city. In *Religion and Place* (pp. 39-55). Springer.

Saberi, A., Motamedi, S., Shamshirband, S., Kausel, C. L., Petković, D., Endut, E., . . . Roy, C. (2016). Evaluating the legibility of decorative arabic scripts for Sultan Alauddin mosque using an enhanced soft-computing hybrid algorithm. *Computers in Human Behavior*, *55*, 127-144.

Yahaya, A., & Mohd, A. (2013). Products Attributes as Attraction and as Pull Factor towards Sustaining Visitation to Putrajaya Botanical Garden. *Pertanika Journal of Social Sciences & Humanities*, *21*(3).

Yahya, A., & Embi, M. R. B. (2013). Evolution of Islamic geometric patterns. *Frontiers of Architectural Research*, *2*(2), 243-251. https://doi.org/http://dx.doi.org/10.1016/j.foar.2013.03.002

Received: 28th Feb 2023. Accepted: 31st March 2023

PLANNING MALAYSIA:
Journal of the Malaysian Institute of Planners
VOLUME 21 ISSUE 1 (2023), Page 329 – 345

VARIABLES AND INDICATORS TO MEASURE THE PERFORMANCE OF SUSTAINABLE CONSTRUCTION PROJECT MANAGEMENT OF CITY PARK

Silia Yuslim[1], Manlian R. A. Simanjuntak[2], Fermanto Lianto[3]

[1]*School Student Doctoral Program of Civil Engineering*
UNIVERSITAS TARUMANAGARA, INDONESIA *and lecture at*
UNIVERSITAS TRISAKTI, INDONESIA
[2]*Professor Construction Management*,
UNIVERSITAS PELITA HARAPAN, INDONESIA
[3]*Lecturer at Architecture and Planning Department,*
UNIVERSITAS TARUMANAGARA, INDONESIA

Abstract

City people need a quality city park. It makes the city park development project anticipate the needs of the community and the environment. Currently, city parks in Jakarta aren't qualified, because the gaps in the management of city park construction projects. The research aim is to provide a set of variables and indicators that influence the pre-construction stage of managing a sustainable City Park construction project to measurement city park project cost performance and quality, as a reference for increasing the achievement of city park functions. This study applies a combination of Soft System Methodology (SSM) and Hard System Methodology (HSM) with Focus Group Discussion (FGD) and questionnaires. This research is consultant's point of view pilot project. The research results are a set of variables and indicators for performance measurement as a basis for developing a model of sustainable city park construction projects management in future research.

Keywords: city park; construction project management performance; sustainable

[1] Corresponding Author, Email: siliayuslim@trisakti.ac.id

INTRODUCTION

The increase in population and the magnitude of the flow of urbanization causes many changes in green land in urban areas to change functions to meet the population's needs. The City Park is one of the green areas needed by a city to improve the quality of life of its people. In comparison, City Parks is one of the green areas required by a city to improve the quality of life of its people. City parks are also public goods (public goods) used as a forum for the public to engage in outdoor activities without paying, providing services for the public interest. In addition, the City Park provides a forum for community interaction, a healthy environment and can improve community welfare (Pakzad & Osmond, 2016; Firmansyah, Soeriaatmadja, & Wulanningsih, 2017). City Parks in Jakarta are also expected to play an optimal role as public goods. Minister of Public Works Regulation No. 5/PRT/M/2008 concerning Guidelines for Provision and Utilization of Green Open Space in Urban Areas outlines that the functions of city parks are ecologically, economically, socio-culturally, aesthetically and mitigating.

City parks in Jakarta have not yet fully functioned according to the functions stated in the Minister of Public Works Regulation No. 5/PRT/M/2008. Many City Parks are not maintained. Damaged play facilities and lack of shelter in several parks are Kalijodo Park (Filani, 2017). The misuse of several parks as places of sexual intercourse can be seen from the discovery of condom waste in the park, plus vandalism and damage to pedestrian paths (Anugrahadi, 2019). Finally, it causes people to be reluctant to visit the park. Misuse of park functions, damage, and vandalism are caused by a lack of community ownership and sub-optimal maintenance. All of this shows that there are problems in the management of the City Park construction project implementation. This situation further causes the sustainability of the City Park to be unattainable. As a result, City Parks become inaccessible and inclusive and have not played a role according to the expected function.

This research is a continuation of previous research that examines the condition of the management system of city park construction project management and is part of a more extensive series of research, namely "Management Model for Sustainable City Park Construction Project Implementation in Jakarta. The results of previous studies indicate that the weakness of the city park construction management system lies in the management of the pre-construction stage, and the involvement of stakeholders is not optimal. Therefore, this paper aims to provide a set of variables and indicators that can measure the performance of urban park construction project management that can be used as a reference for increasing its success.

Research relevant to this research has discussed: 1) measuring the green open space success performance for its functions achievement (Firmansyah,

Soeriaatmadja, & Wulanningsih, 2017; Hui, Lim, Lee, Zakaria, & Keng, 2017); 2) elaboration of green open space management criteria that combine criteria from previous research (based on literature studies) (Pakzad & Osmond, 2016); 3) the need for collaborative management and interdisciplinary approaches to achieve the sustainability of a landscape (Opdam, 2018). The visible gap is that no research has revealed the quality performance measurement and cost performance of the management of urban park construction project implementation, which is more focused on the pre-construction stage. Therefore, the research aims to provide a set of variables and indicators to measure the performance of city park construction project management, especially at the pre-construction stage, which has gone through validity and reliability tests based on the results of a limited questionnaire distribution (Pilot Project). These variables and indicators can build a management model for implementing a sustainable urban park construction project in Jakarta.

THEORETICAL REVIEW

A city park construction project is a series of activities to achieve predetermined targets in a limited period and use specific resource allocations. Each project has a specific pattern as the main characteristic of the project and is known as the Project life cycle. A cycle projects activities series that begins with an initial idea until the project is declared complete and grouped into stages of project development activities so that suitable control can be carried out (Sanchez, 2017). Each stage of development must pay attention to management actions, project procedures, stakeholder competencies, project internals, and project externals (Alias, Zawawi, Yusof, & NM, 2014). The stages in the project cycle are grouped into four stages, namely the Conception Stage, Planning Stage, Execution Stage, and Operation Stage.

Each stage of development must pay attention to management actions, project procedures, stakeholder competencies, project internals, and project externals (Faisal, 2019) which is in line with the needs of an Eco-city, it is necessary to determine the definition and target of budget, management, supervision, and regulatory/ policy support (Liu, Lau, & Lin, 2018), related to the sustainable management of a City Park. This is described in two essential documents produced at this stage (Sanchez, 2017). The first documents are Project Charter (project requirements), Goal Project (agreements from stakeholders), Product Description, Risk, Stakeholder Responsibility, Project Budget, and Duration Prediction. The second document, the Stakeholder List, defines who is involved in a project so that coordination can be carried out to provide direction for the design of the City Park (Opdam, 2018). Stakeholder involvement is beneficial for enhancing the project's character (City Park).

Community involvement from the planning stage (Geberemariam, 2016; Yuslim, 2019) can provide input on design considerations and build a strong sense of affection and ownership for City Parks and solutions for achieving sustainability (Kumar, Lodha, Mahalingam, Prasad, & Sahasranaman, 2016). This effort can indirectly save maintenance costs. These savings are necessary considering that these costs are continuous (Herman, Sbarcea, & Panagopoulos, 2018). City Park construction projects must also consider maintenance costs keeping in mind. The government can facilitate the community's involvement and other stakeholders so that development outcomes positively improve the neighbourhood's quality of life (Stefano, Endayani, & Sadono, 2021; Hersperger, Burgi, Wende, Bacau, & Gradinaru, 2021). Stakeholder involvement can also take the form of support from the private sector. In this regard, two essential factors out of five must be considered for its success: effective project management and a complete and profitable legal and regulatory framework (Nguyen, Likhitruangsilp, & Onishi, 2020).

The planning Phase is a Project Management Plan that describes the Project Scope and activities to complete a project. Its activities include the preparation of the Term of Reference (TOR) as a guide for the success of a design; details of work units, work sequences, resource estimates, duration estimates, and project schedule finalization as the basis for determining the estimated cost of each activity; preparation of quality management plans with product conformity inspection devices against General and Technical Specifications (Sanchez, 2017); various planning (human resources, communication between stakeholders and risk management). At this stage, design guidelines and operational principles are also needed to refer to the three pillars of sustainability. Guidelines must be applied in the design process, understood by the designer, and implemented according to their respective scale levels (Klemm, Lenzholzer, & Brink, 2017). This is necessary considering that construction activities significantly impact three pillars of sustainability: ecology/ environment, economy, and socio-culture (Wirahadikusumah, Abduh, Messah, & Aulia, 2021).

The project execution/implementation stage is the stage for controlling the schedule, budget, and quality control as the main tasks. This step is carried out to monitor the implementation of the project so that it can be completed according to the planning document. This is intended to achieve the quality and cost performance of the City Park construction project in improving the quality of health and the surrounding environment (Sugiyama, 2013; Grunewald & Behnisch, 2019). The last stage is the operation stage, which are the operational and maintenance activities of the project's products. Project performance illustrates how the project works by comparing the actual work results with the estimated workings of the work contract agreed by the parties who signed the

contract. Construction project performance indicators can be divided into (Ling, Low, Wang, & Lim, 2009; Sufa, 2010):

1) Objective construction project performance indicators, including time, cost, occupational health, and safety, as well as possible project benefits.
2) Subjective construction project performance indicators, including quality, technical performance, functions achievement, productivity, stakeholder satisfaction, and sustainability.

Determination of variables and performance indicators of urban park construction project management in this study focuses on the process at the Preconstruction stage related to the completeness and quality of its implementation with benchmarks from one subjective indicator, namely the achievement of functions, as well as one of the objective factors, namely cost. Based on the previous research, literature review result, and the design criteria of the 2019 RTH Development and Development Guidebook in DKI Jakarta, the variables of urban park construction project management to measure cost performance are Pre-construction Stage Management, Completeness of Planning Documents, Cost Estimated, Technical Standards for Sustainable Landscape Design Criteria, and Stakeholder Engagement.

In this study, performance measurement of sustainable urban park construction management was carried out on quality performance and cost performance. The benchmark for City Park quality performance achievement is carried out on three pillars of sustainability, such as ecological function (environmental), economic function, and socio-cultural. The cost performance benchmark increases the actual project cost of < 10% of the initial contract cost based on Presidential Regulation No. 16/2018 concerning Government Procurement of Goods and Services.

METHODOLOGY

Research Method

By looking at the management of the City Park construction project as a system, this research method will also use a combination of Soft System Methodology (SSM) and Hard System Methodology (HSM). SSM uses a holistic approach to solving complex and unstructured problems (Eriyatno, 2013). In contrast to other methods included in HSM, SSM is used for build systems to resolve ambiguous problems. SSM uses a seven-step approach.

Researchers have widely used SSM as a method or approach. The utilization of SSM as a method or approach is applied in multiple areas, including the field of education management and administration, management and organizational studies (Wang, Liu, & Mingers, 2015), human resource

development (Fadhil, Maari, Bantacut, & Hermawan, 2017) organizational performance improvement, organizational policies (Henggeler, Dias, Dantas, Mathias, & Zamboni, 2016). SSM is also used in dealing with environmental problems. However, SSM should be equipped with a quantitative systemic methodology and a numerical database with HSM to make the decision-making objectives more structured and measurable. HSM is a critical thinking methodology that utilizes various numerical techniques and operational research. The methodological phase in this study is described in Fig. 1.

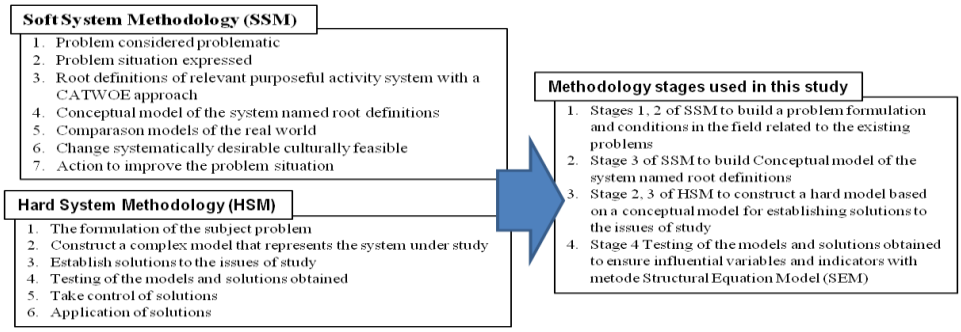


Figure 1. Research Phase
Source: Researcher Document (Authors, 2021)

SSM is used to conduct social studies on a group or situational organization. A systems approach is needed to examine the relationship between problem situations and the real world (Checkland & Poulter, 2010). SSM helps understand the field problems, formulate them and present them through rich pictures. Relate the issue to the existing system to find a root definition that can explain the problem's process. It would test with CATWOE analysis. This step serves as the basis for building a conceptual system model for each system described. In this study is the management system for implementing the City Park construction project. Conceptual models can help understand problems in the field and provide steps for solving them (Zuniawan & Sriwana, 2019). Based on the conceptual model, a questionnaire was compiled, and then a Focus FGD was conducted to validate it. After that, using the Structural Equation Model (SEM) method, a hard system model was built to predict it through the Pilot Project. SEM with Smart PLS is two analytical tools taken from econometrics, namely simultaneous equations that focus on latent variables (variables that cannot be measured directly) measured through the indicators (Ghozali & Latan, 2015).

Sampling Technique

Sampling techniques are based on specific criteria or considerations related to population characteristics, needs, and research objectives, called purposive

sampling. The City Park sample in this study was determined based on the following criteria:

1) Environmental parks and regional parks with an area of 0.5 – 5 Ha have been upgraded to City Parks based on the scale of service and ease of visitor accessibility
2) City Parks that the developer does not manage
3) Newly renovated City Parks (less than five years) and City Parks that are planned to be renovated

Based on these criteria, there are 10 City Parks in Jakarta, which are sampled in this study, namely 2 City Parks in Central Jakarta (Menteng Park and Suropati Park); 2 City Parks in East Jakarta (Salix Park, Picnic Park, and Bamboo Park); 2 City Parks in South Jakarta (Langsat Park, and Casuarina Park); 2 City Parks in North Jakarta (Kalijodo Park dan Bintaro Park); and 2 City Parks in West Jakarta (Cattleya Park and Wijayakusumah Park). This research was conducted as a pilot project involving 30 respondents (Creswell, 2014) to answer the questionnaire about the management system for implementing the City Park construction project, especially the pre-construction stage to measure the performance of urban park construction project management. The selected respondents are expert consultants with the following criteria:

1) Work experience in garden green open space construction projects > 5 years
2) Has handled a city park construction project

Research Instruments

The research measuring instruments used in this study are Focus Group Discussions (FGD), which is an in-depth interview conducted by researchers with a group of people (3-12 people) together in a meeting at the same time to validate the questionnaire. Validity testing is done by testing construct validity by asking whether the questions in the questionnaire are in accordance with the scientific concept in question, called expert judgment, total 3 people, through the FGD process, with the following criteria: government representatives (Head of the Park Planning Section of the Parks Division of the City Park and Forest Service) as a client and manager, with minimum 10 years work experience; consultant representatives (Director of Urban Plus Landscape Architecture and Secretary-General of the Indonesian Association of Landscape Architects), with minimum 10 years work experience, have handled at least 5 City Parks and have a certificate of expertise in Main Landscape Architects; and academic representatives (permanent Lecturer of the Landscape Architecture Study Program at Trisakti

University), with minimum 10 years work experience and certified as Intermediate Landscape Architect.

Questionnaire is a data collection technique conducted on respondents by using a set of questions or statements with a benchmark answer set in the category of strongly agree with a value of 5; category agrees with a value of 4; undecided/neutral category with a value of 3; the category does not agree with a value of 2, and the category strongly disagrees with a value of 1.

The Research Data Analysis

Analysis was carried out after the hard system model had been built to test the validity and reliability of the data obtained. The validity test is carried out to see how far the determination and accuracy of a measuring instrument in carrying out its measuring function are. Test reliability (reliability) is an index that shows the extent to which a measuring instrument can be trusted or relied on. Reliability testing is carried out to see whether the instrument can measure something measured consistently from time to time and to see how far a measuring instrument can be trusted or reliable in measuring what will be measured (Nurgiyantoro, 2012). In this study, the distribution of the questionnaire was carried out in a limited manner as a Pilot Project to be then tested for its feasibility related to the suitability of the model with field conditions as well as the validity and reliability of the questionnaire conducted with the Smart PLS (Partial Least Square) software as well Convergent Validity, Discriminated Validity, Composite reliability, and Cronbach's Alpha.

RESULTS

SSM phase on Unstructured Problems (Reality of City Park Project Construction Management in Jakarta) to Arranging Identified Problems Identified in Rich Picture

Results In the SSM-based action, the research provided an overview of the management of the City Park construction project implementation in Jakarta. Based on the results of discussions with the actors involved, it can be seen that implementing the City Park construction project, stakeholder involvement, and general guidelines related to the elaboration of sustainable landscape design has been carried out. Still, as a result, City Parks have not functioned optimally and are not sustainable. The interrelationship of roles between actors, the existing regulatory roles, and the implementation process in the field is reflected in the Rich Picture in Figure 2.

The number of activities that are not carried out optimally at the planning preparation stage, including the absence of a study for determining the direction of City Parks design, clarity regarding the scope of the project, the time allocation provided for the City Park construction project, as well as optimal

stakeholder involvement caused activities at the planning stage to not be carried out correctly. As a further consequence, the construction phase also did not go well. Another problem revealed from the interviews and in-depth discussions with the supervisory consultant were the mismatch between stakeholder expectations for green space and the available budget. This causes the necessary design adjustments that affect the quality of the City Park. In the end, the existing City Park cannot function optimally and operate correctly.

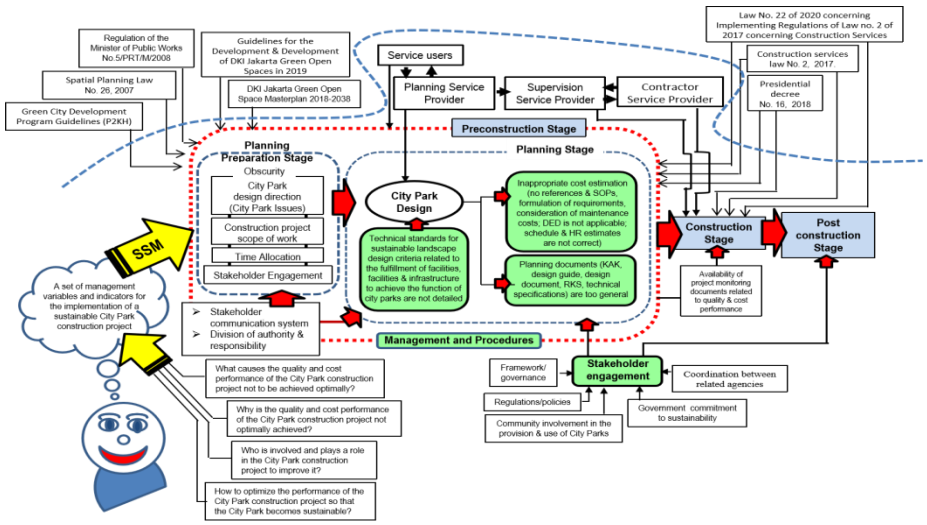


Figure 2. Rich Picture of City Park Project Construction Management in Jakarta
Source: Researcher Document (Authors, 2021)

SSM phase on Formulation Root Defining: Sustainable Urban Park Construction Project Management in Jakarta

At this phase, a Root Definition is carried out, focusing on Jakarta's City Park construction project management, especially the pre-construction stage. Management of the pre-construction stage that was not carried out correctly and the unavailability of a guide to the description of sustainable landscape design resulted in inadequate planning documents, and cost estimates could not be carried out correctly. This ineffectiveness is further complicated because stakeholder involvement cannot be carried out optimally. This needs to be improved to improve the quality performance and cost performance of the City Park construction project, which ultimately can achieve a sustainable City Park. In SSM, Root Definitions are checked for accuracy through CATWOE Analysis as shown in Table 1, which consists of Customers, Actors, Transformation Process, World View, Owner, and Environmental Constraint.

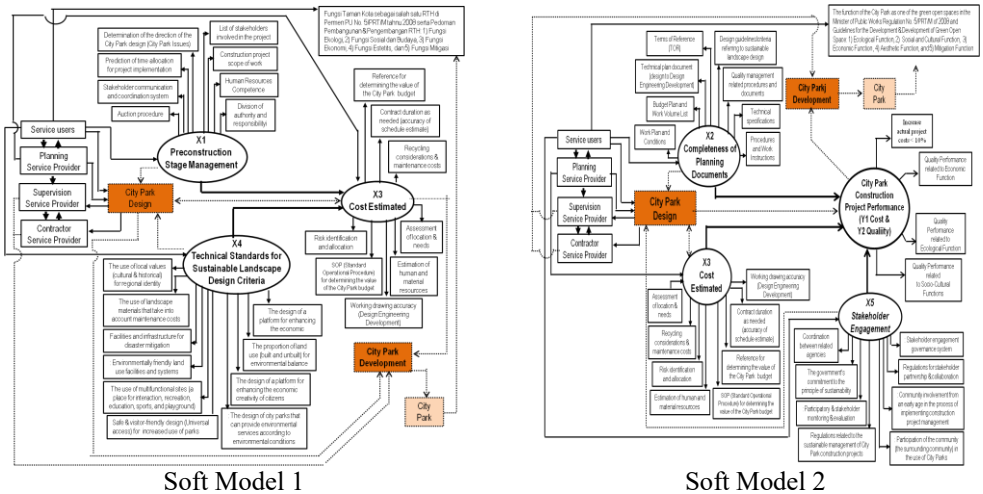
Table 1: CATWOE Analysis

Customer Actors	Community, Department of Parks and Urban Forests, Sub-Department of Urban Parks and Forests, Ministry of Public Works and Public Housing (Service Users); Consultant, Contractor (Service Provider)
Transformati-on	Ineffective management of the implementation of the City Park construction project in Jakarta
Welt (Worldview)	A set of variables and indicators for the management of a sustainable City Park development project to improve the performance of a City Park development project in Jakarta
Owner	Jakarta City Parks and Forests Service; Sub-dept. of City Parks and Forests; and the Ministry of Public Works and Public Housing
Environment	Regulations, availability of funds, time, stakeholder needs, Green City Construction and Development Program, and the environment

Source: Researcher Document (Authors, 2021)

SSM phase on Formulating a Conceptual Model

In formulating a conceptual model, three phases of research are needed. The first soft model phase describes and explains implementing a City Park construction project in Jakarta regarding the variables and indicators. The second soft model phase describes and explains the quality and cost performance of the City Park construction project in Jakarta to the variables and indicators that become the benchmarks. The third soft model phase describes a comprehensive model, which combines the two soft models, namely the model produced in the soft model phase 1 and soft model phase 2 (Fig. 3).



Soft Model 1 Soft Model 2

Figure 3. SSM Research Phase of Implementation Management City Park Construction Projects in Jakarta

Source: Researcher Document (Authors, 2021)

The soft model phase 1 was built to explain implementing the City Park construction project, especially the pre-construction stage. At this stage, a reasonable cost estimation variable is measured by indicators of completeness of activities and available documents. These variables are also influenced by pre-construction stage management variables and technical standard variables for sustainable landscape design criteria, with their respective indicators as the basis for City Park design needs.

The soft model phase 2 was built to describe the variables and indicators that affect the Pre-Construction stage. Cost estimation variables, completeness of planning documents, stakeholder involvement and their respective indicators affect the cost performance and quality of the City Park construction project. The soft model phase 3 (Fig.4) aims to build a new model as a comprehensive soft model by combining the phase 1 and 2 models into a unified model so that the influence between one variable and another can be seen. There are 5 variables of urban park construction project management to measure cost and quality performance, such as Pre-construction Stage Management (X1) with 8 indicators, Completeness of Planning Documents (X2) with 8 indicators, Cost Estimated (X3) with 8 indicators, Technical Standards for Sustainable Landscape Design Criteria (X4) with 10 indicators, and Stakeholder Engagement (X5) with 8 indicators. This model is built as the basis for building the hard model in the next phase.

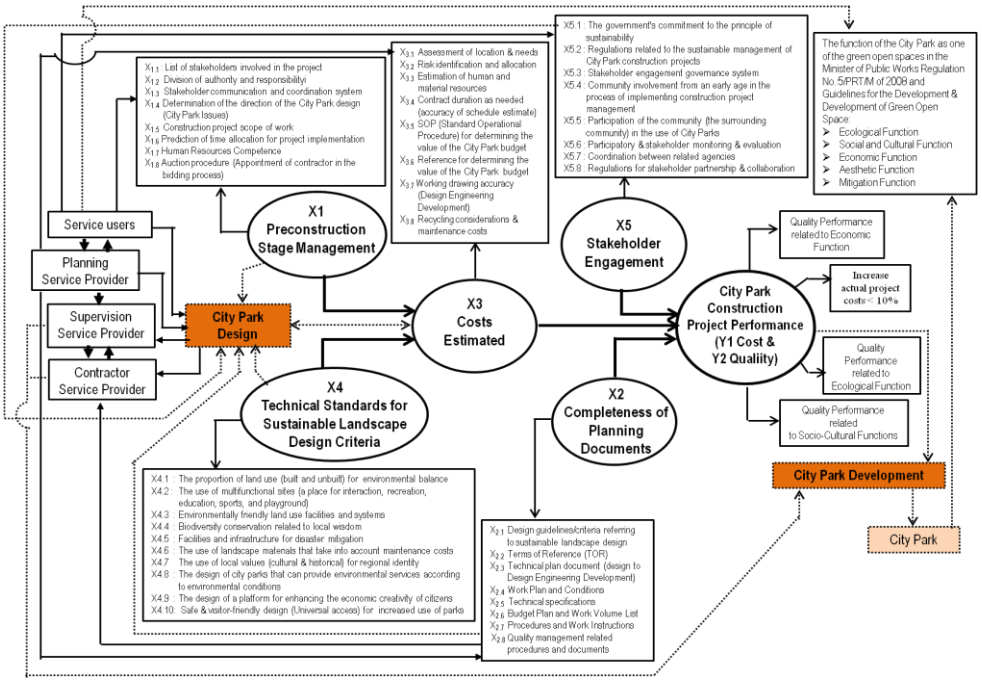


Figure 4. The Soft Model 3 of the Conceptual Model of Management for the Implementation of a Sustainable City Park Construction Project in Jakarta
Source: Researcher Document (Authors, 2021)

In Figure 4, it can be seen that there are variable of pre-construction stage management, guidelines for the elaboration of sustainable landscape design, cost estimates, completeness of planning documents, and stakeholder involvement in the management of the implementation of a sustainable City Park construction project; as well as the cost performance variables and the quality of the City Park construction project. These variables are influenced by their respective indicators.

HSM to construct a hard model by Structure Equation Model (SEM) based on a conceptual model for establishing solutions to the issues of study based on Conceptual Model

The hard model was built by looking at the relationship between the City Park construction project (Fig. 5) on the quality performance and cost performance of the City Park construction project. Then it is used to analyze the influence of the indicators of each of these variables. Data analysis used Smart PLS.

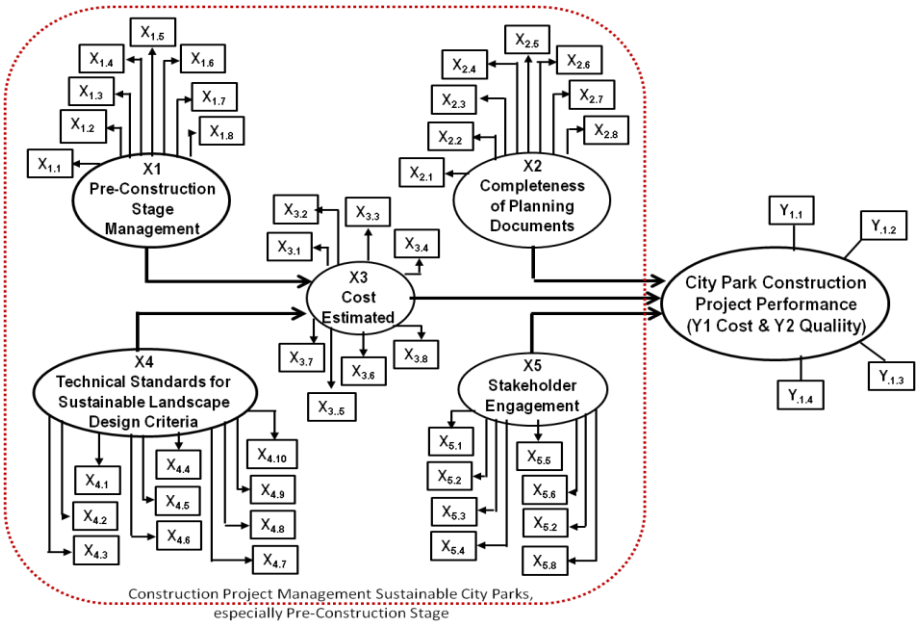


Figure 5. Hard Model Based on Conceptual Model
Source: Researcher Document (Authors, 2021)

DISCUSSIONS

The data obtained from the Pilot Project is tested in a hard model simulation (Fig. 5) that has been built to test whether the model results. Variables and Indicators Management Model for the Implementation of a Sustainable City Park Construction Project in Jakarta has the power to answer the actual phenomenon. Smart PLS will analyze the data validity and reliability.

Convergent validity from initial research studies with reflexive indicators is seen from the correlation between indicator scores and construct scores. With a correlation value > 0.70, individual indicators are considered reliable. Loading 0.50 - 0.60 at the research of the scale development stage is still acceptable (Ghozali & Latan, 2015). In this research, all indicators have a loading above 0.60. The Smart PLS output for the loading factor shows that the outer loading value of all indicators of the Preconstruction Stage Management variable (X1) ranges from 0.827 to 0.951; 0.780 to 0.950 for all indicators of the Completeness of Planning Documents variable (X2); 0.801 to 0.928 for all indicators of the Cost Estimated variable (X3); 0.780 to 0.932 for all indicators of the Technical Standards for Sustainable Landscape Design Criteria variable (X4); 0.805 to 0.928 for all indicators of the value of the outer loading of all indicators of the Stakeholder Engagement variable (X5); and 0.816 to 0.960 for all indicators of the City Park Construction Project Performance variable (Y).

Based on that, it is known that all research indicators have an outer loading value > 0.7. Initial data processing shows that all variables' indicators are valid for research and for further analysis.

Discriminant validity can be assessed based on the square root of the Average Variance Extracted (AVE) with a recommended value > 0.5 (Ghozali & Latan, 2015). Based on the data processing, the Preconstruction Stage Management variable (X1) has an AVE value of 0.800; 0,756 for the Completeness of Planning Documents variable (X2); 0,786 for the Cost Estimated variable (X3); 0,769 for the Technical Standards for Sustainable Landscape Design Criteria variable (X4); 0,760 for the Stakeholder Engagement variable (X5); and 0,785 for the City Park Construction Project Performance variable (Y). Thus, each variable has good discriminated validity because all research variables have met the recommended value. It means each variable in this research has a good constituent indicator.

The next test is the composite reliability of the indicator block that measures the construct. The construct will reliable if the composite reliability value > 0.60 (Ghozali & Latan, 2015). The data processing results show satisfactory composite reliability results. The Preconstruction Stage Management variable (X1) has a composite reliability value of 0.970; 0,961 for the Completeness of Planning Documents variable (X2); 0,967 for the Cost Estimated variable (X3); 0,971 for the Technical Standards for Sustainable Landscape Design Criteria variable (X4); 0,962 for the Stakeholder Engagement variable (X5), and 0,936 for the City Park Construction Project Performance variable (Y). Composite reliability value of all constructs > 0.60. This means that each variable has a high level of reliability.

Cronbach's alpha value can strengthen the reliability test with composite reliability. A variable can be declared reliable or fulfilled if the value of Cronbach's alpha > 0.7 (Ghozali & Latan, 2015). The result of processed data show that the Cronbach's alpha value of the Preconstruction Stage Management variable (X1) is 0.964; 0,954 for the Completeness of Planning Documents variable (X2); 0,961 for Cost Estimated variable (X3); 0,968 for the Technical Standards for Sustainable Landscape Design Criteria variable (X4); 0,956 for the Stakeholder Engagement variable (X5); and 0,908 for the City Park Construction Project Performance variable (Y). This shows that each research variable has a high level of reliability.

The questionnaire's validity and reliability tests, variables, and indicators have high validity and reliability. That is, the variables and indicators can be trusted under the conditions in the field. Thus, this study has 5 variables that influence the management of the City Park construction project in Jakarta, namely Preconstruction Stage Management (X1), Completeness of Planning Documents (X2), Cost Estimated (X3), Technical Standards for Sustainable

Landscape Design Criteria (X4), and Stakeholder Engagement (X5). Each variable has 8-10 indicators that support its construct. In addition, this study also has a variable City Park Construction Project Performance (Quality and Cost) as a benchmark for achieving management implementation.

CONCLUSIONS

Based on the Smart PLS analysis results, five variables influence the management of a sustainable City Park construction project, namely Preconstruction Stage Management, Completeness of Planning Documents, Cost Estimated, Technical Standards for Sustainable Landscape Design Criteria, and Stakeholder Engagement. Of these five variables, 42 indicators can be used as a reference in measuring the quality and cost performance of the City Park construction project. The research results can be used as a basis for developing a management model for implementing a Sustainable City Park construction project in Jakarta in future research.

REFERENCES

Alias, Z., Zawawi, E., Yusof, K., & NM, A. (2014). Determining Critical Success Factors of Project Management Practice: A Conceptual Framework. *Procedia - Social and Behavioral Sciences 1 , 153*, 61-69.

Anugrahadi, A. (2019, September 21). *Kondom dan Tisu Magic Berserakan di Taman Kota Wijaya Kusuma Grogol*. Retrieved from https://www.liputan6.com: https://www.liputan6.com/news/read/4067934/kondom-dan-tisu-magic-berserakan-di-taman-kota-wijaya-kusuma-grogol

Checkland, P., & Poulter, J. (2010). *Soft systems methodology: System approaches to managing change: a practical guide.* London: Springer.

Creswell, J. W. (2014). *Research design : qualitative, quantitative, and mixed methods approaches.* USA: SAGE Publications, Inc.

Eriyatno. (2013). *"Ilmu Sistem: Meningkatkan integrasi dan koordinasi manajemen" (Systems Science: Improve management integration and coordination), Center for System Bogor, Bogor, Indonesia.* bogor.

Fadhil, R., Maari, M. S., Bantacut, T., & Hermawan, ,. A. (2017). "Model Strategi Pengembangan Sumber Daya Manusia Agroindustri Kopi Gayo dalam Menghadapi Masyarakat Ekonomi ASEAN" (Strategy Model for Gayo Coffee Agroindustry Human Resource Development in Facing the ASEAN Economic Community). *Jurnal Manajemen Teknologi, , 16* (2), 141–156.

Faisal, B. (2019). *Pedoman Pembangunan dan Pengembangan Ruang Terbuka Hijau.* Jakarta: Dinas Kehutanan.

Filani, O. (2017, Maret 27). *Baru Sebulan Diresmikan, Fasilitas Taman Kalijodo Rusak*. Retrieved from https:// www.cnnindonesia.com: https:// www.cnnindonesia.com/nasional/20170327200515-20-203110/baru-sebulan-diresmikan-fasilitas-taman-kalijodo-rusak

Firmansyah, A. R., Soeriaatmadja, I., & Wulanningsih, R. (2017). A set of sustainable urban landscape indicators and parameters to evaluate urban green open space in

Bandung City. *3rd International Symposium for Sustainable Landscape Development (ISSLD 2017). IOP Conf. Series: Earth and Environmental Science , 179* (1).

Geberemariam, T. K. (2016). Post Construction Green Infrastructure Performance Monitoring Parameters and Their Functional Components. *Environments , 4* (1), 2.

Ghozali, I., & Latan, H. (2015). *Partial Least Squares : Konsep, Teknik dan Aplikasi Menggunakan Program SmartPLS 3.0.* Semarang: Badan Penerbit Universitas Diponegoro.

Grunewald, R., & Behnisch. (2019). Multi-Indicator Approach for Characterising Urban Green Space Provision at City and City-District Level in Germany. *International Journal of Environmental Research and Public Health , 16* (13), 2300.

Henggeler, A. C., Dias, ,. L., Dantas, G., Mathias, J., & Zamboni, L. (2016). "An Application of Soft Systems Methodology in the Evaluation of Policies and Incentive Actions to Promote Technological Innovations in The Electricity Sector". *Energy Procedia , 106*, 258–278.

Herman, K., Sbarcea, M., & Panagopoulos, T. (2018). Creating Green Space Sustainability through Low-Budget and Upcycling Strategies. *Sustainability , 10*, 1-15.

Hersperger, A. M., Burgi, M., Wende, W., Bacau, S., & Gradinaru, S. R. (2021). “Does landscape play a role in strategic spatial planning of European urban regions?". *Landscape and Urban Planning , 194*.

Hui, Q. Y., Lim, K. Y., Lee, L. K., Zakaria, L. K., & Keng, Y. F. (2017). Sustainable Urban Green Space Management Practice. *International Malaysia-Indonesia-Thailand SIC , 2*, 1-4.

Jennings, V., Larson, L., & Yun, J. (2016). Advancing Sustainability through Urban Green Space: Cultural Ecosystem Services, Equity, and Social Determinants of Health. *International Journal of Environmental Research and Public Health , 13* (2), 196.

Klemm, W., Lenzholzer, S., & Brink, A. v. (2017). Developing green infrastructure design guidelines for urban climate adaptation. *Journal of Landscape , 12* (3), 60-71.

Kumar, A., Lodha, D., Mahalingam, A., Prasad, V., & Sahasranaman, A. (2016). Using ‘design thinking’ to enhance urban re-development: a case study from India. *Engineering Project Organization Journal* .

Ling, F., Low, S. P., Wang, S. Q., & Lim, H. H. (2009). Key Project Management Practices Affecting Singaporean Firms’ Project Performance in China. *International Journal of Project Management , 27* (1), 59-71.

Liu, J., Lau, P. L., & Lin, F. W. (2018). Critical success factors for eco-city development in China. *International Journal of Construction Management , 18* (6), 497-506.

Nguyen, P. T., Likhitruangsilp, V., & Onishi, M. (2020). Success Factors for Public-Private Partnership Infrastructure Projects in Vietnam. *International Journal on Advanced Science Engineering Information Technology , 10* (2), 858-865.

Nurgiyantoro, B. (2012). *Statistika Terapan untuk Penilaian Ilmu-ilmu Sosial.* Yogyakarta: Gadjah Mada University Press.

Opdam, P. (2018). Exploring the Role of Science in Sustainable Landscape Management, An Introduction to the Special Issue. *Sustainability , 2* (2), 331.

Pakzad, O., & Osmond, O. (2016). Developing a Sustainability Indicator Set for Measuring Green Infrastructure Performance. *Procedia - Social and Behavioral Sciences , 216*, 68–79.

Sanchez, J. D. (2017). *A Guide to The Project Management Body of Knowledge, PMBOK Guide* (Sixth ed.). Pennsylvania: Project Management Institute Inc.

Stefano, A., Endayani, S., & Sadono, R. (2021). Combining the Traditional and Modern Architecture in Taman Samarendah Plan, Samarinda City, East Kalimantan Province, Indonesia. *International Journal on Advanced Science Engineering Information Technology , 11* (2), 705-711.

Sufa, M. F. (2010). Identifikasi Kriteria Keberhasilan Proyek. *Jurnal Performa , 11* (1), 19 - 22.

Sugiyama, G. (2013). The Synergistic Model of Quality Service Design of Green Open Space Asset Through QFD.

Wang, ,. W., Liu, W., & Mingers, J. (2015). A systemic method for organisational stakeholder identification and analysis using Soft Systems Methodology (SSM)". *European Journal of Operational Research , 246* (2), 562–574.

Wasisto. (2016). Ruang Publik, Aktivisme Online dan Kelas Menengah Indonesia. *"Unbreakable Discussion Series: Public Sphere and Online Activism".* Epikurian Cafe.

Wirahadikusumah, R., Abduh, M., Messah, Y., & Aulia, M. (2021). Introducing sustainability principles into the procurement of construction works – case of Indonesian developers. *International Journal of Construction Management , 21* ((), 932-944.

Yuslim, S. (2019). Strategy for Managing Public Park Maintenance as One Effort for the Implementation of Sustainable Green Open Space. *Proceedings of the 1st International Conference on Environmental Science and Sustainable Development, ICESSD 2019* (pp. 237-245). Jakarta: EAI.

Zuniawan, A., & Sriwana, I. K. (2019). "Handling of Coal Dust at Coal Handling Facility in Coal Power Plant Using Soft System Methodology (SSM) Approach. *SINERGI , 23* (3).

Received: 28th Feb 2023. Accepted: 31st March 202

PLANNING MALAYSIA:
Journal of the Malaysian Institute of Planners
VOLUME 21 ISSUE 1 (2023), Page 346 – 363

ESTIMATING VALUE UPLIFT FROM TRANSIT INVESTMENTS IN SUBANG JAYA, SELANGOR USING DIFFERENCE-IN-DIFFERENCE METHOD

Mohd Faris Dziauddin[1]

[1]*Department of Geography and Environment,*
UNIVERSITI PENDIDIKAN SULTAN IDRIS (UPSI)

Abstract

It is generally believed that public transport investment such as urban rail transit systems can improve accessibility, particularly in larger and denser metropolitan areas. The improved accessibility provided by urban rail transit systems can drive up the value of surrounding land or property due to increased buyer demand. Based on this general belief, the study estimates the impact of the Kelana Jaya LRT line extension on residential property values in Subang Jaya, Selangor. Using Difference-in-Difference (DID) method with transaction-based data of 1,006 terraced properties, it is estimated that a typical terraced unit located within 0.8 km of the nearest LRT station and be sold during the construction phase of the project and after the system became operational would fetch a respective premium of approximately 4.7% and 5.3%, or RM31,490 and RM35,510 on average. It is also estimated that the overall impact on the price of terraced properties located within 0.8 km from the nearest LRT station in Subang Jaya, amounts to nearly RM11.6 million. An interesting accounting implication arising from this potential revenue is that it could provide a significant financial incentive to fully or partially fund urban rail transit projects in the Greater Kuala Lumpur area.

Keywords*:* Light rail transit system, Difference-in-Difference (DID) method, value uplift, land value capture, Subang Jaya, Selangor

[1] Corresponding Author

INTRODUCTION

Public transport systems, such as urban rail transit, are expected to improve people's accessibility and mobility, especially in more densely populated metropolitan areas. In addition to improved accessibility and mobility, public transport is also expected to reduce traffic congestion and carbon emission from private transport and bring other economic benefits to cities, such as increased productivity and opportunities for land development. Because of these benefits, there is growing interest among cities to invest in the construction or extension of urban rail transit systems. However, such systems are expensive not only to build or upgrade but also to operate and maintain. For example, the cost of building the STAR LRT, PUTRA LRT (currently known as the Sri Petaling and Kelana Jaya LRT lines), and the Kuala Lumpur Monorail line (or KL Monorail) was US$0.9 billion, US$1.5 billion, and US$0.3 billion, respectively (Kiggundu, 2009; A. Jalil, 2016). Table 1 shows the major sources of funding for urban rail transit systems in the Greater Kuala Lumpur[1] (hereafter, Greater KL). As shown in Table 1, the construction of urban rail transit systems in the Greater KL was financed primarily through domestic borrowing and Federal Government funds. It should be noted that Federal Government funds generally come from consolidated tax revenues. Medda and Modelewska (2011), however, argued that the traditional way of financing the construction, operation and maintenance of public transport is increasingly inadequate due to the critical, diverse, and complex needs of public transport. At the same time, government financial support for public transport is becoming more limited and uncertain (Mathur, 2015; Ubbels & Nijkamp, 2002). In many cases, for example, plans for investment in urban rail transit systems are postponed or even cancelled due to budgetary constraints.

For the above reasons, there is growing interest among policymakers in establishing the land value capture (LVC hereafter) mechanism to fully or partially fund[2] the development of public transport. In other words, to ensure adequate and sustainable transport investments for current and future needs, policymakers need to re-evaluate current transport funding mechanisms and explore alternative revenue sources (Lari et al., 2009). One possible alternative is known as "value capture," which taxes land and property owners who benefit significantly from increased land and property values due to proximity to transport infrastructure. With improved accessibility, land and property near transit stations may receive a higher valuation from buyers compared to similar land and property located at a further distance. Evidently, a 2016 study by the Council for the Preservation of Rural England (CPRE), cited by Pearson et al. (2022), found that landowners profited an estimated £9.3 billion of the £12.3 billion in land value increases generated by infrastructure improvements. According to Hong and Ingram (2012), there is a consensus among scholars that

the cost of public investment should be recovered, at least in part, through the financial benefits that the investment generates. This approach is based on David Ricardo's (1817) neoclassical urban economic theory, which states that the unearned increment resulting from public investment should be returned to the public through tax measures, etc. (Amborski, 2012).

To assess whether an LVC mechanism is feasible, information is needed on the increase in land or property values following an investment in nearby public transport infrastructure (Dziauddin, 2019). Using the Difference-in-Difference (DID) method and a sample of over 1,000 transactions of terrace properties between 2013 and 2019 in Subang Jaya, Selangor, the paper aims to estimate the indirect impact of the Kelana Jaya LRT line on residential property values at different points in time. To estimate this indirect impact, the property market at each point in time is assumed to reflect the combined influence of positive and negative externalities associated with the proximity of a nearby rail transit station. Controlling the characteristics of residential property and housing submarkets, the paper estimates a potential price premium one has to pay to live near a rail transit station. It should be emphasised that knowledge of property value appreciation around rail transit stations is important as it helps shed light on future planning and development of sustainable public transport systems such as urban rail systems in Greater Kuala Lumpur and other cities. More importantly, the results of this study are useful to urban and transport planners, and policymakers who are increasingly seeking alternative sources, such as the LVC mechanism, to fund or partially fund urban rail transit systems.

Table 1: *Major sources of financing for urban rail transit systems in Greater KL*

Urban rail transit systems projects	**Project costs**	**Funding methods**
Sri Petaling LRT line	US$0.9 billion	10% was funded by the Federal Government, 10% by the soft loans from the Federal Government, 10% from the private equity, and 60% by domestic commercial equity.
Kelana Jaya LRT line	US$1.5 billion	25.6% was financed by government soft loans, 20.4% by private equity, and 54% by domestic commercial dept.
KL Monorail line	US$0.3 billion	78% was financed by government soft loans and 22% by private equity.

Source: Kiggundu, 2009.

The remaining sections of this paper are structured as follows: Section 2 reviews the relevant literature on the impact of urban rail transit on residential property values. Section 3 discusses data and methodology, while Section 4

presents empirical results. Finally, Section 5 reviews the empirical results and discusses policy implications from the perspective of LVC mechanisms.

LITERATURE REVIEW

Traditional urban economic theory or more specifically the land rent theory proposed by Alonso (1964), Muth (1969), Mills (1972), and later refined by Fujita (1989), derived from utility maximisation, suggests a positive relationship between proximity to public transport and property values (usually measured from the property to transit stations) owing to better accessibility to and from desired destinations such as major employment centres, schools and colleges, recreational facilities, and health care. According to Mills and Hamilton (1994), the accessibility benefits of public transport should lead to a locational advantage near transit stations, increasing the demand for properties. As a result, a bid-rent surface might be expected to peak near transit stations (Dziauddin, 2019).

There are extensive empirical studies that have investigated the effect of proximity to urban rail transit on property values. However, the focus of the discussion in this section is on the effect of urban rail transit on residential property values. Based on Table 1, the following conclusions can be drawn:

(1) Although the results of previous studies were mixed (with positive, negative, and non-significant results), variation in statistically positive significant results predominates in most of these investigations.
(2) In estimating the effect of rail transit systems on property values, previous studies have considered both heavy and light rails. Results have shown that residential properties near heavy rail stations received greater benefits than those near light rail stations. This can be attributed to the advantages related to higher train speeds, more frequent train service, and greater geographic coverage of heavy rail. In addition, most studies have found that residential properties near commuter rail stations have a higher value than those near heavy and light rail stations (an increase in value of +2.7% to +20.0%).
(3) Most of the past studies have designated catchment areas as locations within a radial distance of 0.4 km, and up to 1.6 km from the nearest transit station.
(4) In determining the study period most researchers have estimated the effect on residential property values from the onset of train service until decades beyond. However, some studies have estimated the impact several years before the government's official announcement of the project, immediately after the announcement, and during the construction of the project (Dubé et al., 2013; Devaux et al., 2017; Diao et al., 2017; Forouhar & Hasankhani, 2018; Yen et al., 2019; He, 2020).
(5) Regarding estimation methods, most of the early studies (since 1970s) have employed the hedonic pricing models (HPM) for over a decade. However,

in the proceeding years, researchers have adopted newer methods following the development of spatial statistical analysis, such as geographically weighted regression (GWR) and spatial autoregressive models (SAR). In addition, some studies have also adopted a quasi-experimental approach such as trend analysis and DID method when longitudinal data are used in identifying the effect of proximity to rail transit systems on property values.

STUDY AREA, DATA AND METHODOLOGY

Study Area

The city of Subang Jaya was selected as the study area. The city is located in the district of Petaling in the state of Selangor, just 20 km from the city centre of Kuala Lumpur. Subang Jaya covers an area of 161.8 sq. km. with a population of about 968,930 in 2020 (about 16.73% of the total population of Selangor). The population growth rate between 2015 and 2020 was 3.93%. The population is relatively young: 26.1% of the total population is 15 years and younger, while 71.6% is of working age (URBANICE Malaysia, 2021). In terms of land use, about 84% of Subang Jaya is a built-up area consisting mostly of residential and institutional uses complemented by commercial and industrial activities. It is served by two LRT lines, one KTM commuter line, and one bus rapid transit line, facilitating access to

Table 2
Summary of selected empirical studies on the effect of urban rail transit on residential property values

Author	Location	Transit type	Property type	Method	Results
Duncan (2011)	San Diego, California, USA	Light rail transit	Condominium	Multilevel model	Transit facility without the pedestrian environment such as intersection density, increases in people-serving commercial activity or decreases in the steepness of the terrain has an insignificant effect on condominium values.
Nolan et al. (2012)	New Jersey, USA	Heavy and light rail transit	Residential	HPM	A house located within the transit village (catchment areas of 0.25 and 0.5 miles from the nearest transit station) increases in value by +0.6%.
Dubé et al. (2013)	Montreal South Shore, Canada	Commuter rail transit	Single-family house	DID	A single-family house located within the vicinity of the commuter station increases in value ranging from +0.7% to +11% depending on the location, with an average impact of +2.6%.
Dziauddin et al. (2015)	Kuala Lumpur, Malaysia	Light rail transit	Residential	HPM and GWR	A house located within a catchment area of 2 km of the nearest transit station increases in value, but the value varies by geographic area.
Zhong and Li (2016)	Los Angeles, California, USA	Heavy and light rail transit	Single-family and multi-family houses	HPM, spatial Durbin model and GWR	A multi-family house located within the three distance bands of mature stations (0-400 m, 400-800 m and 800-1600 m) are 27-99% (US$283,090 to US$1,030,410) more valuable than their counterparts located beyond 1600 m.
Camins-Esakov and Vandegrift (2017)	Bayonne, New Jersey, USA	Light rail transit	Residential	HPM	The results show that the 8th Street Station had no statistically significant impact on annual house price appreciation.

Table 2
Continued.

Author	Location	Transit type	Property type	Method	Results
Devaux et al. (2017)	Laval, Montréal, Canada	Light rail transit	Single-family house	Trend analysis and DID	A single-family house located within a catchment area 1.6 km of the nearest station and after the rail transit is in operation increases in value as distance decreases ranging from +5.67% up to +24.68%.
Diao et al. (2017)	Singapore	Heavy rail transit	Residential	DID	A house located within 0.6 km from the nearest station increases in value by +7.8%.
Forouhar and Hasankhani (2018)	Tehran, Iran	Heavy rail transit	Residential	DID	A house located within 0.4 km of the nearest transit station experiences an increase in value in low-income neighbourhoods, but a decrease in value in high-income neighbourhoods.
Mulley et al. (2018)	Sydney, Australia	Heavy rail transit	Residential	HPM and GWR	The results from HPM indicate that a house increases in value by just over +0.5% for every 100 m closer to the nearest transit station, while the GWR identifies significant variations in the areas where properties have gained the greatest uplift from the investment.
Yen et al. (2019)	Gold Coast, Queensland, Australia	Light rail transit	Residential	DID	The model results do confirm the increases in property prices because of better accessibility to Gold Coast light rail transit, but the amount of uplift does appear to depend both on the model approach and the method to select catchment and control areas.

Table 2
Continued.

Author	Location	Transit type	Property type	Method	Results
Dziauddin (2019)	Kuala Lumpur, Malaysia	Light rail transit	Residential	HPM and GWR	The results show proximity to the nearest light rail transit station gives positive premiums of up to +8% for the majority of properties located in lower–middle and upper-middle income neighbourhoods such as Wangsa Maju, Setapak, Keramat, Setiawangsa, Ampang and Sentul. In contrast, the impact of proximity to the nearest light rail station was not found to be significant for properties in high-income neighbourhoods such as Petaling Jaya.
He (2020)	Hong Kong, China	Commuter rail transit	Residential	DID	The results show that the network accessibility of rail lines had a statistically significant capitalisation effect on property prices that varied across different submarkets.
Le Boennec et al. (2022)	Nantes, France	Commuter rail transit	Residential	HPM and GWR	A house located within a radius of less than 2.8 km from the nearest station increases its value by 0.17 compared to a similar house outside this distance, while the GWR shows significant variations across geographical areas.
Pearson et al. (2022)	Newcastle, UK	Light rail transit	Residential	HPM	A house located within a radius of 0.8 km of the newly operational station increases in value by +9.76%, while a similar house located within a radius of 0.8 km of the establish station increases in value just by +3.32%.

downtown Kuala Lumpur and other major centres. However, in this study, the Kelana Jaya LRT line which passes through Subang Jaya is used as a case study.

Historically, the Kelana Jaya LRT line (formerly known as PUTRA LRT) was constructed in the mid-1990s and became operational in 1998, in time for the 1998 Commonwealth Games. On completion, the line was 29 km long and had 24 stations running between Subang Depot in Petaling Jaya and Terminal PUTRA in Gombak. The main objective of the Kelana Jaya LRT line was to improve accessibility and connectivity between the western and northeastern suburbs of Kuala Lumpur by passing through downtown Kuala Lumpur at a low cost compared to other modes of transport such as taxis. After more than a decade of operation, and due to the urgent need to improve accessibility and connectivity to other major residential areas such as Subang Jaya, the line was extended in 2010 and completed in 2016. The extended project started at Lembah Subang Kelana Business Centre and passed through Subang, USJ and Alam Megah before reaching Putra Heights. Currently, the total Kelana Jaya LRT line includes 46.4 km of grade-separated tracks, both underground and elevated, and 37 stations. Figure 1 shows the study area along with the distribution of residential samples used in this study.

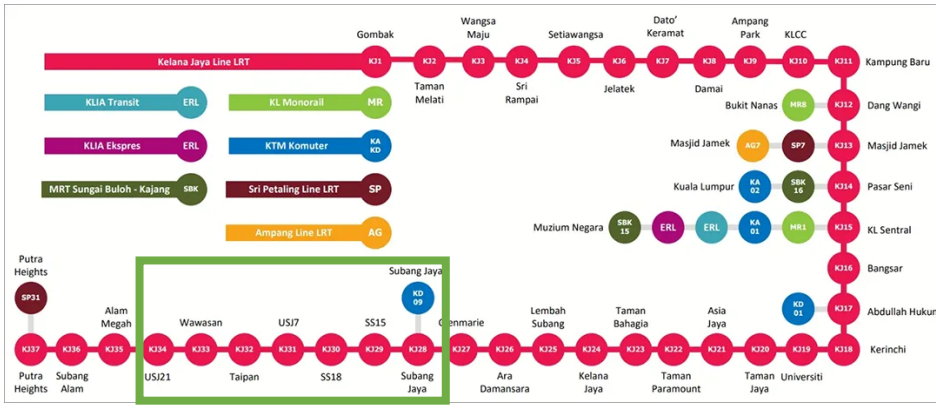


Figure 1: Map of Kelana Jaya LRT line (i.e., the Lembah Subang Extension and study area outlined in green)

Data Descriptions

The residential transaction price data (dependent variable in Malaysian Ringgit) were obtained from Brickz database (https://www.brickz.my) and recorded between I January 2013 and 31 December 2019 for the longitudinal studies. These longitudinal data were intended to reflect two phases of project development, namely during construction (2013-mid 2016) and after it became operational (mid-2016-2019). The Brickz database includes the transaction price,

date, property address, building type (terrace, semi-detached, and bungalow houses), sub-building type (corner lot, end lot and intermediate), tenure, and physical characteristics of the property such as a number of stories, lot and floor areas, and a number of bedrooms. Although the database contains transaction records for residential properties for the entire Subang Jaya area, only those within a 2.5 km catchment area along the Kelana Jaya LRT line were selected for the sample. In selecting the sample for the DID method, Tse and Love (2000) pointed out that factors such as similar locational characteristics and income groups with presumably homogeneous tastes should be considered so that the net effects of physical and locational characteristics of the neighbourhood are similar. For this study, property markets with similar locational characteristics and income groups were selected for analysis. In addition, to control for physical characteristics of the property, this study uses similar building and sub-types (terrace house and intermediate) and nearly similar lot and floor areas. Table 3 shows the descriptive statistics of 1,006 terrace property transaction data used as the sample in this study. The mean price of the sample is RM 0.67 million with a standard deviation of 0.14 (20.89% of the mean), while the mean lot area is 1,507.44 and the mean floor area is 1,155.78 with a standard deviation of 303.03 (20.10% of the mean) and 164.74 (14.25% of the mean), respectively. Thus, the differences between price, lot, and floor area are relatively small.

Table 3: *Descriptive statistics (n = 1,006)*

	Mean	**S. D.**	**Max.**	**Min.**
House price (million)	0.67	0.14	1.85	0.10
Lot area (square feet)	1,507.44	303.03	3,886	1,000
Floor area (square feet)	1,155.78	164.74	1399	500

Locational characteristics are meanwhile used to estimate the external influence on residential property values. The characteristics selected for this study include proximity to the nearest LRT station, presence of primary and secondary schools, and distance to the nearest commercial area. All distances to these facilities were calculated using geographic information systems (GIS) and which represent the road network distances for each variable. To capture the effect of these factors on residential property values, dummy variables (1 and 0) are used in the analysis. In this case, the multi-band catchment areas of 0-0.8 km (the treatment zone) and 1.8-2.5 km (the control zone) from the nearest LRT station were employed, both during construction time and after the system was operational. For other locational facilities such as primary and secondary schools and commercial areas, a single-band catchment area was employed. Thus, the binary dummy variable is given a value of 1 if a property unit is within 0-0.6 km of the nearest elementary and secondary school and commercial area; otherwise,

the value is 0. The definition of dependent and independent variables is shown in Table 4.

Table 4: *List of variables and their definitions*

Short form	Independent variables (expected sign)	Definition of variables
PRICE	House price (dependent variable)	House price in Malaysian ringgit (RM)
LOT	Lot area (+)	Gross lot area in square feet
FLOOR	Floor area (+)	Gross floor area in square feet
TREAT1	Treatment 1 (+)	1 if it is within a radius of 0.8 km from the nearest LRT station after its operations
CTRL1	Control 1 (+)	1 if it is within a radius of 1.8–2.5 km from the nearest LRT station after its operations
TREAT2	Treatment 2 (+)	1 if it is within a radius of 0.8 km from the nearest LRT station before its operations
CTRL1	Control 2 (+)	1 if it is within a radius of 1.8–2.5 km from the nearest LRT station before its operations
SCH1	Proximity to nearest primary school (+/–)	1 if it is within a radius of 0-0.6 km from the nearest primary school
SCH2	Proximity to nearest secondary school (+/–)	1 if it is within a radius of 0-0.6 km from the nearest secondary school
COM	Proximity to nearest commercial area (+/–)	1 if it is within a radius of 0-0.6 km from the nearest commercial area

Statistical Analysis

In order to estimate the indirect impact of the Kelana Jaya LRT line on residential property values in Subang Jaya, Selangor, while controlling for neighbourhood and physical characteristics, the DID method was used. The DID model in this study can be expressed as follows (Yen et al., 2019: 2):

$$\ln(p_{it}) = \beta_0 + \beta_1 S_{it} + \beta_2 L_{it} + \sum \theta_t LR_{it} \cdot year_{it} + \varepsilon_{it} \quad (1)$$

where p_{it} represents the transaction price of residential property i at time point t (t = 2013 to mid-2016 and mid-2016 to 2019), which is predicted by a vector of physical and locational characteristics. The physical and locational characteristics include S_{it}, a vector of physical characteristics for property i in year t; Lit, a vector of locational characteristics for property i in year t; the interaction of LR_{it} and $year_{it}$ is the DD estimator capturing change between the treatment area and control area; θ_t is the coefficient of interest; and ε_{it} is the error term of property i in year t. It should be noted that the DD model is typically implemented as an interaction term between treatment group and control group in a regression analysis.

In all regression-based analyses, some of the independent variables are usually multicollinear. To address this problem, correlations among the independent variables were determined using the Pearson correlation coefficient and the variance inflation factor (VIF). According to Neter et al. (1985) and Orford (1999), a Pearson coefficient greater than 0.8 and a VIF greater than 10 indicate harmful collinearity and were therefore used in this study. In addition to multicollinearity, another problem to consider is heteroskedasticity. The presence of heteroscedasticity was determined by conducting the Breusch-Pagan test.

RESULTS

Table 5 shows the results of the DID method using the semi-logarithmic functional form. This allows the parameter estimates to be interpreted as a percentage change in the dependent variable given a unit change in the independent variable. The results show that almost 30% of the variance in the dependent variable is explained by the model. Moreover, the majority of the variables except for SCH1, SCH2, and COM are statistically significant with expected signs. Among all the variables, the coefficient related to the floor size of the property (FLOOR) is highly significant, indicating that it has a strong and statistically significant influence on residential property values. Hence, *ceteris paribus*, with each square foot increase in floor size, the residential property value will increase by approximately 0.4%. This equates to RM670.00, at the mean. As expected, the coefficient on the lot size of the property is also positive and statistically significant. Each square feet increase in lot size, *ceteris paribus*, increases residential property values by 0.02%, at the mean, which equates to RM132.66. Furthermore, the effect of locational characteristics on residential property values is positive but not statistically significant.

It is important to note that the impact of the Kelana Jaya LRT line on residential property values, which is the main focus of this paper, is remarkable. All the dummy variables used to estimate the impact of the line is positive and statistically significant. The coefficients for TREAT1 and TREAT2 show that residential properties located within 0.8 km of the nearest station increased in price by respectively 8.7% and 7.9%, *ceteris paribus*, when the system became operational and during the construction period of the project. This equates to a mean price of RM58,290 and RM52,930, respectively. The results of this study have indeed supported the earlier study by Diao et al. (2016) on the impact of the new Circle Line MRT in Singapore, where they found that the statistically significant effect of the MRT occurs twice, during the construction of the project, which is due to speculation, and after the system was in operation. Interestingly though, the coefficients for CTRL1 and CTRL2 suggest that *ceteris paribus*, residential properties located within 1.8 km to 2.5 km of the nearest station increase in price by 4.7% and 6.7%, at the mean, which equate to RM31,490 and

RM44,890, respectively. This implies that the positive impact of the transit system on residential property values is wider, affecting residential properties up to 2.5 km from the nearest station, at least in the context of Subang Jaya, Selangor. A positive and statistically significant impact of the transit system on residential properties of up to 2.5 km may be viewed with some scepticism. However, it should be kept in mind that Subang Jaya is located quite a distance away (20 km) from the Kuala Lumpur city centre and commuting to and from can be tiresome due to traffic congestion at peak hours. Therefore, having an LRT station in the neighbourhood may influence perceptions of improved accessibility, which in turn reflects the positive impact of LRT on property values more broadly.

Table 5: *Results of DID model: Ordinary least square (OLS)*

	Unstandardized coefficients		**Standardized coefficients**			**Collinearity statistics**
	B	**Std. Error**	**Beta**	**t**	**Sig.**	**VIF**
Constant	12.426	0.055		224.153	0.000***	
LOT	0.000	0.000	0.270	7.483	0.000***	1.832
FLOOR	0.001	0.000	0.404	11.063	0.000***	1.884
SCH1	0.009	0.013	0.020	0.691	0.489n/s	1.137
SCH2	0.002	0.012	0.005	0.183	0.855n/s	1.086
COM	0.009	0.019	0.016	0.482	0.630n/s	1.618
TREAT1	0.087	0.017	0.164	5.152	0.000***	1.437
CTRL1	0.047	0.024	0.060	1.924	0.055*	1.353
TREAT2	0.079	0.021	0.115	3.845	0.000***	1.255
CTRL2	0.067	0.027	0.074	2.457	0.014**	1.294
Adj. R^2	0.288					
SSE	0.187					
F-statistics	46.262					

Notes: *, ** and *** indicate significance at the 0.1, 0.05 and 0.01 levels.

According to Tse and Love (2000), a potential difficulty associated with the hedonic pricing model is the presence of heteroskedasticity. Although this presence does not bias the coefficient estimates, it makes them less accurate and inefficient and, more importantly, it may lead to invalid conclusions (Gujarati & Porter, 2009). To assess the presence of heteroskedasticity in the model, the Breusch-Pagan test was conducted (Breusch & Pagan, 1979). The results indicated the presence of heteroskedasticity in the model. In order to improve the efficiency of the model due to this presence, the weighted least squares (WLS) can be used (Tse & Love, 2000; Gujarati & Porter, 2009). Hence, the regression equation (1) can be run using weighted least squares together with a heteroskedasticity consistent covariance matrix estimator and this can be expressed as follows (Tse & Love, 2000: 372)

$$S(\beta) = \sum w_t^2 (y_t - x_t'\beta)^2 \quad (2)$$

where y_t is a general function of the independent variables x_t, and w_t is the value of the weight series.

Table 6 shows the weighted least squares results. In general, the estimation with the weights shows that the coefficients for most variables are very close to those in model 1, except for the dummy variable for proximity to the nearest transit station. For example, the coefficients for CTRL1 and CTRL2 became insignificant, while the coefficients for TREAT1 and TREAT2 decreased respectively, *ceteris paribus*, from 8.7% (OLS) to 5.3% (WLS) and from 7.9% (OLS) to 4.7% (WLS) when the weights were included. At the mean, this corresponds to RM35,510 and RM31,490, respectively. The results support previous empirical evidence that the impact of the urban transit system on residential property values tends to be concentrated within 0.8 km or 10 minutes walking distance from the nearest station.

CONCLUSION AND POLICY IMPLICATIONS

This study was motivated by the desire to determine the incremental value of urban rail transit investments in Subang Jaya, Selangor. Using the DID method with transaction-based data of terraced properties, this study confirms results found in other areas in terms of value appreciation from urban rail investments such as LRT, where such investments significantly increase the value of residential properties. As shown above, a typical terraced unit located within 0.8 km (TREAT1) of the nearest LRT station and sold during the construction phase of the project and after the system became operational experienced a premium of approximately 4.7% and 5.3%, or RM31,490 and RM35,510 on average, respectively. This is derived after controlling property markets with similar locational characteristics and income groups, as well as physical characteristics of the property.

Table 6: *Results of DID model: Weighted least squares (WLS)*

	Unstandardized coefficients		**Standardized coefficients**			**Collinearity statistics**
	B	**Std. Error**	**Beta**	**t**	**Sig.**	**VIF**
Constant	12.615	0.049		258.965	0.000***	
LOT	0.000	0.000	0.223	5.610	0.000***	2.254
FLOOR	0.000	0.000	0.401	10.114	0.000***	2.243
SCH1	0.002	0.010	0.006	0.192	0.848n/s	1.169
SCH2	0.004	0.010	0.012	0.435	0.664n/s	1.078
COM	0.007	0.016	0.017	0.423	0.672n/s	2.245
TREAT1	0.053	0.014	0.146	3.758	0.000***	2.145

CTRL1	0.014	0.019	0.025	0.746	0.456n/s	1.626
TREAT2	0.047	0.017	0.100	2.858	0.004***	1.759
CTRL2	0.028	0.022	0.041	1.299	0.194n/s	1.421
Adj. R^2	0.295					
SSE	1.495					
F-statistics	47.703					

Notes: *** indicates significance at the 0.01 level.

Moving beyond the statistical results, the findings of this study provide the necessary empirical evidence for the potential implementation of a land value capture mechanism as an alternative revenue source to fund or at least partially fund urban rail transit investments in Malaysia. As noted in the introduction, traditional mechanisms for financing the costs of urban rail construction, operation, and maintenance are becoming increasingly inadequate due to budgetary constraints. With the exception of Hong Kong's Metro and Singapore's MRT, most urban rail transit systems are not self-sustaining since they mainly rely on government support to cover costs. This is further exacerbated by government financial support for public transport becoming increasingly limited and uncertain. Given these challenges, it is crucially important to reflect on the implications of this study for the potential implementation of a land value capture mechanism. To date, many cities in the United States (US), the United Kingdom (UK), Japan, China (especially Hong Kong), Singapore, and Brazil have adopted various mechanisms to capture the land value increases generated by urban rail transit, whether through taxes or fees, such as special assessment districts (known as betterment taxes in the UK), tax increment financing, transport service charges, and development contributions, or through development-based mechanisms such as joint development, transit-oriented development, land sales or leases, and sales of air rights.

Table 7: *Estimation of value increment from the Kelana Jaya LRT line access*

Radius distance	**Property area (sq. feet)**	**Price premium**	**Value increment (Ringgit Malaysia)**
Radius 0.8 km (during construction phase)	246,000	0.053	7,878,170.176
Radius 0.8 km (after operation)	132,190	0.047	3,703,773.070
Total			11,581,943.246
	Simulation of value capture scenarios		
	0.5% capture rate		57,909.716
	1.0% capture rate		115,819.432
	5.0% capture rate		579,097.162

Notes: Property refers to the floor area of terraced units. Value increment is a result of property units*average price*price premium/average floor size of the building. Average prices are RM657,505 (after operation) and RM662,311 (during the construction phase), while average buildings are 1,088 (after operation) and 1,111 (during the construction phase), respectively. *Source*: Adapted from Xu et al. (2016).

Based on the results of this study, we may illustrate land value capture under different mechanisms in the scenarios cited above for Subang Jaya in particular, and Greater Kuala Lumpur in general. One possible method is to impose a direct value capture tax assessment within a 0.8 km radius of the nearest station. Using the data based on 226 (after operation) and 119 (during construction phase) transaction records of terraced properties located within a 0.8 km radius of the nearest LRT station in Subang Jaya, the average price, the price premium created by LRT and divided by the average size of the property, the value increment can be calculated. Table 6 shows the results of value increments accruing from the Kelana Jaya LRT line access. Introducing an urban rail transit value increment tax of 0.5%, 1%, and 5% on terraced units located within a 0.8 km radius of the nearest station would result in revenues of nearly RM58,000, RM116,000 and RM580,000, respectively. These figures are only indicative of the value capture revenue estimated from transaction records of terraced units obtained for this study. An interesting accounting implication arising from these revenues is that they could provide a significant financial incentive to fund urban rail transit projects in Greater Kuala Lumpur.

While the results of this study are believed to be relatively robust, admittedly, there are some limitations that should be considered in tandem with avenues for future studies. It is suggested that future research should use longer periods of longitudinal data spanning at least five years prior to the announcement of the construction of a new LRT line in the area. In addition, additional property and locational characteristics could, for example, include the property's age and ambient noise levels.

In summary, this research has successfully determined value uplift from urban rail transit investments in Subang Jaya, Selangor. More importantly, knowledge of property value appreciation surrounding rail transit stations is important as it helps shed light on future planning and development of sustainable public transport systems such as the urban rail systems in Greater Kuala Lumpur and other cities.

ACKNOWLEDGMENT

This study is funded by the Fundamental Research Grant Scheme (FRGS Code: 2019-0021-106-02) from the Ministry of Higher Education, Malaysia.

REFERENCES

Alonso, W. (1964). *Location and Land Use: Toward a General Theory of Land Rents*. Harvard University Press, Cambridge, MA.

Amborski, D. (2012). Land value capture: The current policy regime and applications in Toronto. *AESOP2012: The 26th Annual Congress. Ankara, Turkey*.

Breusch, T. S., & Pagan, A. R. (1979). A simple test for heteroscedasticity and random coefficient variation. *Econometrica*, *47*(5), 1287-1294.

Camins–Esakov, J., & Vandegrift, D. (2017). Impact of a light rail extension on residential property values. *Research in Transportation Economics*, *67*, 11-18.

Devaux, N., Dubé, J., & Apparicio, P. (2017). Anticipation and post- construction impact of a metro extension on residential values: The case of Laval (Canada), 1995-2013. *Journal of Transport Geography*, *62*, 8-19.

Diao, M., Fan, Y., & Sing, T. F. (2017). A new Mass Rapid Transit (MRT) line construction and housing wealth: Evidence from the Circle Line. *Journal of Infrastructure, Policy and Development*, *1*(1), 64-89.

Dubé, J., Thériault, M., & Des Rosiers, F. (2013). Commuter rail accessibility and house values: The case of the Montréal South Shore, Canada, 1992-2009. *Transportation Research Part A*, *54*, 49-66.

Duncan, M. (2011). The impact of transit-oriented development on housing prices in San Diego, California. *Urban Studies*, *48*(1), 101-127.

Dziauddin, M. F., Powe, N. A., & Alvanides, S. (2015). Estimating the effects of light rail transit (LRT) system on residential property values using geographically weighted regression (GWR). *Applied Spatial Analysis and Policy*, *8*(1), 1-25.

Dziauddin, M. F. (2019). Estimating land value uplift around light rail transit stations in Greater Kuala Lumpur: An empirical study based on geographically weighted regression (GWR). *Research in Transportation Economics*, *74*, 10-20.

Forouhar, A., & Hasankhani, M. (2018). The effect of Tehran metro rail system on residential property values: A comparative analysis between high- income and low-income neighbourhoods. *Urban Studies*, *55*(16), 3503-3524.

Fujita, M. (1989). *Urban Economic Theory: Land Use and City Size*. Cambridge University Press, Cambridge.

Gujarati, D. N., & Porter, D. C. (2009). *Basic Econometrics*. 5th Edition, McGraw Hill Inc., New York.

He, S. Y. (2020). Regional impact of rail network accessibility on residential property price: Modelling spatial heterogeneous capitalisation effects in Hong Kong. *Transportation Research Part A*, *135*, 244-263.

Ingram, G., & Hong, Y. H. (2012). Land value capture: types and outcomes. In *Value Capture and Land Policies*, edited by G. Ingram and Y. H. Hong, 3-18. Lincoln Institute of Land Policy, Cambridge, MA.

Kiggundu, A. T. (2009). Financing public transport systems in Kuala Lumpur, Malaysia: Challenges and prospects. *Transportation*, *36*, 275-294.

Lari, A., Levinson, D., Zhao, Z., Iacono, M., Aultman, S., Vardhan Das, K., Junge, J., Larson, K., Scharenbroich, M. (2009). Value capture for transportation finance: Technical Research Report, The Centre for Transportation Studies, University of Minnesota,

2009. http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.233.589&rep=rep1&type=pdf.

Le Boennec, R., Bulteau, J., & Feuillet, T. (2022). The role of commuter rail accessibility in the formation of residential land values: exploring spatial heterogeneity in peri-urban and remote areas. *The Annals of Regional Science* (online first). https://doi.org/10.1007/s00168-022-01113-1.

Mathur, S. (2015). Sale of development rights to fund public transportation projects: Insights from Rajkot, India. BRTS Project. *Habitat International*, *50*, 234-239.

Medda, F. R., & Modelewska, M. (2011). Land value capture as a funding source for urban unvestment: The Warsaw Metro System. Ernst & Young Better Government Programme, Poland.

Mills, E. S. (1972). *Urban Economics*. Scott, Foresman and Company, London.

Mills, E., & Hamilton, B. (1994). *Urban Economics* (5th ed.). Harper-Collins, New York.

Mulley, C., Tsai, C. H., & Ma, L. (2018). Does residential property price benefit from light rail in Sydney? *Research in Transportation Economics*, *67*, 3-10.

Muth, R. (1969). *Cities and Housing: The Spatial Pattern of Urban Residential Land Use*. Chicago University Press, Chicago.

Neter, J., Wasserman, W., & Kutner, M. H. (1985). *Applied Linear Statistical Models*. Homewood, Irwin.

Noland, R. B., DilPetrillo, S., & Lahr, M. L. (2012). Residential property values and New Jersey Transit Village Program. *Transportation Research Record*: *Journal of the Transportation Research Board*, *2276*, 78-88.

Orford, S. (1999). Valuing the Built Environment: GIS and House Price Analysis. Ashgate Publishing Ltd., Aldershot, UK.

Pearson, J., Muldon-Smith, K., Liu, H., & Robson, S. (2022). How does the extension of existing transport infrastructure affect land value? A case study of the Tyne and Wear Light Transit Metro system. *Land Use Policy* (online first). https://doi.org/10.1016/j.landusepol.2021.105811.

Tse, R. Y. C., & Love, P. E. D. (2000). Measuring residential property values in Hong Kong. *Property Management*, *18*, 366-374.

Urbanice Malaysia & MBSJ (2021). Voluntary Local Review 2021 – The implementation of 2030 Agenda for Sustainable Development in Subang Jaya City. https ://sdgs.un.org/sites/default/files/2021-07/VLR%20SDGs%20Subang%20Jaya.pdf

Ubbels, B., & Nijkamp, P. (2002). Unconventional funding of urban public transport. *Transport Research Part D: Transport and Environment*, *7*(5), 317-329.

Xu, T., Zhang, M., & Aditjandra, P. T. (2016). The impact of urban rail transit on commercial property value: new evidence from Wuhan, China. *Transportation Research Part A*, *91*, 223-235.

Yen, B. T. H., Mulley, C., & Shearer, H. (2019). Different stories from different approaches in evaluating property value uplift: Evidence from the Gold Coast Light Rail System in Australia. *Transportation Research Record: Journal of the Transportation Research Board*, *2673*(3), 11-23.

Zhong, H., & Li, W. (2016). Rail transit investment and property values: An old tale retold. *Transport Policy*, *51*, 33-48.

Received: 28th Feb 2023. Accepted: 31st March 2023

PLANNING MALAYSIA:
Journal of the Malaysian Institute of Planners
VOLUME 21 ISSUE 1 (2023), Page 364 – 381

DEVELOPING SPECIAL ECONOMIC ZONES (SEZs) IN MALAYSIA: A LAND USE PLANNING LEGAL PERSPECTIVE

Muhammad Fadhlullah Najimudin[1], Nuarrual Hilal Md Dahlan[2], Mohd Zakhiri Md. Nor[3]

[1]*Faculty of Built Environment & Surveying,*
UNIVERSITI TEKNOLOGI MALAYSIA
[1,2,3] *School of Law,*
UNIVERSITI UTARA MALAYSIA

Abstract

Special Economic Zones (SEZs) is a known mechanism that policymakers commonly use to attract Foreign Direct Investment (FDI). However, there is a global mixed reaction towards its successful implementation with a few operational failures, especially from the legal framework perspective. Therefore, this paper aims to explore the land use planning legal issues encountered by the development of the Special Economic Zones in Malaysia. Two significant legal issues and problems focusing on the cases related to land use planning and land matters have been identified using qualitative textual analysis. Findings show that there are loopholes and weaknesses in the statutory plan and local authorities exercising their power on land use planning management related matters. Thus, understanding the legal cases from these two issues is essential in formulating the next course of action on how the legal and regulatory framework should be embodied and embedded in the land use planning practice and policy in the SEZs' development.

Keyword: Special Economic Zones, Land Use Planning, Development Control, Legal Aspect

[1] PhD Candidate at Universiti Utara Malaysia (UUM). Email: fadhlullah.najimudin@gmail.com

INTRODUCTION

Economic development, without a doubt, is the backbone of a country. Economic growth will be the yardstick in determining the success of a nation. Any prospective domestic or foreign investors are among the primary contributor to economic policy. For a developing or less developed country, these investors' involvement is crucial to ensure that their economy can become more influential (Dorozyński et al., 2016). Foreign Direct Investment (FDI) is one of the potential tools to increase economic growth. Johnson (2006) discussed that FDI enhances the country's economic development, but the country also benefits from technology spill-over from the FDI that operates in the dynamic region. Most countries' policymakers have innovatively created many incentives to attract FDI, such as tax incentives, export processing zones, economic zone, tariffs, and subsidies. The implementation of FDI is assumed to create a remarkable impact on local economic development (Dorozyński et al., 2016; Sharif Karimi & Zulkornain, 2009). Thus, to spur the country's economic growth, policymakers should not only emphasise the local economy or investment flow only, but they should also invite more FDIs to the host country.

One of the critical policy mechanisms that has been implemented in most countries to attract investment, especially for industrial development, is the Special Economic Zones (SEZ). SEZ can be generally defined as "demarcated geographic areas contained within the border of a country where the rules and regulations of business are different from those that prevail in the national territory" (Farole & Akinci, 2011). Various rules principally deal with investment setting, international trade, taxation, customs regulation, and the regulatory system intended to be more politically lenient and administratively competent than other areas of that particular national territory (Farole & Moberg, 2017).

World Investment Report 2019 stated that more than 1,000 SEZs have been established in the last five years worldwide. It expected that at least 500 more be in the circle in a few coming years (United Nations, 2019). Figure 0.14 shows the rapid development of SEZ in almost half of the decade from 1975 until the year 2018. Thus, it can be said that SEZ is a *modus operandi* that has been implemented by many of the policymakers to boost up the economic development of the country. In fact, in term of economic development, establishing SEZs itself also involves physical and infrastructure development as similar to its definition of 'demarcated geographic areas within countries' (Deng et al., 2018). This indicates that SEZs do not only focus on economic growth per se; they also affect other aspects such as the involved areas' physical and social development.

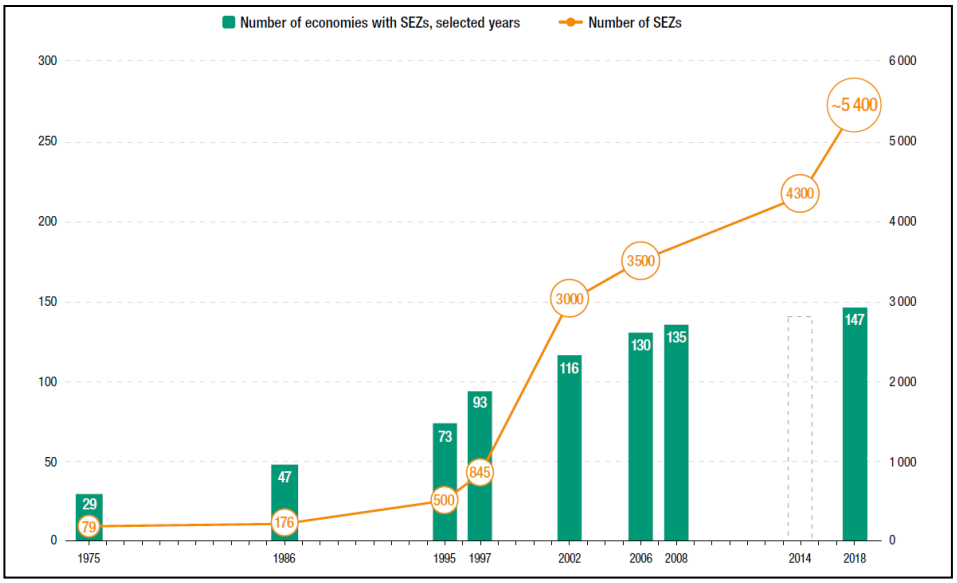


Figure 0.14 SEZ Around Globe (Source WIR 2018)

More often, SEZs development worldwide encounters several identical issues relating to land management matters, including the inefficiencies of development control and problematic governance in the perspective of legal and regulation. The spatial planning in Malaysia focuses on economic investment instead of land-use planning management that is inadequate to coordinate with the surrounding area's social, environmental and physical development, which subsequently has compromised the original planning intentions. The sustainable practice of physical development, which looked into the balance between economic and social and environmental aspects, would require a revision into the development policies as the existing practice often prioritise profit-driven development (Maidin, 2005; Masum et al., 2017). Therefore, understanding the legal issues related to land use planning in Malaysia is essential to improve SEZs' current and future development in Malaysia.

DEFINING SPECIAL ECONOMIC ZONE FROM LAND USE PERSPECTIVE

SEZ can be generally defined as "demarcated geographic areas contained within the border of a country where the rules and regulations of business are different from those that prevail in the national territory" (Farole & Akinci, 2011). The different rules principally deal with investment setting, international trade, taxation, customs regulation, and the regulatory system to be more politically lenient and administratively competent than other areas of that particular national territory (Farole & Moberg, 2017). World Investment Report 2019 stated that

more than 1,000 SEZs have been established in the last five years worldwide and expected at least 500 more to be in the circle in few coming years (United Nations, 2019).

Special Economic Zones (SEZs) can be described as establishment with legal framework, creating geographic areas governed by a distinct regulatory regime – where taxes and bureaucratic burdens on business activity, especially the development of export infrastructure, are substantially reduced (Jenkins, 2014). One of the primary aims behind the development of SEZs was to create incentives for the private sector to invest in the "creation of world-class infrastructure – automated port facilities, fibre-optic networks, uninterrupted electricity supply"- that would eventually lead to export growth and job creation (Jenkins, 2014).

Even though for economic development, the establishment of SEZs also involves physical development as similar to its definition of 'demarcated geographic areas within countries'(Deng et al., 2018). This indicates that SEZs not only focus on economic growth per se, but they also affect other aspects such as the involved area's physical and social development. Therefore, as part of the physical and social development, there is also a need for land use planning to be applied effectively in SEZs' development.

LAND USE PLANNING SYSTEM IN MALAYSIA

Several provisions and legislation govern land use planning activities in Malaysia. Its legislation is strongly influenced by the British colonial ruler (Ahmad et al., 2013). Town and Country Planning 1976 (Act 172) ('TCPA') was established to ensure uniformity of law and policy regulating town and country planning practice in Peninsular Malaysia. Under List III of the Federal Constitution, the Town and Country Planning matters come under the 'Concurrent List'; both Federal and State government have a legislative power to enact the law on the matter related to planning. Unlike land matters, where it is under exclusive jurisdiction of the respective states pursuant to List II of the 9th Schedule to the Federal Constitution.

The evolution of the law and regulation can be tracked through three significant periods: (1) pre and during British Colonial, (2) post-Malaya independence, and (3) TCPA was passed in 1976. The earliest planning system established was in 1801 with the formation of Committee of Assessors in George Town, Penang, being the first city to have proper planning, including roads, drains systems, well planned administrative and institutional building throughout the city (Harun & Jalil, 2012; PLANMalaysia, 2020; Shukri et al., 2018)

As a federal constitutional monarchy, Malaysia is practising a three-tier administration system: the federal government, the state governments (consist of 13 states) and the local authorities (comprise of 149 local authorities) (Local Government Department, 2020). The federal and state government's jurisdiction

is spelt out in the Ninth Schedule of the Federal Constitution. Meanwhile, the Town and Country Planning practice appears in the Concurrent List, shared between the federal and state government levels. With the establishment of TCPA, the three-tier administration system is being recognised in controlling and regulating the town and country planning practice in Peninsular Malaysia. The Federal Government formulated the national strategic spatial planning to give a macro perspective of the land use and physical development of Peninsular Malaysia (Ministry of Housing and Local Government Malaysia, 2010)

Figure 2: Malaysia National Development Planning Framework
Source: National Physical Plan

The official planning system in Malaysia has three functioning tiers: (1) National Physical Plan (NPP) prescribed under Subsection 6B of TCPA – Spatial Planning of the entire country, (2) State Structure Plan (STP) prescribed under Section 8 until 11B of TCPA – general planning of the state land uses and development and (3) Local Plan (LP) prescribed under Section 12 until 16A- contains the details plan and written statement of the land uses under the designated Local Authority. The NPP and STP set up long-term development goals through the projected urban structure and land use layouts of the country and state. The LP delineates the boundary of an area planned for development and gives practical orientation, infrastructure framework, and land use regulations for plots within the local authority territory.

In this context, SEZs will significantly impact the local plan's preparation as it involves the physical, economic and social development within and surrounding designated area. The zones prioritise obtaining well-equipped

infrastructure, financial support, and benefits with preferential terms (Wahyuni et al., 2013). Therefore, special zones are important for economic development and have a significant role in regulating land use planning. Given that it involves optimum land use planning management, SEZs' outstanding role and impact raise concerns regarding land use planning system and regulation effectiveness.

LEGAL ISSUES IN LAND DEVELOPMENT

SEZs is one of the well-known strategies to boost up the economic growth of a country. As SEZs' development often involves a large land area, the planning of SEZs needs to be carried out appropriately to avoid any shortcoming throughout the development and underutilisation of land. Thus, a thorough and holistic understanding of the legal issues related to land use planning is essential for the comprehensive and successful development of SEZs in Malaysia.

Land management matters are often identified as critical issues that jeopardise any development's success, including the SEZs. Regularly, the issues such as problematic governance on land matters and ineffective development control are encountered by stakeholders, developers, investors, or government agencies. This affects the development to experience facing obstacles due to the delay in the construction process and indirectly may become the reason for the withdrawal of investment in the area.

Development Control and Land Use Planning

Part IV of the TCPA specifically highlights Planning Control. As highlighted in the previous section, planning control is an important mechanism to spur and foster development within the legal planning framework (Chan & Yung, 2004). In the Malaysian context, it is prohibited on the use of land or building other than in conformity with the local plan as described in Part IV, section 18 (1) TCPA. The enforcement of this law ensures that relevant development will be implemented according to the formulated plan. This is also to ensure that the proposed development will lead to the strategic plan and goal that have been established by the local authority in the local plan. Apart from conforming with the local plan, any development shall require planning permission from the local authority (section 21 (1) TCPA). In other words, the development will only be considered as 'legal' when the planning permission has been granted simultaneously with the conformity with the local plan pursuant to section 22 (3) TCPA.

Section 18 (1) TCPA highlights that the development plan shall be used as the tools and guidance for the local authority to control the development under their jurisdictions. The case of law confirmed this - *Awang Ismail & Ors v. Kerajaan Negeri Kedah & Ors* [2010] 3 CLJ 962 (High Court of Malaya at Alor Setar), where the court acknowledged that a gazetted structure plan had the force of law. In the case *Low Moh Sun v. Majlis Perbandaran Pulau Pinang*

LR/PP/15/92 [1992] (Penang Appeal Board), the Town Planning Appeal Board dismissed the appellant's appeal for the development that does not conform with the development plan. The appeal board decided it was not improper for the local planning authority to consider and be guided by the provision of the draft local plan for Tanjong Tokong. Thus, it is evidence that the development plan such as the Structure Plan or Local Plan enacted under Part III, TCPA shall be the guideline for the state and local authority in exercising their development control. It is further to improve the physical living environment, communication, traffic management and other related factors under their jurisdiction.

Similarly, this is also the principle of law in the latest case of *Perbadanan Pengurusan Trellises & Ors v. Datuk Bandar Kuala Lumpur & Ors* [2021] 2 CLJ 808 (Court of Appeal at Putrajaya). In this case, the appellant (residents of Taman Tun Dr Ismail (TTDI)) applied for a judicial review for (i) an *order of certiorari* against the first respondent's Conditional Planning Approval dated 28.2.2017 and a Development Order dated 13.7.2017, and (ii) an *order of mandamus* directing the first respondent to adopt the draft Kuala Lumpur Local Plan 2020 and to thereafter publish the adoption in the Gazette pursuant to section 16 of the Federal Territory (Planning) Act 1982. The third respondent (Menang Perkasa Sdn Bhd) has submitted for a planning application for mixed-use development comprises of one block affordable apartment and eight blocks luxurious service apartment in which it involves the material change of use and density of the said land, which is located just next to Taman Kiara Rimba. The said land was demarcated as a public open space, recreational and sports area, green area and city park, while under the Local Plan, Taman Rimba Kiara was demarcated as a city park and public open space with zero development intensity.

One of the main grounds on the objection are the proposed development plan contravened the Kuala Lumpur Structure Plan and Kuala Lumpur Local Plan in terms of land usage, zoning and density. The proposed development applied to change the current zoning from green area to housing and expected to increase the current density of TTDI from 74 to 979 persons per acres. Thus, this issue is one of the appellant's main objections as it will affect the zoning of the area, which indirectly impacts the density and traffic flow in the residential area. The Court of Appeal issued an order of *certiorari* quashing the decision of the first respondent, which granted the development order for the said development on 13 July 2017 on the basis that the Datuk Bandar was bound to have regard to the Comprehensive Development Plan (CDP), the KL Structure Plan and the KL Local Plan in consideration of any application for planning permission. The court further held that the decision (development order) reached is invalid when these plans were not considered in granting the planning permission. Quoted from the judgment of the case on the importance of local authority to comply with the statutory development plan in granting the planning permission, Mary Lim JCA said:

> "If the Datuk Bandar, the 'authorised producer', so to speak of these plans, **does not consider these plans material considerations, it is of great worry who then will**." (emphasis added).

Furthermore, the adherence to the TCPA can be seen in *Gunung Lang Development Sdn. Bhd. v Pengarah Perancang Bandaraya* (2017) MLJU 685 (Court of Appeal at Putrajaya) case. In this case, Gunung Lang Development Sdn Bhd (GLDSB) has submitted an application for planning permission to Majlis Bandaraya Ipoh (MBI). However, the application has been rejected due to its non-conformity with the development plan. Due to the rejection, GLDSB appealed against such rejection to the High Court of Malaya at Ipoh and further to the Court of Appeal (Putrajaya). Nonetheless, both courts dismissed the appeals. The High Court and the Court of Appeal agreed that TCPA is a public law that regulates the urban and rural planning matters in Peninsular Malaysia. The local authority's decision shall be deemed to be under the public law, not private law. Thus any allegation of wrong decision made by the local authority and application for remedy in respect of the application for planning permission must be done through a judicial review application pursuant to Order 53 of the Rules of Court 2012 or through an appeal to the Appeal Board pursuant to section 23 of the TCPA.

On the other hand, TCPA provides explicitly that planning permission will be obtained once the proposed development conforms with the development plan. Planning permission could also be rejected even if the proposed development is in accordance with the development plan. This has been reported in *Chong Co Sdn Bhd v Majlis Perbandaran Pulau Pinang, [2000] 5 MLJ 130* (Appeal Board, Penang). In this case, the appellant applied for planning permission to develop a 12-storey building. The appellant has fulfilled all the requirements for the planning permission application. However, the appellant was informed to reduce the said proposed development to a five-storey building. The appellant later appealed and contended that they are entitled to obtain the planning permission since they have complied with all the guidelines prevailing when submitting the application. However, the respondent submitted that it would not be necessary for them to grant planning permission, even though the applicants have complied with the development plan's requirements. The respondent decided not to approve the application due to the height of the building. There was no gazetted local plan for the said area during that time, and the Penang Island Structure Plan 1987 is the only development plan that exists. The Appeal Board rejected the application on the basis that:

> "Planning permission could be refused even if the development in respect of which permission is applied for would not contravene any provision of the development plan. And in the instant case, even if the development in respect of which permission was applied would not contravene any provision of the 1987 structure plan, planning permission could be validly refused on account of the provisions that the respondent thinks are likely to be made in any development under preparation or to be prepared, or the proposals relating to those proposals. **The development plan was definitely not the only matter to be taken into consideration**." (emphasis added).

Similarly in *Majlis Perbandaran Pulau Pinang v Syarikat Bekerjasama-Sama Serbaguna Sungai Gelugor Dengan Tanggungan* [1999] 3 MLJ 1 (Court of Appeal Putrajaya). The Court of Appeal was in the opinion that the statutory requirement stated in Section 22(2) of the TCPA, which highlighted the phrase 'shall take into consideration the requirements of the Development Plan does not mean that the local planning authority will slavishly adhere. In other words, the proposed development's conformity with the development plan is not a must in the planning application. In *Sunway City (Penang) Sdn Bhd v Lembaga Rayuan Negeri Pulau Pinang & Ors and other appeals* [2017] MLJU 755 (High Court of Malaya at Penang), the High Court agreed that in some instances, there should be an exemption on what has been gazetted in the development plan. For instance, where the development involves hill land area in which the area with a certain percentage of the slope is not allowed to be developed. Hence, in this situation, the court stated that since the area gazetted as a 'special project' under the structure plan, it may indicate a project with features distinguishing it from other (usually commercial) ventures. It also cannot merely be what the State Planning Committee or the Second Respondent (MPPP) per se claims to be. Therefore, even if there may be specific provisions in the development plans that the applicant shall follow, the requirement is not mandatory (Md Dahlan et al., 2015).

Besides, conflict of land use planning application between state and local government can be seen in *Subang Jaya Municipal Council & Residents v. Sime Darby* on Subang Ria Park's issues in Selangor Appeal Board (Ying, 2011). In this case, the Appeal Board was unhappy with the local plan process, which flawed in two perspectives; (1) local plan content and (2) the manner it was approved. The way it was approved showed non-coordination between the state and local planning authority. Initially, the local authority, the Subang Jaya Municipal Council, has zoned 72 acres as open spaces during the public Hearing of Draft Subang Jaya Local Plan 2020. However, under the gazetted Local Plan 2020, a portion of the open space comprised of 19 acres was converted into

housing and commercial zoning. The State Planning Committee (SPC) has given principle approval to Sime Darby to develop that portion of land (Ying, 2011). Thus, Sime Darby has applied for planning permission to assume that the SPC has principally agreed on their proposal to develop a portion of the private park operated by them. However, the application was rejected by the Subang Jaya City Council (MBSJ) with the stand that the area is zoned for open spaces (The Star Online, 2010). Thus, the decision made by the local authority to conform with the local plan and not jeopardising a portion of public use for a profitable development can be praised as this complies with section 18 (1) TCPA, which prohibits the use of land or building other than in conformity with the local plan. Therefore, even if there may be specific provisions in the development plans that the applicant shall follow, the requirement is not mandatory (Md Dahlan et al., 2015).

Land Matters

In Malaysia's context, the power of land matters is under the State Authority as stipulated in List II (2)(a) to Ninth Schedule of the Federal Constitution. Section 5 of the National Land Code defines 'State Authority' to mean the Ruler or Governor of the State. For practical purposes, the ruler, as explained in *Lebbey Sdn Bhd v Chong Wooi Leong & Anor And Other Application* [1998] 5 MLJ 368 (High Court of Malaya at Shah Alam) as a Ruler is acting upon the EXCO's recommendation, which has the authority to decide matters pertaining to the land, which includes the power of land alienation under NLC (Md Dahlan, 2012). The state authority has the absolute power to exercise the land alienation process as prescribed in Section 76 of the NLC.

An application for land ownership approved by the State Authority will be final, complete, and effective when the land title has been registered and issued to the applicant. This matter is also further supported through *North East Plantations Sdn Bhd v Pentadbir Tanah Daerah Dungun & Anor [2011] 2 CLJ 392* (Federal Court, Putrajaya). The court decided that as long as the land title was not registered and issued to the appellant, then the lands still belonged to the state authority. The State Authority still have the power to revoke the approval of ownership of land that has been previously granted and reserves the right to reject premium payments and other payments related to it. Further, the court in majority (Abu Samah Nordin and Azhar Ma'ah JJCA, while Hishamudin Mohd Yunus JCA, dissenting) held that legitimate expectation cannot override the express statutory provisions of the National Land Code 1965. The appellant, in this case, had no legitimate expectation that titles would be issued to it when the State Authority had validly revoked the approval of alienation of the said land lots.

The same principle has also been decided through the case of *Piagamas Maju Sdn Bhd lwn Pengarah Tanah dan Galian Negeri Selangor dan satu lagi dan permohonan yang lain, [2013] 2 MLJ 97* (High Court of Malaya, Shah

Alam). The court stated that the State Authority's action to revoke the approval of the ownership of the land and return the payment of premiums and other fees related to it is legal because the land still belongs to the government unless the land has been registered to other owners.

Thus, looking into the abovementioned issues and cases, the revocation of the approval might indirectly impact the applicant. For example, relying on the land alienation's approval, despite not being the "registered owner" of the particular land, the applicant may begin to invest by planning the improvements of the land, preparation for the development proposal of the land and many others. Thus, the revocation of the land alienation after being pending for a lengthy amount of time may result in a wastage of time and money that, towards the end, the opportunity for the prospective landowner to develop the land can be denied. This issue can be seen in the case of *Pembinaan Batu Jaya Sdn Bhd v Pengarah Tanah dan Galian, Selangor & Anor* [2016] 2 MLJ 495(Court of Appeal Putrajaya), whereby the appellant has submitted the pre-computation plan to local authority and district office, however, the applicant was only being informed that the state authority had revoked the alienation four years after the application. On top of that, the alienation of the land has been approved ten years back when the appellant submitted an application to the state authority for the alienation of state land for mixed development. Thus, it can be summed that the revocation of land took almost 15 years after the land alienation application has been approved. In consequence, the appellant became aggrieved and suffered losses in their investment.

Furthermore, in this case, the act of revoking the land alienation's approval by the state authority without giving sufficient notice and reason can be perceived as an abuse of power. On the other hand, besides no details and reasons for the revocation, the said land had been alienated to some other commercial party. Further, the court had rejected the respondent's (local planning authority) argument that no obligation to give a reason for the said decision. The Court of Appeal held that the appellant has the right to know the reasons for revocation based on the principle of natural justice. Lord Mustill's judgment in *Doody v Secretary of State for the Home Department; and other appeals* [1994] 1 AC 531 *Doody's* case stated that:

> "The giving of reasons may be inconvenient, but I can see no ground at all why it should be against the public interest; indeed rather the reverse. That being so, I would ask simply: is a refusal to give reasons fair? I would answer without hesitation that it is not."

There is no doubt that state authority can revoke the approval, but the question is the reason for the revocation and why at a very late stage. These

circumstances indirectly show a bad impression on the state authority's integrity and transparency in the land alienation exercise. The "absolute" power given to the state authority on land matters has indirectly led them to use power arbitrarily and unfairly.

Meanwhile, land legal issues related to the land category under the National Land Code 1965 (NLC 1965) and the zoning system under the planning system might arise. One of the conditions stipulated in NLC 1965 is on the categories of land use provided: agriculture (Section 115), building (Section 116), and industry (Section 117). The category of land uses will determine the permissible use of land activities. Meanwhile, under the local plan, the local authority has also produced a zoning plan within their territory as part of the land-use planning system. As the planning system also binds the NLC 1965, the category of the land use and zoning system in the development plan should be parallel or in tally with each of these two documents.

However, a conflict between these two systems has been recorded in *The Ordinary Co Sdn Bhd v Lembaga Rayuan Negeri Selangor & Anor* [2014] 7 MLJ 705 (Appeal Board of Selangor). Ordinary Co Sdn Bhd is the registered owner of a plot of land (Lot 16994) in Petaling Jaya in which the land use is categorised as "Building" with the express condition of "Commercial Building". Further, the applicant has paid the quit rent and assessment rate under "Building" rate. However, the land was wrongly zoned as an open space under the local plan (Rancangan Tempatan Petaling Jaya – Pengubahan 1), which was gazetted in June 2007 by the second respondent (Petaling Jaya Municipal Council-MBPJ). Later, in 2011, the applicant submitted a planning application for a land-use changes form open space to commercial use and subsequently to develop a five-storey building on that particular land.

Nonetheless, MBPJ rejected the application on the ground that the proposed development did not conform with the local plan. Thus, the applicant appealed to the Selangor Appeal Board on the decision by MBPJ. The appeal was dismissed by the board on the basis that Section 108 of the National Land Code 1965 does not apply to the local plan prepared under TCPA, and therefore the use of condition in a land title could not prevail over the land-use zoning gazetted in the Local Plan. The applicant was not allowed to change the zoning and develop the said land.

Dissatisfied with the Board of Appeal's decision, the applicant later applied for a judicial review at the High Court of Malaya at Shah Alam. The court has decided for MBPJ to consider the applicant's planning application in which the land has been categorised under the use of "Commercial Building", and MBPJ had wrongly zoned the said lot into open spaces. The courts decided that both respondents (the Board of Appeal and MBPJ) did not recognise that under the local plan, Lot 16994 was improperly zoned as an open space that contravenes the land use and express condition under the land title. MBPJ further denied the

planning application by deciding that the land cannot be developed despite being categorised under commercial land use in the land title. The court further held that 'the use condition in a land title prevails over the land-use zoning under the local plan pursuant to section 108 of the NLC and section 18(3) of the TCPA. The term 'restriction' in Section 108 of the NLC can be construed or interpreted as the restriction imposed by the landowner's local planning authority. Thus, the Board of Appeal has committed an error of law by concluding that the land use condition in the land title does not prevail over the land-use zoning under the local plan.

LESSON LEARNT

Based on the overview from the legal cases that have been discussed above, it can be identified that a few issues on the land use planning and land matter may affect the development of SEZs in Malaysia. The issues on the conformity of the proposed development with the zoning of the local plan, a condition required by the local authority, is essential as it can directly impact the development of SEZs in Malaysia. Wahyuni et al. (2013) pointed out that SEZs' appropriate planned development is very important as it will affect the investors' confidence to do their businesses in the host country. The issue of the non-conformity of the proposed development might delay the planning permission process in which the applicant needs to submit for the material change of the land use if the proposed development does not conform with the zoning in the local plan. If there is a need for the zoning in the local plan to be changed, it will take a long process in which it has to go through the process of local plan amendment, which might take up to 6 months period.

On the other hand, despite ensuring that the land use planning system can support the SEZs' development in Malaysia, there is also a need to enhance the local planning authority power. Land use planning through the development plan is one of the tools used to assist the local planning authority in regulating and controlling development and land use planning (Maidin et al., 2009). The local planning authority is empowered to restrict and control the development based on the provision under TCPA and other related by-laws. However, based on the analysis made on the several cases abovementioned, there is still a loophole for the local authority to exercise their full rights as the 'regulator and manager' of their territory. In the country's overall development, there is a need for the whole development to be a plan-led development to avoid the 'ad-hoc' or short-term planning. Short-term urban planning practice for instant profit can drive into a degenerative development (García-Ayllón, 2015).

Further, there is a vital need to integrate the related agencies in preparing the development plan and other development control exercises. Looking into the case of *The Ordinary Co Sdn Bhd v Lembaga Rayuan Negeri Selangor & Anor* in which the local authority wrongly zoned the lot as 'open

space' despite being categorised for 'building' use. In this case, the local authority should consult with other departments and technical agencies, including the land office, Department of Environment (JAS) and Department of Mineral and Geo-science (JMGS), to prepare their development plan. The abovesaid case should not happen if the input and integration between these two main agencies, the local planning authority and land office, are well-synchronised. It was pointed out by Md Dahlan et al. (2019) in which the involved agencies should be coordinated and integrated to ensure that the inefficiency and ineffective control of land use can be minimised. Good coordination between related parties is very crucial to ensure the smoothness of these SEZs. Thus, the issue of inconsistency of the land use under NLC 1965 and Development Plan should be thoroughly reviewed during the preparation of the development plan.

In addition to the above, it is submitted that the development plans should be regularly revised and updated to ensure their data and information are current and that they can meet contemporary dynamic developmental issues and challenges. To further cement this, it is required that the relevant technical agencies such as the JMGS, Land Office, Department of Irrigation and Drainage (JPS) and JAS should prepare their own updated big data and inventory of relevant information under their respective jurisdiction portfolio for each district in Malaysia. The big data and inventory collected will be used to enhance and improve the development plan.

CONCLUSION AND RECOMMENDATION FOR FUTURE RESEARCH

The Special Economic Zone (SEZ) concept, without a doubt, has been verified by most of the countries to boost their economic growth, i.e., China, India, Africa, Malaysia, United States, Europe and many others. However, behind all these successes lies many issues that can affect SEZs' execution in the long run. The lack of regulation or policy implementation for SEZ can somehow create much confusion and affect the investors' confidence in the host country (Najimudin et al., 2020). Issues and problems such as strategic planning of SEZ, bureaucratic redundancy in registration, the unattractive package offered, customs clearance, taxation disadvantages, foreign exchange and economic instability, long-process for development, immigration issues with foreign workers and many other items have indirectly hampered the overall SEZ environment and deterred the prospective investors. The problems have been documented in relevance to the SEZs worldwide, such as in China, Australia, Africa, the United States and Poland (Fenwick, 1984; Lord & Tangtrongita, 2014; Zhihua Zeng, 2019). Hence, the empirical analysis of the legal cases related to land use planning and other land matters is essential and useful for various reasons, which mainly help understand the texture and scope of legal issues related to SEZs' development.

Since land-use planning represents a system that the respective authorities manage, which will also impact individual rights, it is justified that a review mechanism to be established ensures that the power to execute the system is appropriately used. Therefore, when an application for the planning approval received an adverse decision such as refusal or with some condition that needs to be followed, which are not in their favour, those affected by the decision might choose to bring and review the decision to the "higher" decision-making authority. It is undeniable that a check and balance and equitable process is needed in the planning system; however, if the local authority who are more familiar with their territory cannot exercise their "full access" towards the plans that they prepare what their city will be, these interventions might give an impact on the land use planning system itself. Thus looking into the prospect legal issues in the development of SEZs from the perspective of land uses and other land matters can offer the course of action on how the law should be accordingly embodied into the development agenda in increasing the Foreign Direct Investment (FDI) in the country which has badly affected from the current Covid-19 pandemic.

Thus, drawing back on the abovesaid cases discussed in the earlier part, future research can go in-depth into two important aspects: the statutory plan's role and related stakeholders' responsibility. Future research is recommended to further explore the statutory development plan's role from the perspective of its information adequacy, equity and sustainable life and development goal. Based on the earlier discussion, the development plan is perceived to be comprehensive from the perspective of data provision and information update, which indirectly unable to face and meet the contemporary challenges and issues in development, including the issues and problems in SEZs. Hence, further understanding of the effectiveness of development plan to be balanced, equitable and able to meet the societal necessities and needs in regulating land-use planning is important as the fundamental knowledge in formulating SEZs regulatory framework.

On top of that, there is also a need to study the technical agencies' responsibility and the local authority. Land use planning management system is perceived as not well integrated between different stakeholders that cause non-coordination for land development. Understanding the relevant stakeholders' role, especially the technical agencies and the local authority, in providing the database for land development of relevant potential areas is crucial to ensure it able to meet all challenges, including the issues and problems in SEZs, and most importantly, avoiding hindrances throughout the whole development process. Coordination between the related agencies in providing the information, possibly in one single database, is essential for further and future reference by other relevant stakeholders, specifically the landowner.

Lastly, there is a need to understand the duty of local planning authority further, specifically balancing between the right for development and the right to

a healthy environment. The decision of granting planning permission by the local authority had been multiple times favouring profitable economic development such as the cases of *Perbadanan Pengurusan Trellises & Ors v. Datuk Bandar Kuala Lumpur & Ors* and *Awang Ismail & Ors v. Kerajaan Negeri Kedah & Ors*. Slight consideration had been put on future direct and indirect social and environmental consequences: regional disparity of spill-over development and environmental degradation, despite the statutory development plan had been gazetted. The development issues such as flood, soil erosion, human safety, human security, and landslides were clearly prevailed, possibly from local authority's weakness in providing their monitoring and maintenance work might jeopardise SEZs' current and future development in Malaysia. Therefore, further evaluation of the local authority's duty in practising balance development is recommended in the future.

ACKNOWLEDGEMENTS

The author would like to thank Universiti Teknologi Malaysia (UTM) for this research funding through Skim Latihan Akademik Muda (SLAM) scholarship.

REFERENCES

Ahmad, F., Mohd, I., Maidin, S. L., Zainol, R., Norzailawati & & Noor, M. (2013). Malaysian Development Plan System: Issues And Problems. *Malaysian Institute of Planner*, *XI*, 1–20.

Awang Ismail & Ors v. Kerajaan Negeri Kedah & Ors [2010] 3 CLJ 991.

Chan, E. H. W., & Yung, E. H. K. (2004). Is the development control legal framework conducive to a sustainable dense urban development in Hong Kong? *Habitat International*, *28*(3), 409–426. https://doi.org/10.1016/S0197-3975(03)00040-7

Chong Co Sdn Bhd v Majlis Perbandaran Pulau Pinang, [2000] 5 MLJ 130.

Deng, Y., Fu, B., & Sun, C. (2018). Effects of urban planning in guiding urban growth: Evidence from Shenzhen, China. *Cities*, *83*(December 2017), 118–128. https://doi.org/10.1016/j.cities.2018.06.014

Doody v Secretary of State for the Home Department; and other appeals [1994] 1 AC 531. (n.d.).

Dorozyński, T., Świerkocki, J., & Urbaniak, W. (2016). The FDI inflow to special economic zones in Poland. *Contemporary Studies in Economic and Financial Analysis*, *98*, 135–159. https://doi.org/10.1108/S1569-375920160000098009

Farole, T., & Akinci, G. (2011). Special Economic Zones. In *Special Economic Zones*. https://doi.org/10.1596/978-0-8213-8763-4

Farole, T., & Moberg, L. (2017). Special Economic Zones in Africa: Comparing Performance and Learning from Global Experience. In *The International Bank for Reconstruction and Development / The World Bank*. The International Bank for Reconstruction and Development / The World Bank.

Fenwick, A. (1984). Evaluating China's Special Economic Zones. *Berkeley Journal of International Law*, *2*(2). https://doi.org/10.15779/Z38S64W

García-Ayllón, S. (2015). *La Manga case study : Consequences from short-term urban*

planning in a tourism mass destiny of the Spanish Mediterranean coast. *43*, 141–151. https://doi.org/10.1016/j.cities.2014.12.001

Town and Country Planning Act 1976 (Act 172).

Gunung Lang Development Sdn. Bhd . v Pengarah Perancang Bandaraya (2017) MLJU 685.

Harun, N., & Jalil, R. (2012). The Morphological History of the Malaysian Urban Form. *International Economics Development and Research*, 111–116. https://doi.org/10.7763/IPEDR.

Johnson, A. (2006). The Effects of FDI Inflows on Host Country Economic Growth. *Centre of Excellence for Science and Innovation Studies*, *58*, 1–57.

Lebbey Sdn Bhd v Chong Wooi Leong & Anor And Other Applications [1998] 5 MLJ 368.

Local Government Department. (2020). *List of Local Authority*. https://jkt.kpkt.gov.my/en/SoalanLazim/Umum-JKT%26PBT

Lord, M., & Tangtrongita, P. (2014). *Special Border Economic Zone (SBEZ) in the Indonesia-Malaysia-Thailand Growth Triangle (IMT-GT)*. *May*.

Low Moh Sun v. Majlis Perbandaran Pulau Pinang LR/PP/15/92 [1992].pp 6053 -6054

Maidin, A. J. (2005). *Challenges in implementing and enforcing environmental protection measures in Malaysia*. Malaysian Bar. https://www.malaysianbar.org.my/article/news/legal-and-general-news/legal-news/challenges-in-implementing-and-enforcing-environmental-protection-measures-in-malaysia-by-ainul-jaria-bt-maidin

Maidin, A. J., Begum, B., Ali, M., & Ibrahim, A. (2009). Powers of The Local Authority In Regulating Land Planning And Development Control : Whither Control. *Planning Malaysia*, *7*, 133–147.

Majlis Perbandaran Pulau Pinang v Syarikat Bekerjasama-Sama Serbaguna Sungai Gelugor Dengan Tanggungan [1999] 3 MLJ 1.

Masum, A., Nafees, S. M., Md. Nor, M. Z., & Ahmed, K. H. W. @ M. H. (2017). The Right to Development Versus Environmental Protection With Special Reverence to Federal Constitution. *Advanced Science Letters*, *23*(9), 9072–9075.

Md Dahlan, N. H. (2012). Legal Issues in The Alienation of Lands for Housing Development Projects in Malaysia. *Malayan Law Journal*, *6*, 41–63.

Md Dahlan, N. H., Mohamed Nafees, S. M., & Ahmad, M. H. (2019). A Planning Law Perspective On Abandoned Housing Projects In Malaysia. In *Selected Legal Issues in Indonesia and Malaysia*. UNISSULA PRESS, Universitas Islam Sultan Agung, Semarang, Indonesia.

Md Dahlan, N. H., Nafees, S. M., Masum, A., & Win, K. H. (2015). Abandoned Housing Projects in Malaysia: A Planning Law Perspective. *AGBA's 12th Annual World Congress, 16-19 November 2015*, 239–247.

Ministry of Housing and Local Government Malaysia. (2010). *National Physical Plan-2*.

Najimudin, M. F., Md Dahlan, N. H., & Md. Nor, M. Z. (2020). Establishment of Bukit Kayu Hitam as a Special Border Economic Zone (SBEZ): Global lessons. *AMEABRA International Virtual Conference on Environment-Behaviour Studies*.

North East Plantations Sdn Bhd v Pentadbir Tanah Daerah Dungun & Anor [2011] 2 CLJ 392.

Pembinaan Batu Jaya Sdn Bhd v Pengarah Tanah dan Galian, Selangor & Anor, [2016] 2 MLJ 495.

Perbadanan Pengurusan Trellises & Ors v. Datuk Bandar Kuala Lumpur & Ors [2021] 2 CLJ 808.

Piagamas Maju Sdn Bhd lwn Pengarah Tanah dan Galian Negeri Selangor dan satu lagi dan permohonan yang lain, [2013] 2 MLJ 97.

PLANMalaysia. (2020). *History of Establishment*. http://www.planmalaysia.gov.my/index.php/en/about-us/plan-malaysia/sejarah-penubuhan

Sharif Karimi, M., & Zulkornain, Y. (2009). *M PRA Munich Personal RePEc Archive FDI and Economic Growth in Malaysia FDI and Economic Growth in Malaysia*. *14999*.

Shukri, S. M., Wahab, M. H., Amat, R. C., Taib, I., & Ismail, S. (2018). *The Morphology of Early Towns in Malay Peninsula The Morphology of Early Towns in Malay Peninsula*. *July*, 3–7. https://doi.org/10.14419/ijet.v7i3.9.15281

Sunway City (Penang) Sdn Bhd v Lembaga Rayuan Negeri Pulau Pinang & Ors and other appeals [2017] MLJU 755.

The Ordinary Co Sdn Bhd v Lembaga Rayuan Negeri Selangor & Anor [2014] 7 MLJ 705.

The Star Online. (2010). *MPSJ 'no' to reclassify use of Subang Ria Park*. The Star Online. https://www.thestar.com.my/news/community/2010/06/04/mpsj-no-to-reclassify-use-of-subang-ria-park

United Nations. (2019). *World Investment Report 2019 (United Nations Conference on Trade and Development)* (Issue June 2019).

Wahyuni, S., Astuti, E. S., & Utari, K. M. (2013). Critical Outlook At Special Economic Zone in Asia: a Comparison Between Indonesia, Malaysia, Thailand and China. *Journal of Indonesian Economy and Business*, *28*(3), 336–346. https://doi.org/10.22146/jieb.6218

Ying, L. C. (2011). Subang Ria Park stays. *The Star Online*. https://www.thestar.com.my/news/community/2011/06/08/subang-ria-park-stays/

Zhihua Zeng, D. (2019). Special Economic Zones: Lessons from the Global Experience. In *PEDL Synthesis Paper Series 1: Vol. volume 9* (No. 1; 1, Issue 3).

Received: 28th Feb 2023. Accepted: 31st March 2023

PLANNING MALAYSIA:
Journal of the Malaysian Institute of Planners
VOLUME 21 ISSUE 1 (2023), Page 382 – 399

ASSESSING RESIDENTS' INTENTION TOWARDS MUNICIPAL SOLID WASTE SOURCE SEPARATION: A CASE STUDY OF MALAYSIA

Soo-Cheng Chuah[1], Lennora Putit[2], JS Kesminder Singh[3]

[1,2,3] *Faculty of Business and Management,*
UNIVERSITI TEKNOLOGI MARA,
PUNCAK ALAM, SELANGOR, MALAYSIA

Abstract

This study investigates factors affecting Malaysian residents' municipal solid waste source separation behaviour. An extension of the theory of planned behaviour was applied by including the situational factor and perceived policy effectiveness in the model. A sample of 410 respondents was collected using convenient sampling methods. Data were analysed using the structural equation modelling-partial least-square (SEM-PLS) method on the hypotheses in the study. The findings revealed that attitude, subjective norms, perceived behavioural control, and perceived policy effectiveness significantly influenced residents' municipal solid waste source separation intention. On the other hand, situational factors negatively impacted the municipal solid waste separation intention. Results further revealed that moral obligation and environmental knowledge positively influenced attitudes towards solid waste source separation. Thus, it is important for the government to increase Malaysian residents to perform solid waste source separation by providing adequate physical waste separation facilities with effective regulation enforcement.

Keyword: Intention, Solid Waste Source Separation, Theory of Planned Behaviour, Environment Knowledge, Moral Obligation, Policy Effectiveness, Sustainability

[2] Lecturer at Universiti Teknologi MARA. Email: lennora633@uitm.edu.my

INTRODUCTION

Rapid urbanization development and population growth with high consumption has accelerated the generation of solid waste. Municipal solid waste management is a growing issue and critical challenge faced by all countries especially developing countries. Inadequate waste disposal and management creates serious environment degradation and human hazard. Every year, the amount of waste has been recycled less than 20 percent globally with huge amounts of wasted being dumped at of landfill sites or hazardous open dump sites. Landfill is one of the most common methods to manage waste disposal and it results in negative externalities to the environment through methane generation and permeation of leachate. In Malaysia, most of the landfills have attained maximum capacity (United National Development Program, 2014).

One of the useful approaches to managing and reducing waste is recycling (Tee & Low, 2016; Chen & Lee, 2020). The establishment of recycling starts with waste segregation as the recycling rate and recyclable quality can be improved with segregate waste at the source prior to recycling (Otitoju & Seng, 2014; Tee & Yee, 2016) and households' involvement in the recycling process. The 3R principles of reduce, reuse, and recycle have been implemented to encourage waste segregation and waste reduction worldwide, including in Malaysia. A series of plans have been initiated by the Malaysian government to increase and encourage households' involvement in recycling activities as they are the main generator of solid waste. (Teo, Abdul Karim, Mamud, & Wan Abdul Hamid, 2018). However, the Malaysian waste recycling rate is not sufficient as only 10% of waste was recycled and about 90% was dumped into sanitary landfills (Lacovidou & Ng, 2020), which does not reach the target set in Malaysia's National Strategic Plan of 22% recycling rate and divert 40% of waste from landfill in 2020.

Municipal solid waste management is a major challenge for local governments in Malaysia. Malaysians are generating approximately 33,000 tonnes of municipal solid waste per day with an average of 1.17kg per person per day (Lacovidou & Ng, 2020). Adequate and efficient municipal solid waste management is important in creating a 'zero waste' society (Cheng, 2020) and waste separation at source is one of the underlying elements in closing the loop of material, the Malaysian government has introduced the Separation at Source Initiative under Solid Waste and Public Cleansing Management Act 2007 (Act 672) in September 2015 that managed by the Solid Waste Management and Public Cleanliness Corporation (SWCorp) in cultivating households' waste separation behaviour. However, the effectiveness of the policy implementation and various programs of separation at waste and recycling are not significant in fostering waste separation at source practices and waste segregation still remained low among Malaysian households and not bringing observable improvement in municipal solid management practices.

The success of waste separation at the source is subject to the residents' participation willingness and attitude towards waste separation at the source. The effectiveness of households' participation in community recycling activities and waste separation at source is related to individual's behavioural and psychological factors (*Al Mamun, Ramayah, Mahmud, Musa, & Anika., 2018;* Xu, Ling, Lu & Shen, 2017a; Teo et al., 2018). Therefore, it is important to understand the factors influencing an individual's waste separation behaviour. This information provides useful insights for the government to draw out waste management strategies and policies that could bring about residents' behavioural change on waste separation. Past studies have examined residents' waste separation behaviour using the Theory of Planned Behaviour (TPB) as it provides a theoretical framework to examine psychological factors that affect an individual's intention to perform a specific behaviour (Chan, 2013; Karim Ghani, 2013; Zhang, Huang, Yin & Gong, 2015; Teo, et al., 2018; Toan, 2021; Wang, Lu & Liu, 2021). The three psychological factors in TPB are attitudes toward the behaviour, subjective norms, and perceived behavioural control (Ajzen, 1991). This study extends the TPB model by adding the variables of behavioural beliefs of moral obligation and environmental knowledge in influencing attitudes towards waste separation. To date, the Malaysian government has implemented a waste separation policy in encouraging waste separation at source, but the effectiveness of policy implementation depends on the residents' participation in the activities. As such, they can also be affected by external environmental situations and government policies to engage in a specific behaviour. In addition, this study is also looking into situational factors and perceived policy effectiveness as means towards predicting residents' behavioural intention to perform waste separation at source.

LITERATURE REVIEW

Theory of Planned Behaviour

The theory of planned behaviour (TPB) is a psychological theory to predict an individual's intention to engage in a behaviour. The individual's behavioural intention is determined by three factors: attitude, subjective norm, and perceived behavioural control. TPB model has been adopted by past studies to investigate individual waste behaviour such as recycling behaviour (Ramayah, Lee, & Lim, 2012; Chan & Bishop, 2013; Al Mamun et al., 2018), food waste behaviour (Karim Ghani, Rusli, Biak & Idris, 2013; Stefan, van Herpen, Tudoran & Lähteenmäki, 2013) and waste separation behaviour (Zhang et al, 2015; Ma, Hipel, Hanson, Cai & Liu, 2018, Pakpour et al., 2014; Stoeva & Alriksson, 2017; Xu et al., 2017a; Xu et al., 2017b; Carol et al., 2018). The TPB model is extended by including variables of moral obligation and environmental knowledge to predict the attitude towards waste separation, and situation factor and perceived policy effectiveness to predict the waste separation intention. This study

examines factors that influence residents' waste separation intention in Klang Valley, Malaysia. The proposed research model is illustrated in Figure 1 following the hypotheses stated in the study.

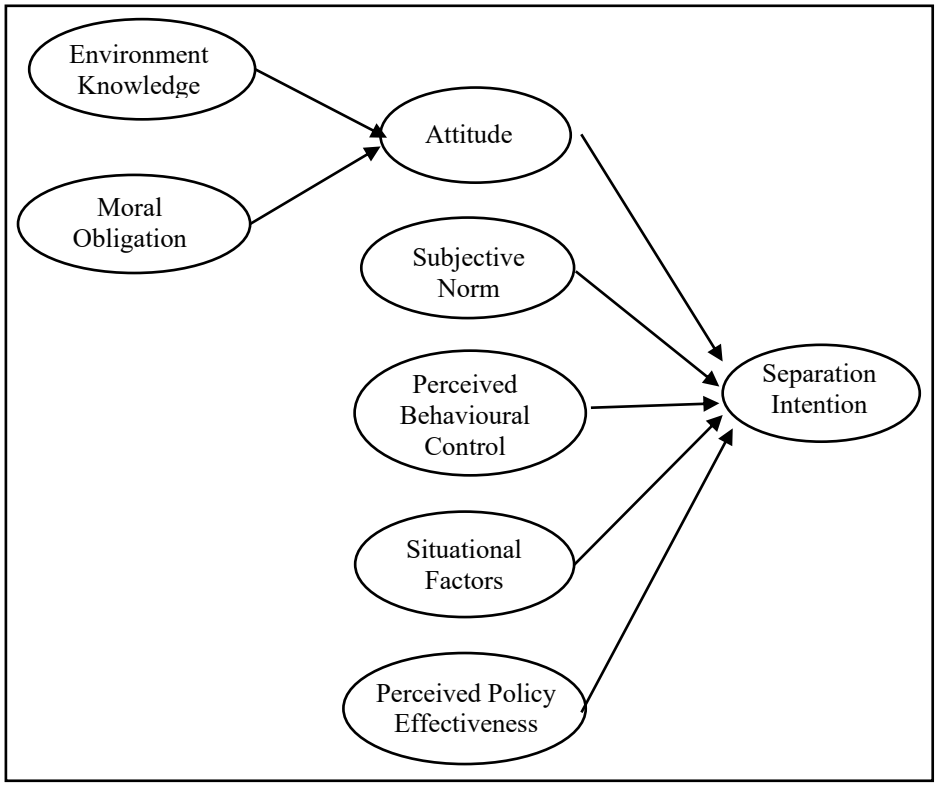


Figure 1: *Proposed research model*

Moral Obligation

Moral obligation towards the environment is an individual's perception to perform positively and to be responsible (Barr et al., 2010). An individual with a high perceived value of the moral obligation is likely to be controlled by his or her beliefs and behaviours and subsequently shape an ethically environmental attitude. Moral norm was found significantly influence recycling attitude (Botetzagias, Dima & Malesios, 2015; Chan and Bishop, 2013) and household waste separation attitude (Chen & Lee, 2020). Zhang et al. (2015) and Xu et al. (2017a) found a positive impact of moral obligation on the attitude towards waste separation in China. Thus, the following hypothesis is proposed:

H1a: Moral obligation has a positive impact on attitude towards waste separation

Environmental Knowledge

Environmental knowledge is defined as "the general knowledge of facts, concepts, and relationships concerning the natural environment and its major ecosystems" (Fryxell & Lo, 2003, p.48). This knowledge of ecological development and information about environmental issues which is referred to as system knowledge (Schahn & Holzer, 1990; Heo & Muralidharan, 2017). Studies supported the significant role of environmental knowledge towards pro-environmental attitudes, for example, attitudes towards green products (Jaiswal & Kant, 2018; Chuah & Lu, 2019); recycling attitudes (Kelly, Mason, Leiss & Ganesh, 2006); and waste separation (Zhang et al., 2015, Liao & Li, 2019). An individual with adequate environmental knowledge may have performed progressive attitude towards the environment. Therefore, the hypothesis is hypothesized as:

H1b: Environmental knowledge has a positive impact on attitudes towards waste separation

Attitude towards Waste Separation

Attitude towards a specific behaviour refers to "the degree to which a person has a favourable or unfavourable evaluation of the behaviour in question" (Ajzen, 1991, p.188). If an individual possesses a positive attitude towards a behaviour, they are likely to have a higher intention to engage in the behaviour and vice versa. In the context of eco-friendly behaviour such as recycling behavioural intention (Ramayah et al., 2012; Wan et al., 2017) and food separation intention (Ng, Ho & Sia, 2021). Karim Ghani et al. (2013) found a significant positive relationship between individual attitudes and source separation of food waste participation intention in Malaysia. There were studies that have a positive effect of attitude towards waste separation intention in China (Zhang et al., 2015; Xu et al.,2017; Wang et al., 2021), in Vietnam (Bui, Nguyen, Phan & Nguyen, 2020) and in Malaysia (Ng et al., 2021; Teo et al., 2018).

H2: Attitude toward waste separation has a positive impact on waste separation intention

Subjective Norm

Subjective norm is defined as "the perceived social pressure to perform or not to perform the behaviour" (Ajzen, 1991, p.188). It refers to the social influence of family, peers, or community. Several studies have confirmed the significant positive effect of subjective norms on pro-environmental behavioural intention including recycling intention (Ramayah et al., 2012), waste separation intention (Zhang et al., 2015; Xu et al., 2017a; Wang et al., 2021; Ng et al., 2021; Bui et al., 2020), and food waste separation (Karim Ghani et al., 2013). Thus, the proposed hypothesis is as follows:

H2: Subjective norm has a positive impact on waste separation intention

Perceived Behavioural Control

Perceived behavioural control refers to "the perceived ease or difficulty of performing the behaviour of interest" (Ajzen, 1991, p.183). It is an individual's perception of his or her self-efficacy to perform the undertaking action needed to engage with the underlying situation. Individual's more likely to perform an underlying behaviour if they perceived more opportunities and resources and fewer expected obstacles on it. Various studies have examined the effect of perceived behavioural control on pro-environmental behavioural intention such as recycling intention (Wan et al., 2017) and specifically in waste separation (Zhang et al, 2015; Xu, et al., 2017a; Liao, Zhao & Chen, 2018; Bui et al., 2020; Carol et al., 2018). This study predicts that individuals with higher perceived behavioural control would be having a higher intention to separate waste. Therefore, the following hypothesis is proposed:

H3: Perceived behavioural control has a positive impact on waste separation intention

Situational Factors

Situational factors are defined as "having the ability and easy access to facility" (Davis, Philips, Read & Iida, 2006, p.124). It refers to physical conditions that may influence pro-environmental behaviour. In other words, situational factors are the extent of assessment by the respondents on the physical conditions such as limited space, time, convenience, and cooperation as obstacles to influence their waste separation behaviour. Davis et al. (2006) and Latif, Omar, Bidin and Awang (2012) found a significant positive influence of situational factors on recycling intention in the UK and in Malaysia, respectively. Situational factors also positively influenced food waste separation intention in Malaysia by Karim Ghani et al. (2013). Meanwhile, Zhang et al. (2015) findings indicated a negative relationship between situational factors and waste separation intention in China. The hypothesis can be concluded as follow:

H4: Situational factors *have a positive impact on waste separation intention*

Perceived Policy Effectiveness

Perceived policy effectiveness refers to "an individual's favourable or unfavourable evaluation on the clarity, adequacy and facilitation of policy measures (e.g., the sufficiency of waste separation bins, clarity of guidelines and promotion, etc.)" (Wan et al., 2014, p.56). It is a means by which government facilitates waste separation by providing infrastructure and facilities, education, campaign, and techniques in waste treatment. Government facilitators stimulate

residents to react and evaluate government policies' effectiveness. Wan et al. (2014) and Liao et al. (2018) found a positive relationship between perceived policy effectiveness and intention to separate waste in Hong Kong and rural areas in China, respectively. Effective public policy may motivate an individual's intention to perform a specific behaviour (Wan and Shen, 2013). Therefore, the following hypothesis is proposed:

H5: Perceived policy effectiveness *has a positive impact on waste separation intention*

METHODOLOGY

The population of this study are households from Klang Valley, Malaysia. Klang Valley is an urban conglomeration located in Central of Malaysia, it covers the area of the capital city Kuala Lumpur and the state of Selangor with a high-density of population (Department of Statistics Malaysia, 2020). The questionnaire of this study was designed by adopting past studies (Zhang et al, 2015; Xu et al., 2017b). The questionnaire consisted of 2 parts; the first part is regarding respondents' demographic characteristics, and the second part contains question items about the variables in the study.

The minimum required sample size was calculated using the GPower software (Faul et al., 2007) with a predictive power of 0.95 and effect size of 0.15 as suggested by Cohen (1992) and Ahmad et al. (2019). The calculation showed that a minimum sample size of 153 is required with seven predictors. A total of 410 questionnaires were collected using the convenience snowball sampling method from households in Klang Valley.

Structural equation modelling-partial least squares (PLS-SEM) was applied to analyse the data collected using SmartPLS software version 3.2.8 (Ringle et al., 2015). The PLS-SEM analysis comprises both the measurement model and structural model respectively.

Multivariate normality was assessed by applying Web power websites (Cain et al., 2017). The Mardia's multivariate skewness ($b = 6.557, p < 0.01$) and kurtosis ($b = 93.029, P < 0.01$) results indicating the non-normality of the data. Common Method Bias was tested as a single source approach was applied in data collection.

DATA ANALYSIS

A. Descriptive Statistics

Table 1 presents the demographic profile of respondents in the study. Almost 60% of the respondents were female. Most of the respondents were between the

age 18–25 years old. Majority of the respondents were Malay (85%). Respondents were with tertiary education level.

Table 1: Demographic Profile

	Frequency (n=410)	Percent
Gender		
Male	173	42.2%
Female	237	57.8%
Age		
Less than 17 years old	52	12.7%
18–25 years old	263	64.1%
26–40 years old	51	12.4%
41–65 years old	39	9.5%
66 years old and above	5	1.2%
Ethnicity		
Malay	348	84.9%
Chinese	40	9.8%
Indian	17	4.1%
Others	5	1.2%
Academic qualification		
SPM or below	104	25.4%
Diploma	180	43.9%
Degree	119	29.0%
Postgraduate	7	1.7%
Occupation		
Employee	117	28.5%
Student	260	63.4%
Housewife	20	4.9%
Retiree	7	1.7%
Others	6	1.5%

B. Multivariate statistics

1. Measurement Model

An assessment of the measurement model includes convergent validity and discriminant validity as suggested by Hair, Hult, Ringle & Starstedt (2017). The measurement model examines loadings, average variance extracted (AVE), and composite reliability (CR) and the results are presented in Table 2. The results of this study measurement model satisfy the criteria requirements of reliability and convergent validity as the item loadings exceeded 0.5, AVE values were greater than 0.5 (range from 0.613 to 0.771) and CR values were above 0.7 (range from 0.792 to 0.910). Two items were dropped from the model due to low factor loading (MO2 and PBC1).

Table 2: Measurement model

Construct	Item	Loadings	AVE	CR
Moral obligation	MO1	0.826	0.677	0.863
	MO3	0.875		
Environmental Knowledge	EK1	0.795	0.724	0.84
	EK2	0.842		
	EK3	0.831		
Attitude towards waste separation	ATT1	0.820	0.613	0.826
	ATT2	0.790		
	ATT3	0.736		
Subjective norm	SN1	0.848	0.771	0.910
	SN2	0.898		
	SN3	0.886		
Perceived behavioural control	PBC2	0.706	0.659	0.792
	PBC3	0.905		
Situation factors	SF1	0.916	0.722	0.885
	SF2	0.928		
	SF3	0.684		
Perceived policy effectiveness	PPE1	0.781	0.616	0.889
	PPE2	0.828		
	PPE3	0.825		
	PPE4	0.753		
	PPE5	0.734		
Waste separation intention	SI1	0.876	0.767	0.908
	SI2	0.892		
	SI3	0.858		

The discriminant validity was assessed with a heterotrait-monotrait ratio of correlations HTMT as proposed by Henseler, Ringle, & Sarstedt (2015). All HTMT ratio values are less than 0.85 indicating the discriminant validity of the measures was confirmed (Table 3).

Table 3: Discriminant validity (HTMT)

	1	2	3	4	5	6	7	8
1. Attitude towards waste separation								

2. Environmental knowledge	0.717						
3. Moral obligation	0.785	0.708					
4. Perceived behavioural control	0.687	0.593	0.828				
4. Perceived policy effectiveness	0.535	0.357	0.462	0.536			
5. Situation factors	0.242	0.271	0.348	0.332	0.102		
6. Waste separation intention	0.674	0.481	0.698	0.824	0.533	0.318	
7. Subjective norm	0.437	0.34	0.743	0.847	0.393	0.357	0.531

2. Structural equation model

The structural equation model measures of path coefficients, standard errors, t-values, and p-values were examined with a 5000-sample resampling bootstrapping procedure as suggested by Hair et al. (2018). The results of the hypotheses testing criterions are presented in Table 4. As shown in Table 4, Environmental Knowledge ($\beta = 0.351, p < 0.01$)and Moral Obligation ($\beta = 0.347, p < 0.01$) had positive effect on attitude towards waste separation, supporting hypotheses H1a and H1b. The results revealed that Attitude towards Waste Separation ($\beta = 0.249, p < 0.01$), Subjective Norm ($\beta = 0.101, p < 0.01$), Perceived Behavioural Control ($\beta = 0.307, p < 0.05$), Situation Factor ($\beta = 0.114, p < 0.01$) and Perceived Policy Effectiveness ($\beta = 0.101, p < 0.01$) had positive effect on Waste Separation Intention and Situation Factor ($\beta = 0.114, p < 0.01$) had a negative effect on Waste Separation Intention. Therefore, hypotheses H2, H3, H4, H5, H6 in the study were supported.

Table 4: Hypothesis testing

Hypotheses Relationship	Std beta	Std error	t-value	p-value	BCI LL	BCI UL	Decision	f^2	R^2
H1a: MO -> ATT	0.347	0.048	7.183	0.000	0.258	0.414	supported	0.147	0.360
H1b: EK -> ATT	0.351	0.049	7.142	0.000	0.274	0.429	supported	0.144	
H2 : ATT -> SI	0.249	0.052	4.830	0.000	0.163	0.330	supported	0.086	0.471
H3 : SN -> SI	0.101	0.054	1.867	0.031	0.018	0.199	supported	0.013	
H4 : PBC -> SI	0.307	0.057	5.427	0.000	0.205	0.398	supported	0.112	
H5 : SF -> SI	-0.114	0.037	3.031	0.001	-0.175	-0.052	supported	0.022	
H6 : PPE -> SI	0.199	0.048	4.140	0.000	0.129	0.278	supported	0.057	

Note(s): MO = moral obligation, EK = environmental knowledge, ATT = attitude towards waste separation, SN = subjective norm, PBC = perceived behavioural control, SF = situation factors, PPE = perceived policy effectiveness, SI = waste separation intention

The R^2 value of Attitude towards Waste Separation and Waste Separation Intention was 0.360 and 0.471, respectively indicating relatively moderate in-sample exploratory power of the model. The effect size, f^2 was determined followed Cohen guideline that effect size of 0.02, 0.15 and 0.35 are considered as small, medium, and large. The f^2 values of Environmental Knowledge ($f^2 = 0.147$) and Moral Obligation ($f^2 = 0.144$) on Attitude towards Waste Separation, and Perceived Behavioural Control ($f^2 = 0.112$) on Waste Separation Intention indicating moderate affect. Attitude towards Waste Separation ($f^2 = 0.086$), Perceived Policy Effectiveness ($f^2 = 0.057$) and Situation factor ($f^2 = 0.022$) had relatively small effect on Waste Separation Intention.

The data in this study was single sourced. The issue of Common Mathos Bias was tested using partial correlation method using unrelated marker variables as suggested by Podaskoff, MacKenzie, Lee, and Podsakoff (2003). In this method, the model was regressed with and without marker variable. If the difference of the R^2 value is not more than 10%, it will then indicate a no bias problem from the single data source. The difference of the R^2 values of the endogenous constructs before and after partially out the marker variable in the model is shown in Table 5, and the difference of R^2 values is less than 10%, indicating that common method bias is not substantial in the study.

Table 5: Partial correlation method: Compare R^2

Construct	Without Marker Variable	With Marker Variable
Attitude towards waste separation	0.360	0.362
Waste separation intention	0.471	0.471

The predictive relevance of the model was examined using the blindfolding procedure (Hair Risher, Sarstedt & Ringle, 2018). As the Q^2 values for Attitude towards Waste Separation ($Q^2 = 0.215$) and Waste Separation Intention ($Q^2 = 0.351$)are greater than 0, indicating the model has sufficient predictive relevance.

The model's out-of-sample predictive power was examined using the PLSpredict with 10 folds as suggested by Shmueli et al. (2019). Comparing the root mean square error (RMSE) values of PLS-SEM with the naïve LM benchmark is shown in Table 6. Results revealed that two of the six PLS-SEM's RMSE values were lower than LM's RMSE values, indicates a medium out-of-model predictive power as recommended by Shmueli et al. (2019).

Table 6: PLS predict assessment

	PLS-SEM		LM		PLS-SEM – LM
	RMSE	Q^2 predict	RMSE	Q^2 predict	RMSE
ATT1	0.667	0.237	0.67	0.228	-0.003
ATT2	0.773	0.221	0.767	0.233	0.006
ATT3	0.71	0.177	0.707	0.185	0.003
SI1	0.701	0.358	0.703	0.355	-0.002
SI2	0.668	0.339	0.672	0.332	-0.004
SI3	0.705	0.292	0.706	0.289	-0.001

DISCUSSION AND IMPLICATIONS

The findings of this study support the relevance of an extended TPB behavioural model on waste separation intention. The results revealed a significant positive effect of attitude towards waste separation on waste separation intention, which was in line with previous studies (Zhang et al., 2015; Xu et al., 2017a; and Bui et al., 2020). This shows that the environment-related specific attitude would indicate higher intention to separate waste. The findings also revealed that attitude was positive significantly determined by moral obligation and environmental knowledge, providing support to findings by Zhang et al., 2015 and Wang et al. (2018). This explains that individual who with adequate knowledge on environment issues are likely to hold constructive attitude towards waste separation. Residents' responsibility and increased knowledge regarding waste separation and recycling can be cultivated through effective channels such as communication and education (Ramayah et al., 2012).

The findings also revealed the significant impact of Subjective norms on waste separation intention and are consistent with past studies by Zhang et al (2015) and Xu et al. (2017a) in China, Khanh et al. (2020) in Vietnam and Razali et al. (2020) in a Malaysian context. The influence of subjective norm was different from other factors in the model. Malaysia is a collectivist society whereby peers, family members and community have considerable influence on a person's life practices (Ramayah et al., 2012) and social pressure may stimulus people's waste separation intention and in turn likely to participate in the waste separation behaviour.

Perceived behavioural control was also found to have a positive significant impact on waste separation intention. It supports past findings such as Zhang et al. (2015) and Razali et al. (2020). It was also found to be the most influential factor in affecting the waste separation intention. As stated by Ajzen (1991), adequate opportunities and resources may motivate people to have higher perceived self-control over behaviour which increased the probability to perform a specific behaviour.

The situational factor was found to be negatively significant in influencing the waste separation intention in line with Zhang et al. (2015). Inconvenient conditions have restricted residents to perform waste separation behaviour as they need to spend more time on waste separation. Physical conditions with adequate facilities for waste separation generally make consumers easy access and a sense of convenience. However, the results indicate that the accessibility of waste disposal physical conditions do not stimulate residents' intention to perform the waste separation. This is because they may not be concerned and enthusiastic enough about separating waste, perhaps due to low awareness about waste separation even if their surrounding environment is equipped with adequate physical waste separation facilities such as collection points, and separate waste bins.

The results also supported hypothesis H_6 which showed a significant positive impact of perceived policy effectiveness on waste separation intention, consistent with Xu et al. (2017b). Effective public authority policy with aggressive facilitation and persuasion through waste separation and recycling campaign and comprehensive education may encourage and facilitate public to perform waste separation intention and behaviour. This indicates that individual's waste separation behaviour is intensely motivated by policy measures (Wan, Shen & Choi, 2014).

The implementation of waste separation at source could be improved through waste management campaigns or education programmes in schools and the community. This is aimed to instil residents' environmental knowledge and increase moral obligation in promoting residents' attitude towards waste separation at source and recycling. As subjective norm has a significant impact on the intention to separate waste at source, strong social norm pressure can be cultivated through community programs to effectively foster the residents' intention towards it.

Relevant campaigns should highlight the importance of solid waste management. The residents should be educated on how to practice waste separation at source, and to consider their moral obligation as responsible residents in the community to contribute towards environmental sustainability. Creating awareness and cultivating the right attitude towards waste separation at source is important as adequate situation factor is unfavourable in influencing intention to perform waste separation among the residents in Klang Valley, Malaysia. The effective implementation of the policy has to be comprehensively well planned with continuous effort and strict execution and enforcement of the Solid Waste and Public Cleansing Management Act 2007 (Act 672) to enhance the waste separation at source among residents and facilitate a sustainable environment.

CONCLUSION AND LIMITATION

This study validates the TPB model application n predicting the intention to separate waste at the source. Attitude, subjective norms, and perceived behavioural control were found to significantly influence the waste separation intention. The additional two variables of situation factors and perceived policy effectiveness have further increased the model's validity and were also found to have a significant negative and positive impact on waste separation intention, respectively. However, this study is not without limitations. The use of the self-report method in data collection may lead to overestimation that may not reflect the resident's actual perception.

Furthermore, the cross-sectional method of the study is restricted to residents' perception at a point in time. Thus, future study can utilise longitudinal data in reflecting behavioural changes. This study investigates the residents' waste separation intention in the urban area of Malaysia which may not be generalized by residents in other regions and rural areas. Future study is recommended to include other variables that are not captured in the said. Furthermore, future investigation of actual waste separation behaviour may be potentially considered as behavioural intention may or may not results in performing waste separation behaviour as depicted by the intention-behaviour gap.

ACKNOWLEDGEMENT

The authors would like to thank the Faculty of Business and Management, Universiti Teknologi MARA, Puncak Alam Campus, Selangor, MALAYSIA for its support in undertaking this research project.

REFERENCES

Ahmad, N. H., Ramayah, T., Mahmud, I., Musa, M., & Anika, J. J. (2019). Entrepreneurship as a preferred career option. *Education + Training*, *61*(9), 1151–1169.

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, *50*(2), 179–211. https://doi.org/https://doi.org/10.1016/0749-5978(91)90020-T

Al Mamun, A., Mohiuddin, M., Ahmad, G. Bin, Thurasamy, R., & Fazal, S. A. (2018). Recycling intention and behavior among low-income households. *Sustainability (Switzerland)*, *10*(7), 1–22. https://doi.org/10.3390/su10072407

Barr, S., Gilg, A. W., & Ford, N. J. (2001). A conceptual framework for understanding and analysing attitudes towards household-waste management. *Environment and Planning A*, *33*(11), 2025–2048. https://doi.org/10.1068/a33225

Botetzagias, I., Dima, A-F., & Malesios, C. (2015). Extending the Theory of Planned Behavior in the context of recycling: The role of moral norms and of demographic predictors. *Resources, Conservation and Recycling*, *95*, 58–67. https://doi.org/https://doi.org/10.1016/j.resconrec.2014.12.004

Bui, N., Nguyen, T., Phan, K., & Nguyen, A. (2020). Legal framework for recycling domestic solid waste in Vietnam: situation and recommendation. *E3S Web of Conferences 164*, 11009. https://doi.org/10.1051/e3sconf /202016411009

Cain, M. K., Zhang, Z., & Yuan, K. H. (2017). Univariate and multivariate skewness and kurtosis for measuring nonnormality: Prevalence, influence and estimation. *Behavior Research Methods*, *49*(5), 1716–1735. https://doi.org/10.3758/s13428-016-0814-1

Chan, L., & Bishop, B. (2013). A moral basis for recycling: Extending the theory of planned behaviour. *Ournal of Environmental Psychology*, *36*, 96–102. https://doi.org/https://doi.org/10.1016/j.jenvp.2013.07.010

Chen, B., & Lee, J. (2020). Household waste separation intention and the importance of public policy. *International Trade, Politics and Development*, *4*(1), 61–79. https://doi.org/10.1108/itpd-03-2020-0008

Cheng, K. W. (2020). Attitude, Perceived Behavioral Control and Subjective Norms in Waste Segregation-at-Source Behavior: An Empirical Study. *Sustainable Business and Society in Emerging Economies*, *2*(1). https://doi.org/10.26710/sbsee.v2i1.1312

Chuah, S-C, & Lu, J. (2019). Green purchase behavior: A study on Malaysian and Chinese millennials. *Malaysian Journal of Consumer and Family Economics*, *23*, 149–172.

Cohen, J. (1992). Statistical power analysis. *Current Directions in Psychological Science*, *1*, 98–101.

Davis, G., Phillips, P. S., Read, A. D., & Iida, Y. (2006). Demonstrating the need for the development of internal research capacity: Understanding recycling participation using the Theory of Planned Behaviour in West Oxfordshire, UK. *Resources, Conservation and Recycling*, *46*(2), 115–127. https://doi.org/10.1016/j.resconrec.2005.07.001

Department of Statistic Malaysia. (2020). Key findings population and housing census of Malaysia 2020: Administrative district. Retrieved from https://www.dosm.gov.my/v1/index.php?r=column/cthemeByCat&cat=500&bul_id=WEFGYlprNFpVcUdWcXFFWkY3WHhEQT09&menu_id=L0pheU43NWJwRWVSZklWdzQ4TlhUUT09

Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, *39*(2), 175–191. https://doi.org/doi:10.3758/bf03193146

Frywell, G. E., & Lo, C. W. H. (2003). The influence of environmental knowledge and values on managerial behaviour on behalf of the environmental: An empirical examination of managers in China. *Journal of Business Ethics*, *46*, 45–69. https://doi.org/https://doi.org/10.1023/A:1024773012398

Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2017). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)* (2nd (ed.)). Sage.

Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2018). The Results of PLS-SEM Article information. *European Business Review*, *31*(1), 2–24.

Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of*

the Academy of Marketing Science, *43*(1), 115–135. https://doi.org/10.1007/s11747-014-0403-8

Heo, J., & Muraligharan, S. (2017). What triggers young Millennials to purchase eco-friendly products?: the interrelationships among knowledge, perceived consumer effectiveness, and environmental concern. *Journal of Marketing Communications*, *25*(4), 421–437. https://doi.org/https://doi.org/10.1080/13527266.2017.1303623

Jaiswal, D. & Kant, R. (2018). Green purchasing behaviour: A conceptual framework and empirical investigation of Indian consumers. *Journal of Retailing and Consumer Services*, *41*, 60–69.

Karim Ghani, W. A. W. A., Rusli, I. F., Biak, D. R. A., & Idris, A. (2013). An application of the theory of planned behaviour to study the influencing factors of participation in source separation of food waste. *Waste Management*, *33*(5), 1276–1281. https://doi.org/10.1016/j.wasman.2012.09.019

Kelly, T. C., Mason, I. G., Leiss, M., & Ganesh, S. (2006). University community responses to on-campus resource recycling. *Resources, Conservation and Recycling*, *47*(1), 42–55.

Latif, S. A., Omar, M. S., Bidin, Y. H., & Awang, Z. (2012). Environmental Problems and Quality of Life: Situational Factor as a Predictor of Recycling Behaviour. *Procedia - Social and Behavioral Sciences*, *35*(December 2011), 682–688. https://doi.org/10.1016/j.sbspro.2012.02.137

Latif, S. A., Omar, M. S., Bidin, Y. H., & Awang, Z. (2012). Environmental Values as a Predictor of Recycling Behaviour in Urban Areas: A Comparative Study. *Procedia - Social and Behavioral Sciences*, *50*(January 2015), 989–996. https://doi.org/10.1016/j.sbspro.2012.08.100

Liao, C., & Li, H. (2019). Environmental education, knowledge, and high school students' intention toward separation of solid waste on campus. *International Journal of Environmental Research and Public Health*, *16*(9). https://doi.org/10.3390/ijerph16091659

Liao, C., Zhao, D., Zhang, S., & Chen, L. (2018). Determinants and the moderating effect of perceived policy effectiveness on residents' separation intention for rural household solid waste. *International Journal of Environmental Research and Public Health*, *15*(4), 1–17. https://doi.org/10.3390/ijerph15040726

Ma, J., Hipel, K. W., Hanson, M. L., Cai, X., & Liu, Y. (2018). An analysis of influencing factors on municipal solid waste source-separated collection behavior in Guilin, China by Using the Theory of Planned Behavior. *Sustainable Cities and Society*, *37*, 336–343. https://doi.org/10.1016/j.scs.2017.11.037

Ng, K. S., & Iacovidou, E. (2020). Malaysia vs Waste (Featured). *Chemical Engineer - London Then Rugby-*, *July/Augus*(July), 30–33. https://www.researchgate.net/publication/342987835_Malaysia_vs_Waste_Featured

Ng, P.Y., Ho, P.-L., & Sia, J. K.-M. (2021). Integrative model of behavioural intention: the influence of environmental concern and condition factors on food waste separation. *Management of Environmental Quality*, *32*(3), 631–645. https://doi.org/https://doi.org/10.1108/MEQ-06-2020-0128

Otitoju, T. A., & Seng, L. (2014). Municipal Solid Waste Management: Household Waste Segregation in Kuching South City, Sarawak, Malaysia. *American Journal of Engineering Research (AJER)*, *03*, 82–91. www.ajer.org

Pakpour, A. H., Zeidi, I. M., Emamjomeh, M. M., Asefzadeh, S., & Pearson, H. (2014). Household waste behaviours among a community sample in Iran: An application of the theory of planned behaviour. *Waste Management*, *34*(6), 980–986. https://doi.org/10.1016/j.wasman.2013.10.028

Podsakoff, P. M., MacKenzie, S. B., Lee, J-Y., Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology, 8*(5), 879-903.

Ramayah, T., Lee, J. W. C., & Lim, S. (2012). Sustaining the environment through recycling: An empirical study. *Journal of Environmental Management*, *102*, 141–147. https://doi.org/10.1016/j.jenvman.2012.02.025

Razali, F., Daud, D., Weng-Wai, C., & Anthony Jiram, W. R. (2020). Waste separation at source behaviour among Malaysian households: The Theory of Planned Behaviour with moral norm. *Journal of Cleaner Production*, *271*, 122025. https://doi.org/10.1016/j.jclepro.2020.122025

Ringle, C. M., Wende, S., & Becker, J.-M. (2015). *SmartPLS 3*. SmartPLS GmbH. http://www.smartpls.com

Schahn, J., & Holzer, E. (1990). Studies of individual environmental concern: the rolw of knowledge, gender, and background variables. *Environment and Behaviorntal*, *22*, 767–786. https://doi.org/https://doi.org/10.1177/0013916590226003

Shmueli, G., Sarstedt, M., Hair, J. F., Cheah, J. H., Ting, H., Vaithilingam, S., & Ringle, C. M. (2019). Predictive model assessment in PLS-SEM: guidelines for using PLSpredict. *European Journal of Marketing*, *53*(11), 2322–2347. https://doi.org/10.1108/EJM-02-2019-0189

Stefan, V., van Herpen, E., Tudoran, A. A., & Lähteenmäki, L. (2013). Avoiding food waste by Romanian consumers: The importance of planning and shopping routines. *Food Quality and Preference*, *28*(1), 375–381. https://doi.org/https://doi.org/10.1016/j.foodqual.2012.11.001.

Stoeva, K., & Alriksson, S. (2017). Influence of recycling programmes on waste separation behaviour. *Waste Management*, *68*, 732–741. https://doi.org/10.1016/j.wasman.2017.06.005

Tee, S-Y., & Low , J-T. (2016). Attributes in Fostering Waste Segregation Behaviour. *International Journal of Environmental Science and Development*, *7*(9), 672–675. https://doi.org/10.18178/ijesd.2016.7.9.860

Teo, C. B. H., Abdul Karim, A. S., Mamud, N., A., & Wan Abdul Hamid, W. N. H. (2018). Source waste separation behavior among Shah Alam households. *Management & Accounting Review*, *17*(3), 37–52.

Toan, T. P. K. (2021). Factors influencing on residents' household waste separation behavioral intention: Evidence from Ho Chi Minh City, Vietnam. *Economics and Business Administration*, *11*(1), 122–135. https://doi.org/10.46223/hcmcoujs.econ.en.11.1.542.2021

United Nations Development Program. (2014). *Human Development Report 2014: Sustaining Human Progress: Reducing Vulnerability and Building Resilience.*

Wan, C., & Shen, G. Q. (2013). Perceived policy effectiveness and recycling behaviour: The missing link. *Waste Management*, *33*(4), 783–784. https://doi.org/10.1016/j.wasman.2013.02.001

Wan, C., Shen, G. Q., & Choi, S. (2017). Experiential and instrumental attitudes: Interaction effect of attitude and subjective norm on recycling intention. *Journal of Environmental Psychology*, *50*, 69–79. https://doi.org/10.1016/j.jenvp.2017.02.006

Wan, C., Shen, G. Q., & Yu, A. (2014). The moderating effect of perceived policy effectiveness on recycling intention. *Journal of Environmental Psychology*, *37*, 55–60. https://doi.org/10.1016/j.jenvp.2013.11.006

Wang, K., Lu, J. & Liu, H. (2021). Residents' waste source separation behaviours in Shanghai, China. *Journal of Material Cycles and Waste Management*, *23*, 937–949. https://doi.org/https://doi.org/10.1007/s10163-021-01179-7

Wang, Z., Dong, X., & Yin, J. (2018). Antecedents of urban residents' separate collection intentions for household solid waste and their willingness to pay: Evidence from China. *Journal of Cleaner Production*, *173*, 256–264. https://doi.org/10.1016/j.jclepro.2016.09.223

Xu, L., Ling, M., Lu, Y., & Shen, M. (2017a). External influences on forming residents' waste separation behaviour: Evidence from households in Hangzhou, China. *Habitat International*, *63*, 21–33. https://doi.org/10.1016/j.habitatint.2017.03.009

Xu, L., Ling, M., Lu, Y., & Shen, M. (2017b). Understanding household waste separation behaviour: Testing the roles of moral, past experience, and perceived policy effectiveness within the theory of planned behaviour. *Sustainability (Switzerland)*, *9*(4). https://doi.org/10.3390/su9040625

Zhang, D., Huang, G., Yin, X., & Gong, Q. (2015). Residents' waste separation behaviors at the source: Using SEM with the theory of planned behavior in Guangzhou, China. *International Journal of Environmental Research and Public Health*, *12*(8), 9475–9491. https://doi.org/10.3390/ijerph120809475

Received: 28th Feb 2023. Accepted: 31st March 2023

PLANNING MALAYSIA:
Journal of the Malaysian Institute of Planners
VOLUME 21 ISSUE 1 (2023), Page 400 – 414

LATE STRATA TITLES DELIVERY: INSIGHTS AND IMPACT TO HIGH RISE HOUSING DEVELOPMENT

Shanmugapathy Kathitasapathy[1], Tan Liat Choon[2], Nor Suhaibah Binti Azri[3], Muhamad Uznir Bin Ujang[4], Thoo Ai Chin[5]

[1,2,3,4] *Faculty of Built Environment & Surveying,*
UNIVERSITI TEKNOLOGI MALAYSIA, JOHOR, MALAYSIA
[5]*Azman Hashim International Business School,*
UNIVERSITI TEKNOLOGI MALAYSIA, JOHOR, MALAYSIA

Abstract

Malaysia with its booming property development contributes consistently to the growing national gross domestic product (GDP) and economic growth. With the primary driver of urbanization, the property industry has staggeringly changed from horizontal to vertical, giving purpose to the necessity of implementing the concept of strata title in high-rise development. However, as the legislation related to strata title and housing development has yet to perfect itself, the current form does not truly balance the interest of all stakeholders. This paper intends to surface the conundrum to a strata scheme developer if a strata title is not delivered within 36 months as stipulated in the housing development legislation. The research will adopt multiple case concept comparing and contrasting five chosen strata property developments in Johor; implementing a qualitatively driven mixed method approach. The questionnaire instruments will be used to collect data and the instrument of interview will be employed on subject matter expert to validate the findings. The research will demonstrate that the delay in strata titles for the case study projects is in fact a common problem through the questionnaire. Then the federal government policy lawmakers will be interviewed to validate the global findings and deliberate comments and suggestions on possible ways to improve the current system. The suggestion of issuing a temporary strata title will be a potential solution explored during the questionnaire and interview process.

***Keyword**:* Strata Title, High-Rise, Housing Development, Developer, Purchaser, Impact

[1] Corresponding Author

INTRODUCTION

The trade-to-GDP ratio of Malaysia, which has averaged above 130% since 2010, makes it one of the most open economies in the world. Since then, Malaysia's economy has been on an upward trend, averaging 5.4% growth and the World Bank predicts that it will transition to a high-income economy by 2024 (Bank, 2021). The construction industry, according to the Department of Statistics Malaysia (DOSM), is a significant contributor to Malaysia's GDP, with building construction being the most important sub-sector. DOSM also documented that this industry has consistently contributed between 4% and 5% of GDP lead by Kuala Lumpur, Selangor and Johor especially from 2015 to 2020 (Department of Statistics Malaysia, 2021).

The construction industry's consistent GDP contribution was generated by the ever growing and evolving property development. The Valuation & Property Service Department (NAPIC) reported that in the last 6 years from 2016 to 2021, there was a consistent transaction in the residential property nationally with a minimum of RM65 billion to RM76 billion, which is 51% of the overall property market transactions (NAPIC, 2021, 2022). The Ministry of Housing and Local Government (KPKT) further strengthen the fact with consistently renewing and approving new Advertising Permit and Developer License (APDL) in the range of minimum 2159 to maximum 3050 application between 2016 to 2019 (KPKT, 2019).

In retrospect, the twentieth century wrought by the destruction of two world wars and concurrent scarcity of land, sparked rapid development and an upward trend in urbanisation all over the world, including Malaysia (Hussin, 2006). Rapid urbanisation has resulted in the prevalent use of planning procedures in industrialized countries that promotes the housing of growing urban populations in higher density multiunit housing. (Easthope & Randolph, 2016). Malaysia's urban population has recorded increased from around 66% in 2004 to 77% in 2020 over the last fifteen years. Its expansion is anticipated to continue as people move from rural to urban regions owing to the economy and jobs, and as agriculture gives way to industry and services (O'Neill, 2022).

Abdul Ghani and Lee (2015) highlighted the housing industry has evolved from a basic shelter to advances in design and construction, with features such as a gated and guarded community, state-of-the-art lifestyle clubhouse facilities, lush and green landscaping, smart home system and even more green building. This new vertical development trend also known as high-rise development has coincided with the emergence and evolution of the strata scheme development concept. According to Ta (2009), the concept of high-rise living was introduced in Malaysia as early as the 1970s, with Penang having one of the earliest high-rises known as Rifle Range. A strata scheme is a sort of property development in which a building or plot of land is subdivided into pieces

with their own strata titles (Nurul Sal Shabila Izanda, 2020). Strata scheme developments can take many systems, including master planned estates with unique lifestyle, gated communities, retirement villages, unit complexes apartment buildings and rising number of commercial premises and mixed residential (Altmann, 2014).

Strata title instead is a title document issued by the land administrator for the entire parcels of a subdivided multi-story building representing the unit or home purchased under the strata scheme (S.N et al., 2010). It is a kind of proprietorship designed for multi-level apartment buildings and horizontal subdivisions with common areas (Hashim et al., 2018). This title manuscript is a document that confirms ownership as a registered proprietor and includes all important legal information that coffers an indefensible title that allows the owner to engage in any property dealings recognised by the National Land Code 2020, Act 828 (NLC 2020), such as leasing, mortgaging, transferring, and other legalized operations (Choon et al., 2016).

In a Developer's point of view, high rise strata scheme development is well preferred as it offers more value per square feet use of land. In addition, stratified property development can maximize the density within the allowable planning standards which mathematically allows more units to be built vertically on a lesser footprint of land compared to building horizontally with more usage of land (Zan et al., 2018). This conceptual approach obviously commercialises the concept of land scarcity. However, this is the fundamental motto of most Developers, where their sole purpose has always been to deliver the greatest product possible to their Purchasers with the lowest cost incurred.

Housing image in Malaysia has changed substantially over the previous decade as a result of changes in buyer preferences, socioeconomic considerations, technological improvement, and a rise in the level of education and revenue among urbanites. (Abdul Ghani & Lee, 2015). Lifestyle is one of the key reasons why people prefer vertical living (Aziz et al., 2014) and it's a unique property that has better potential value than landed property (Soebiyan et al., 2017). These strata properties are very dominant as it was reported more than 20% of Malaysians (Tan Wee Vern et al., 2019) or approximately 26% of Peninsular Malaysia (Buang, 2017) corresponding to over 6 million tax payers are living in strata properties by the year 2018.

The main objective of this study is to identify the potential causes of delay experienced in the strata title process and showcase the impact it imposes to a Developer

LEGISLATION HISTORY

A strata property development in Malaysia is governed by the following legislations; The Town and Country Planning Act 1976, Act 172 (TCPA 1976) as the main planning reference; Housing Development (Control and Licensing) Act 1966, Act 118 (HDA 1966) and its supporting legislation Housing Development (Control and Licensing) Regulations 1989 (HDR 1989), Housing Development (Housing Development Account) Regulations 1991 (HDA 1991), Housing Development (Tribunal for Homebuyer Claims) Regulations 2002 (HDT 2002) and Housing Development (Compound of Offences) Regulations 2002 (HDC 2002). These are the major legislation that is being used in this industry to regulate licensing for the business of housing development and protection of Purchaser's interest.

On strata front, there are the main legislations Strata Title Act 1985 (STA 1985) and Strata Management Act 2013 (SMA 2013); supported by Strata Management (Maintenance and Management) Regulation 2015 (SMM 2015), Strata Management Tribunal Regulations 2015 (SMT 2015) and Strata Management Compound Regulations 2019 (SMC 2019).

Since the maiden STA 1985 was introduced as the principal Act, various amendments were introduced to solve the existing issues at hand and preparing for the evolving strata development to ensure constant improvement to the legislations (Tan Liat Choon, 2016). The first amendment was the Strata Titles Act (Amendment) 1990 (Act A753) prescribed on February 23rd, 1990. Subsequently, the Strata Titles Act (Amendment) 1996 (Act A951) was employed on August 2nd, 1996. Then, Strata Titles Act (Amendment) 2001 (Act A1107) was enacted on December 1st, 2001. Next was the Strata Titles Act (Amendment) 2007 (Act A1290) implemented on April 12th, 2007. Following that was the Strata Titles Act (Amendment) 2013 (Act A1450) that came into force on June 1st, 2015 and the most current is the Strata Titles Act (Amendment) 2017 (A1518) decreed on January 1st, 2017, which became the sixth amendment.

With reference to the series of amendments, the Strata Title Amendment Act A1450 launched the most significant concept change that has a profound impact to Developers which is the decree to issue strata title upon vacant possession (VP) to Purchasers. The Act A1450 was designed in the spirit of providing the Purchaser it's indefensible title upon key collection.

Similarly, the Housing Development (Control and Licensing) Act 1966 (Act 118) (HDA 1966) is the primary Act; which provides for the control and licensing of the business of housing development in Peninsular Malaysia. Since its enactment on August 29th, 1969, this Act has undergone six revisions, with the most recent revision being published in 2012 (Tan & Partners, 2016). HDA 1966 when first gazetted was instead named as The Housing Developers (Control and

Licensing) Act 1966 until the amendment in 2002, where the name was changed as it is today.

Upon the enactment of the primary HDA 1966, the first amendment was Housing Developers (Control and Licensing) (Amendment) Act 1972 (Act 116) enforced on April 4th, 1972. Subsequently, it was amended again to Housing Developers (Control and Licensing) (Amendment) Act 1977 (Act A402) implemented on June 10th, 1977. Then came Housing Developers (Control and Licensing) (Amendment) Act 1988 (A703) established on December 1st, 1988. This was a major milestone for the legislation as it introduced the Housing Development Account (HDA) concept in Section 7A as part of the license requirements. This was a major step in protecting Purchaser's interest as all monies collected by the Developer must be banked into the HDA governed by Financial Institution and any withdrawal has to be authorised by regulations made under this Act.

The next amendment came into force 14 years later on December 1st, 2002 with the new title Housing Development (Control and Licensing) (Amendment) Act 2002 (A1142). Following that was the Housing Development (Control and Licensing) (Amendment) Act 2007 (A1289) empowered on April 12th, 2007. The most recent amendment, which is the 6th amendment came into force on June 1st, 2015, in the form of Housing Development (Control and Licensing) (Amendment) Act 2012 (A1415).

Supporting HDA 1966 was HDR 1989. This legislation was replaced by the Housing Development (Control and Licensing) (Amendment) Regulations 2002 which came into force on December 1st, 2002. This new regulation essentially overhauled the standard sale and purchase agreements (SPA) and introduced prescribed contracts Schedule G for landed properties and Schedule H for stratified properties. The SPA is a prescribed contract of sale meaning the term and conditions of the contract are given by law (Tan, 2009). The Regulation was further amended to Housing Development (Control and Licensing) (Amendment) Regulations 2007, which was implemented on December 1st, 2007.

With the enforcement of HDA 2012, came the most recent milestone amendment in the form of Housing Development (Control & Licensing) (Amendment) Regulations 2015 (HDR 2015) which came into operation on 1st July 2015. Despite being gazetted in 2012, HDA 2012 did not enter into effect until 4 years later, on 1st June 2015, to reflect the inability to draught and complete the revised HDR 2015 (Keng, 2015). This major amendment improved the prescribed SPA to reflect the momentous milestone changes made in Strata Title Amendment Act A1450.

The decisive alteration was making it compulsory for Developers to obtain Certificate of Completion and Compliance (CCC) and further enhancing the manner of delivery of VP by adding the requirement to ensure a separate strata

title relating to the unit has been issued. Moreover, to compel importance on the delivery of strata title; the schedule of payments of the purchase price under the third schedule of the SPA was amended in which Stages 2 (g) and (h) have been reduced from 5% to 2.5% for respective stages whereas the proportion for Stage 3 has been amplified from 12.5% to 17.5% upon VP being issued.

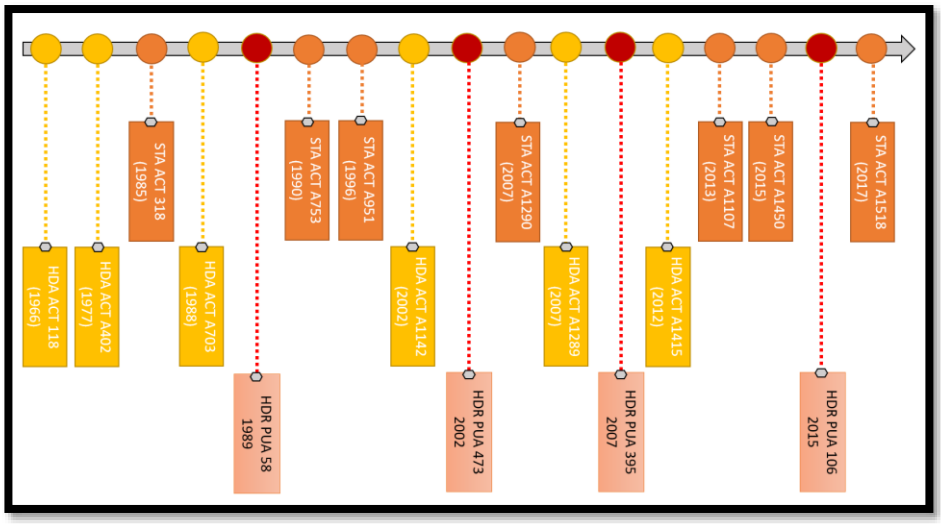


Figure 1 – Legislation Chronology

CONUNDRUM OF A STRATA SCHEME DEVELOPER

Strata scheme development has been a very successful trend in this 21st century. It is evident with Department of Director General of Lands & Mines (JKPTG) reporting a total of 1,749,152 numbers of parcels has been registered in peninsular Malaysia for the year 2021. That has been a rise of 34.8% of registration from the year 2016. From that, approximately 10% was contributed by Johor (JKPTG, 2022). Johor's parcel registration shows a consistent gradual increase of 9% since 2019 (JKPTG, 2020) (JKPTG, 2021). These numbers are sure to dramatically increase with the ongoing rapid growth of high-rise development in Johor with Country Garden group heading the pack with more than 25,000 strata residential units completed.

A strata title holds so much purpose as it's not only being used to provide a Purchaser a document to show its propriety registered ownership, but is also a key milestone to issue VP for a Developer. Despite all the efforts of amendments being made to STA 1985 in the spirit to improve and expedite the strata title process, currently Developers are still facing the challenge of obtaining strata titles for its strata scheme development upon vacant procession (VP). When

the amendment proposal was deliberated in Parliament, it was then touted that the strata title process will be reduced from 170 days to approximately 100 days (Hansard, 2012). However, practically it's harder that it was designed for as it is a tedious process that takes a combined time and effort from the Developer, License Land Surveyor (LLS), Land and Mines Department (PTG) and Department of Survey and Mapping Malaysia (JUPEM).

Section 27 (1)(b) of HDR 1989 insists a Developer must complete the strata title process as a condition precedent in order to issue VP to the Purchaser, even if the strata scheme development has already received its CCC, where it is deemed fit for occupancy. Effectively, any application for strata title could not be made if the building has not yet been issued with the CCC (Lian, 1996). The strata title process begins from planning permission and is further illustrated by Figure 2.

An Advertising Permit and Developer License (APDL) is crucial to a Developer which grants permission to officially launch and sell their product and eventually begin generating income via sales. As regulated by HDA 1966, all monies generated from the sales will be placed in a Housing Development Account (HDA) govern by a bank licensed under the Banking and Financial Service Act 2013 (Act 758) or the Islamic financial Service Act 2013 (Act 759).

Section 7A (4) of HDA 1966 describes monies can only be withdrawn as authorised by regulations made under the Act. This regulation refers to clause 5, third schedule, schedule of payment of the purchase price in the SPA. The schedule depicts 13 milestone payments payable by the Purchaser or its financial institution to the Developer, for the unit acquired. According to the schedule, the Developer can only recoup 75% of the construction cost until VP is issued. The last 25% of the monies and any additional monies are tied to the delivery of vacant possession and subsequently completing the defect liability period (DLP) and closing of the HDA. For successful projects, this 25% margin can hit the fiscal range of tens of million sum. Thus, completing the strata title and issuing VP is ultimately high up a Developer's priority list in order to gain access to that handsome sum.

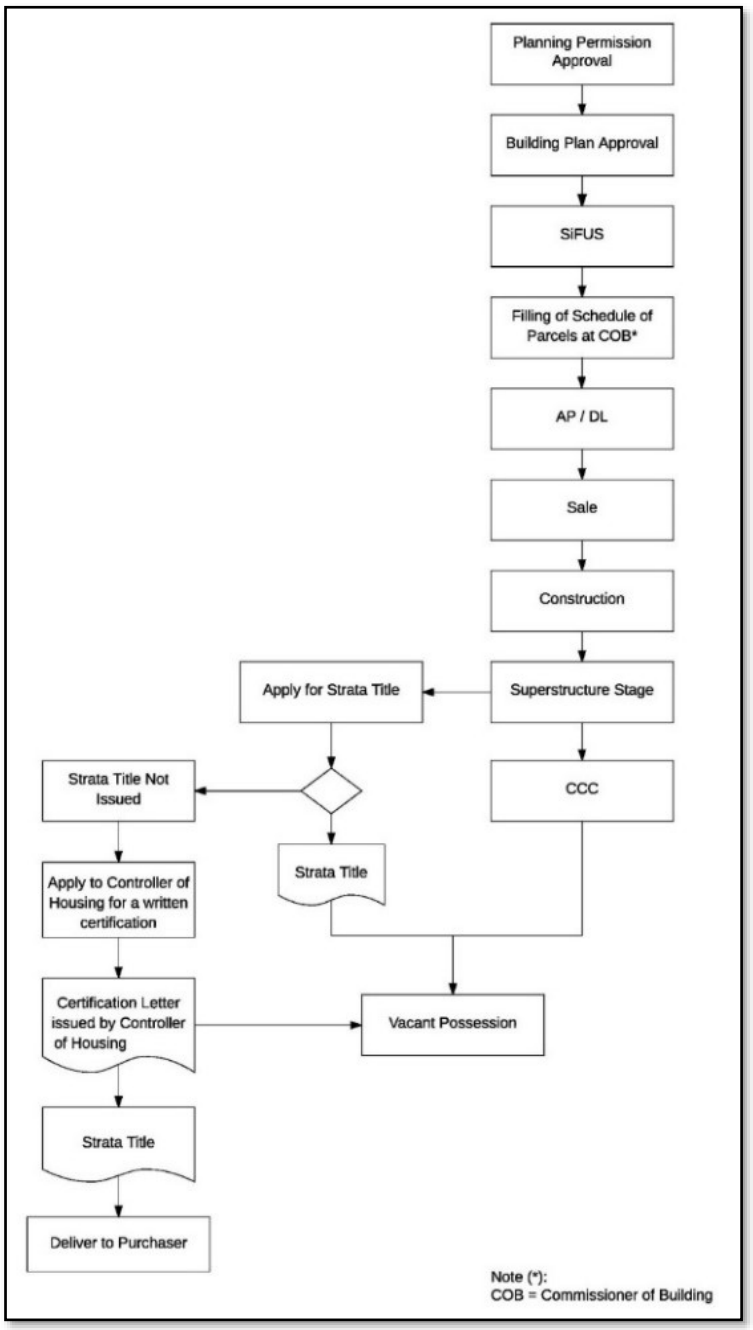


Figure 2 – Strata Title Application Process (Institute, 2016)

Knowing the challenge of VP faced by many Developers, the Ministry of Housing and Local Government (KPKT) has empowered the Housing Controller at his purview under Section 28 of HDR 1989 to issue a waiver that can allow a Developer to proceed with VP without having completed the strata title process. This waiver nevertheless does elevate the problem of collecting 17.5% of the final 25% from the HDA, but the approval comes with a restriction to removing any surplus monies from the account and attaches a new ultimatum dateline for the strata title to be completed. The withdrawal limit is still relevant here and maintains pressure on the cash flow planning of the Developer.

High rise strata development traditionally provides ultimate comfort to its residents by having integrated facilities or basic amenities including a 24-hour security system, gymnasium, swimming pool, shops, recreation areas and even clinic available within their locale. However, to guarantee that these facilities are constantly in excellent shape, each one must be maintained in accordance with its maintenance schedule (Abd-Wahab et al., 2015).

SMA 2013, SMT 2015 and SMM 2015 were enacted to guide proper maintenance and management of strata building. According to SMA 2013, the Developer is responsible for various tasks, setting up all the required for a proper maintenance management body, including key elements, such as management office, maintenance account, sinking fund account and many others. The Developer's last contribution to a strata development would end upon setting up the first annual general meeting of the Management Corporation (MC) and handing over the baton from the JMB to the MC. However, the MC can only be formed until or unless 25% of the strata title has been transferred to the respective Purchasers excluding the original proprietor of the lot of land herein the Developer. Till then the Developer is tied to the development as a member of the JMB, hence incurring unforeseen time, cost and resources.

RESEARCH METHODOLOGY

This study employed a multiple case (K.Yin, 2009) research using qualitatively driven mixed method approach to eliminate generalization and biases of a single case and the desire for richness, robust, depth and a pluralist perspective (Meyer, 2001). Five strata development projects were studied, comparing within the cases and developing contrasts between them employing both quantitative and qualitative instruments such as questionnaire and interview to gather relevant data to test the research question (Race, 2008).

Through observation, reconstruction, and analysis of the situations under consideration, these case studies assist to understand both the process and consequence of the phenomena by using both quantitative and qualitative data (Zainal, 2007). Projects were sampled based on the criteria set and purposive sampling was used to access knowledgeable population herein personnel from

both state and federal government who has in-depth information of the subject, either as a result of their professional position, access to networks, influence, skill or experience (Cohen et al., 2007). Research ethics were integrated and implemented throughout the data collection process. Finally, cross case, quantitative and qualitative analysis were done to develop codes and themes for detail analysis.

The case study projects were from the developer Country Garden Pacificview, DAC Properties Sdn Bhd and Bukit Pelali Properties Sdn Bhd. The criteria set for the project selection were projects in Johor that were completed post Strata Title Amendment Act A1450 that required the Developers to issue strata title during vacant possession to the Purchasers. In addition, the cases selected ranged of different type of strata products such as service apartments, residential apartments, landed strata and mix commercial development. This was to create fundamental contrast between the chosen cases despite being similar in the strata application process.

Correspondingly, stakeholders in this research are the Licensed Land Surveyor (LLS), Developers, Financial Institutes, Architects and Property Managers of JMB from the private sector; and Land and Mines Johor (PTG), Department of Survey and Mapping (JUPEM), Commissioner of Buildings (COB), Town Council Building Department (PBT), Director General of Lands & Mines Federal (JKPTG) and Ministry of Housing and Local Government (KPKT) from the government sector.

RESULTS

In executing the questionnaire instrument to probe the five case studies; Table 1 illustrates the baseline info of the five cases. The table illustrates the distinctive difference between the cases, especially on the type of strata development and the number of parcels a LLS has to prepare for PTG and JUPEM to process and subsequently issue the strata title. It is evident that the number of parcels increases proportionately with the size of the development. Nevertheless, for a landed strata development; despite having very less number of parcels, it still could not be completed within the design time of 36 months.

The data generally shows that a project requires at the least a minimum of additional 1 year from vacant procession to deliver the strata title. Similarly, the Developers took at least a minimum of 1 year from receiving the strata title to transfer the prerequisite of minimum 25% of title to the Purchaser to allow a formation of Management Corporation. Therefore, these 5 cases concluded that the Developers had to manage and maintain the development for a minimum of 2 years before being able to form the MC. All 5 cases were also unsuccessful to withdraw excess fund from the HDA due to failing to complete the strata title registration.

Table 1: Case Study Data

No	Item	Case 1	Case 2	Case 3	Case 4	Case 5
1	Strata Type	Landed Strata	Residential Apartment	Service Apartment	Mix Development	Service Apartment
2	Number of parcels	< 500	> 500 | < 1,000	> 1,000 | < 3,000	> 3,000 | < 5,000	> 5,000 | < 10,000
3	Strata title completed in 36 months	No	No	No	No	No
4	Obtained waiver from KPKT	Yes	Yes	Yes	Yes	Yes
5	Withdraw excess fund from H.D.A	No	No	No	No	No
6	Additional duration to complete strata	> 1 Year | < 2 Years	> 1 Year | < 2 Years	> 1 Year | < 2 Years	> 2 Year | < 3 Years	> 2 Year | < 3 Years
7	Duration it took to from MC	> 1 Year | < 3 Years	> 1 Year | < 3 Years	> 1 Year | < 3 Years	> 3 Year | < 5 Years	> 3 Year | < 5 Years

The quantitative tool of questionnaires and the qualitative instrument of interviews were conducted on a total of 37 respondents comprising of the private sector, state government and federal government sector. These stakeholders are policy makers, submission parties and approval parties encompassing Developers, Licensed Land Surveyors, Architects, Property Managers, Bankers, Land and Mines Johor, Commissioner of Building, Town Council, Ministry of Housing and Local Government and Directors Office of Land and Mines. Figure 3 shows the distribution percentage of the respondents. Probing them resulted in the following root cause of delay in the strata title processing ecosystem. In conclusion of the data collection process; the type of delays were ranked in Table 2.

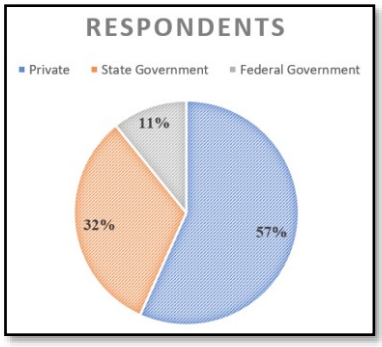


Figure 3: Respondents Distribution

Reason of Delay in Strata Title	Rank
Delay in superstructure completion	1
Developer did not pay fees and taxes	7
Mistake in submission by LLS	3
Delay in CPSP approval	2
Delay in CPS approval	4
Delay in PA(B) submission	5
Delay in Borang 4 submision	6
Delay in Strata Title registration	8

Table 2: Ranking of Cause of Delay

The results from the study further concurred to findings from similar studies. According to a survey conducted by Azman (2017), covering only the district of Johor Bahru from 2005 to 2017, the following were the reasons why strata titles could not be issued: developer closing down, rejected the application due to miscellaneous errors, development not obtaining certificate of completion

and compliance, failure to pay land taxes and various other land problems. Hasan (2016), through his survey concluded the delay to issuing strata title is due to the difficulties in the endorsements of land use, problems in construction according to the approved drawings and various mistakes by licensed land surveyors in preparing the schedule of parcel, proposed strata plans and overall submissions to authority for approvals. Aziz (2014) summarised the delays in her research as causes from land matters, the applicant or the LLS, the completion of the building and the materials associated with the strata submissions. As for Hussin (2006), in her point of view the major cause of delay appears to be the procedures in the Land Office, the Survey Department and the Office of the Department of Lands and Mines, which were excessively slow and unwieldy.

CONCLUSION

Developers that create high-rise strata development now confront more difficulties than ever before, although having the benefit of greater density over the land usage. Furthermore, they also suffer from the negative consequences of the delay in the issue of strata titles (Hussin, 2014). When getting the certificate of completion and compliance for their projects, none of the Real Estate and Housing Developers Association's (REHDA) members were able to secure strata titles, according to input from the association's president. (Buang, 2020). Problems were never shortfall despite when on 1st June 2015, the Housing Development (Control & Licensing) Act 2012, Strata Titles (Amendment) Act 2013 and Strata Management Act 2013 came into effect the momentous changes to the industry. The implementation of these Acts was complemented by the amended Housing Development (Control & Licensing) (Amendment) Regulations 2015 and Strata Management (Maintenance & Management) Regulations 2015. The combined exertion of these legislations were to promote transparency and accountability in the housing development industry (Institute, 2016). Nevertheless, it is a fact that it has imposed stricter conditions to Developers.

In conclusion, this study hopes to elevate the financial challenge to a Developer, challenges faced by the strata processing ecosystem and bring to light some proposals that could be considered for future amendments to the legislation and improvement to the current strata issuance process. It is believed improving the strata title process would be the first step to remedy the current predicament. Alternatively, the suggestion of issuing a temporary strata title on surface seems as another possible solution, however still subjected to detail deliberation.

REFERENCES

Abd-Wahab, S., Sairi, A., Che-Ani, A., Tawil, N., & Johar, S. (2015). Building maintenance issues: a Malaysian scenario for high rise residential buildings. *International Journal of Applied Engineering Research*, *10*(6), 15759-15776.

Abdul Ghani, S., & Lee, Y. F. (2015). Exploring the perception of lifestyle housing development in Malaysia. *The Aisa Pacific Network for Housing Research (APNHR)*, 11.

Altmann, E. (2014). Apartments, co-ownership and sustainability: implementation barriers for retrofitting the built environment. *Journal of environmental policy & planning*, *16*(4), 437-457.

Aziz, A. B. (2014). *Isu dan Permasalahan Dalam Pengeluaran Hakmilik Strata* Universiti Teknologi Malaysia].

Aziz, W. N. A. W. A., Haniff, N. R., Musa, Z. N., Aini, A. M., Sarip, A. G., & Zyed, Z. (2014). *Vertical Living Phenomenon in Malaysia* XXV FIG Congress, Kuala Lumpur Convention Centre.

Azman, N. A. B. (2017). *Faktor Mempengaruhi Pengeluaran Hakmilik Strata* Universiti Teknologi Malaysia].

Bank, T. W. (2021). *The World Bank In Malaysia*. https://www.worldbank.org/en/country/malaysia/overview#:~:text=Malaysia%20is%20one%20of%20the,Malaysia%20linked%20to%20export%20activities.

Buang, S. (2017, 10 March 2017). Evolusi Undang-Undang Strata. *Utusan Malaysia*.

Buang, S. (2020). Strata law reform - A case of failed expectations? https://www.nst.com.my/opinion/columnists/2020/02/567958/strata-law-reform-case-failed-expectations

Choon, T. L., Ujang, M. U. B., Chin, T. A., Hasan, M. H. B. A., & Shah, S. N. W. B. M. (2016). New Strata Rights in Malaysia.

Cohen, L., Manion, L., & Morrison, K. (2007). *Research Methods in Education* (Sixth Edition ed.). Routledge.

Department of Statistics Malaysia, D. (2021). *Gross Domestic Product (GDP) By State 2020*. https://www.dosm.gov.my/v1/index.php?r=column/cthemeByCat&cat=491&bul_id=YnhhZ2g5QlpZWG9RcVNwTGhLaHE4UT09&menu_id=TE5CRUZCblh4ZTZMODZIbmk2aWRRQT09

Easthope, H., & Randolph, B. (2016). Principal–agent problems in multi-unit developments: The impact of developer actions on the on-going management of strata titled properties. *Environment and Planning A: Economy and Space*, *48*(9), 1829-1847. https://doi.org/10.1177/0308518x16650894

Hansard. (2012). Penyata Rasmi Parliment Dewan Rakyat Parliment Kedua Belas Penggal Lima Mesyuarat Ketiga. In (pp. 79). Government of Malayisa.

Hasan, M. H. B. A. (2016). *Pengeluaran Hakmilik Strata Selepas Perlaksanaan Akta Hakmilik Strata (Pindaan) 2013 (Akta 1450)* Universiti Teknologi Malaysia].

Hashim, M. N., Hassan, M. I., & Abdul Rahman, A. (2018). 3d Modelling Towards Strata Registration. *The International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences*, *XLII-4/W9*, 23-26. https://doi.org/10.5194/isprs-archives-XLII-4-W9-23-2018

Hussin, K. (2006). *A Critical Evaluation of Certain Aspects of Strata Title Act 1985* (Publication Number U218706) University of Aberdeen]. United Kingdom.

Hussin, K. (2014). Apartment Law In Malaysia Buying Properties Without Title : Legal Point Of View.

Institute, R. (2016). Process on SiFUS & Strata Title. 5. https://rehdainstitute.com/flow-chart-for-sifus-sijil-formula-unit-syer-and-strata-title-application-for-strata-developments/

JKPTG, D. o. D. G. L. a. M. (2020). *Infografik Statistik Pendaftaran Hakmilik Strata di Semenanjung Malaysia Tahun 2019* https://www.jkptg.gov.my/en/sumber/infographics/file/193-infografik-strata-1-2020-bilangan-hakmilik-strata-yang-telah-didaftarkan-di-semenanjung-malaysia-sehingga-akhir-tahun-2019

JKPTG, D. o. D. G. L. a. M. (2021). *Infografik Statistik Pendaftaran Hakmilik Strata di Semenanjung Malaysia Tahun 2020* https://www.jkptg.gov.my/en/sumber/infographics/file/244-infografik-statistik-pendaftaran-hakmilik-strata-tahun-2020

JKPTG, D. o. D. G. L. a. M. (2022). *Infografik Statistik Pendaftaran Hakmilik Strata di Semenanjung Malaysia Tahun 2021* https://www.jkptg.gov.my/en/sumber/infographics/file/268-infografik-statistik-pendaftaran-hakmilik-strata-di-semenanjung-malaysia-tahun-2021

K.Yin, R. (2009). *Case Study Research Design and Methods* (A. E. V. Knight & A. E. S. Connelly, Eds. Fourth Edition ed.). SAGE Publications.

Keng, Y. P. (2015). Salient amendments to the principal Regulations 1989. http://johorebar.org.my/wp-content/uploads/2016/05/Housing-Development-Control-and-Licensing-Amendment-Regulations-20151.pdf

KPKT, M. o. U. W., Housing and Local Government (2019). KPKT Statistics 2019. 108. https://www.kpkt.gov.my/index.php/pages/view/700?mid=586

Lian, C. G. (1996). Strata Titles Amendments: An Overview. Seminar On Malaysian Land Laws, Crown Princess Kuala Lumpur.

Meyer, C. B. (2001). A Case in Case Study Methodology. *Field Methods*, *Volume 13*, 329-352. (Sage Publications)

NAPIC, V. P. S. D. M. (2021). *NAPIC Property Market Report 2020*. http://napic.jpph.gov.my

NAPIC, V. P. S. D. M. (2022). *NAPIC Property Market Report 2021*. N. P. I. Centre. https://napic.jpph.gov.my/portal/ms/web/guest/publication?p_p_id=ViewPublishings_WAR_ViewPublishingsportlet&p_p_lifecycle=0&p_p_state=normal&p_p_mode=view&p_p_col_id=column-1&p_p_col_count=2&_ViewPublishings_WAR_ViewPublishingsportlet_action=renderReportPeriodScreen&publishingId=445&pageno=1&language=

Nurul Sal Shabila Izanda, S. S., Mazalan Zainuddin. (2020). Strata Title Reform in Malaysia: A Review and Challenges Of Regulatory And Governance Panacea [Journal]. *European Journal of Molecular & Clinical Medicine*, *07*(08), 14.

O'Neill, A. (2022). *Malaysia: Urbanization from 2010 to 2020*. Statista. https://www.statista.com/statistics/455880/urbanization-in-malaysia/

Race, R. (2008). Education in Qualitative Research. In L. M. Given (Ed.), *The SAGE Encyclopedia of Qualitative Research Methods* (Vol. Volume 1 & 2, pp. 240). SAGE Publications, Inc.

S.N, K., Salleh, N. M., & S.A.F, A. (2010, 2-3 September 2010). *Assessment on Problems of Issuances and Transferences of Strata Title in Malaysia: The Perception of the Owner* The Construction, Building and Real Estate Research Conference of the Royal Institution of Chartered Surveyors 2010, Paris, France.

Soebiyan, V., Saragih, J. F. B., & Tedja, M. (2017). Study on High-Rise Building Using Wind Energy at Humid tropical Climate. *CHEMICAL ENGINEERING TRANSACTIONS*, *56*, 6. https://doi.org/10.3303/CET1756041

Ta, T. L. (2009). Managing High Rise Residential Building in Malaysia. *2nd NAPREC Conference, INSPEN*, 25.

Tan, D., & Partners, T. (2016). Malaysia : An Overview Of The Recent Amendment To The Housing Development (Control And Licensing) Act 1966. https://www.mondaq.com/real-estate/467810/an-overview-of-the-recent-amendment-to-the-housing-development-control-and-licensing-act-1966

Tan Liat Choon, M. U. B. U., Thoo Ai Chin, Ng See Eng, Goh Leong Sen, Mohd Hanif Bin Abu Hasan, Shaidatul Nur Wahidah Binti Muhamad Shah. (2016). Condominium Rights in Malaysia. *Advance Science Letters*, *22*, 4.

Tan, R. (2009). *Buying Property From Developers*. Sweet & Maxwell Asia.

Tan Wee Vern, Tan Liat Choon, Toh Ming Liang, Nabilah Huda Binti Yaccub, Muhamad Uznir Bin Ujang, & □, T. A. C. (2019). Analysis Towards The Current Management Of Limited Common Property In Malaysia. *International Journal of Engineering and Advanced Technology*, *8*(5C), 798-807. https://doi.org/10.35940/ijeat.E1113.0585C19

Zainal, Z. (2007). Case Study as a Research Method. *Jurnal Kemanusiaan*, *Bil 9*, 6.

Zan, R. M., Roslan, D. S. N. A., Mustafa, N. K., & Senawi, A. (2018). Establishment of share unit formula for strata residential buildings and its implication to buyer and unit owner. *International Journal of Engineering & Technology*, *7*(2.29), 119-124.

Received: 28th Feb 2023. Accepted: 31st March 2023

PLANNING MALAYSIA:
Journal of the Malaysian Institute of Planners
VOLUME 21 ISSUE 1 (2023), Page 415 – 426

ASSESSING SOCIOECONOMIC DIFFERENTIATION OF RURAL HOUSEHOLD GROUPS IN MALAYSIA

Mohamad Fadhli Rashid[1], Nazia Khalida Sulaiman[2], Khairul Hisyam Kamarudin[3], Khalid Zanudin[4]

[1,2,3]*Urban and Regional Planning Program,*
Faculty of Built Environment and Surveying,
UNIVERSITI TEKNOLOGI MALAYSIA
[4]*Development Planning and Management Program,*
Faculty of Social Sciences and Humanities,
UNIVERSITI MALAYSIA SARAWAK

Abstract

The variation of rural Malaysian household groups is a result of their different socioeconomic backgrounds, as each household group tends to carry its own distinct economic potential. Therefore, in order to plan for the development of rural areas, it is essential to acknowledge the determinants that causes these economic variations to occur. This paper aims to assess the differentiation of rural households' socioeconomic backgrounds in rural areas of Malaysia, and to highlight a review of relevant studies on 20 identified determinants for the differentiation of households' socioeconomic background according to five capitals (economic, social, human, cultural and environmental) as the fundamental framework in measuring household economic performance. Quantitative approach was used as a method to assess the variation of the determinants that causes the differentiation in socioeconomic backgrounds of household groups. Results from this study reveals the key findings on the levels of socioeconomic backgrounds based on six different household groups in Malaysia.

***Keyword**:* Rural Households, Household Income, Rural Areas, Rural Livelihoods, Socioeconomic Background

[1] Corresponding Author

INTRODUCTION

Rural households and their socio-economic growth are key parts of rural development as they play a major role in rural development. Nowadays, most rural areas around the world, particularly rural households, are confronting new risks as a result of globalisation's uncertainties and rapid changes in the economic sector (Rashid et al., 2019a). Due to the challenges and economic potentials of rural areas being diverse across a country, the new rural development paradigm has highlighted various approaches to rural revitalization in different regions, as no solutions are 'one size fits all'. Therefore, it is essential to understand the nature of rural differentiation and the factors leading to the variations of rural performances as these would assist in acknowledging the potential of different rural regions and vicinities.

When the challenges from the uncertainties of globalisation affect communities in a country, rural households are considered the most vulnerable. The economical disadvantages of rural households are largely caused by their exposure to challenges towards attaining equal economic opportunities and socioeconomic sustainability, particularly those with limited sources of income (Rashid et al., 2019b; Thompson, 2014). This situation worsens in cases where there is a lack of new technology and innovative interventions that will assist in boosting the productivity of their economic activities, which mainly involve agriculture and livestock rearing. However, the resilience of rural households comes from the external components that are continually interacting and helping them to adapt to change. These components are their economic, social, political and physical elements.

Rural households have to deal with the issues of change. In order to succeed and perform in their socioeconomic background, their strengths and weaknesses can be assessed and fixed based on their identified elements. The variation of rural households indicates that each has its own unique socioeconomic background and the households in rural areas have differentiation in their economic performance (Rashid et al., 2020). Marginalised households often face the most challenges, especially those with low economic performance (Rashid et al., 2019a). However, there are also rural households with better performance. This issue prompted the question of how the variation in economic performance occurs across rural households and what variables contribute to this scenario. Therefore, the aim of this paper is to assess the determinants that influences the differentiation of household's socioeconomic background in rural Malaysia.

LITERATURE REVIEW

Rural areas in Malaysia

Rural areas in Malaysia are diverse and experiencing rapid changes. The major causes of rural change were the accelerated rate of urbanisation and the on-going outmigration from rural areas (Kamarudin & Rashid, 2020; Preston & Ngah, 2012). The share of GDP in agriculture and employment has also declined considerably over time (Jomo, 2019). Although the issue of rural-to-urban migration is not new, rural communities are facing significant challenges in terms of the continual increase in outmigration of village dwellers, an ageing population and the instability of commodity pricing. Different rural areas have different potentials, hence the varying challenges. For example, the rural areas adjacent to the urban regions have been facing development pressures, encroachment of urban activities, environmental deterioration and straining infrastructure (Fredericks, 2017; Vorodam et al., 2022). In deeper rural areas, some economic activities are still done on a subsistence basis. Basic infrastructure in remote areas is still inadequate and the younger generation in the rural communities are migrating to urban areas with better economic opportunities. With the declining and ageing population, rural businesses and social services in villages as well as rural economic activities such as agriculture and small-medium enterprises can no longer be sustained and might face closure or abandonment. These issues and challenges would have a direct impact on rural communities' socioeconomic backgrounds.

Studies of rural development in Malaysia range across various disciplines, from macro-based (policy, strategy and programme, economic determinants and consequences, rural changes and transformations) to micro-level (village economic performances, individual and behavioural studies, community responses and social consequences). Yet, very few have addressed issues that reflect rural differentiation at household level. One of the recent macro-based studies and literature on rural change and development in Malaysia is the work of Preston and Ngah (2012), which provides a comprehensive account of the rural changes related to historical processes, market forces, and government intervention. Turning to the micro-level perspective, attempts have been made to understand the rural changes and performances of villages in Malaysia, such as the work of Rashid et al. (2019a), which highlights a territorial innovation model approach in evaluating the level of economic performance in Malaysian rural villages.

Factors influencing the differentiation of economic performance

Rural communities frequently encounter numerous challenges in establishing economic equality and socioeconomic sustainability. This has been an on-going issue that specifically affects rural households. Identifying reasons that lead to the differentiation of socioeconomic performances of rural families is crucial in

the creation of government policy or planning procedures, particularly in terms of rural economic development, to revitalise rural areas and their households.

Understanding these determinants that are influential towards rural changes and performances is critical in rural planning and development as the rural area's performance is directly related to the interaction of exogenous and endogenous elements as explained by Peet and Hartwick (2015) in the theory of territorial innovation model. This theory of territorial innovation model defines both external and internal factors as sources of economic performance in rural areas. Rural areas tend to be involved in both external and internal networks in this changing global setting, even though the size, direction and intensity of networks vary across different villages. Therefore, this theory highlights that the rural development approach must emphasise a complex interplay of external and internal causes in which local resources are successfully mobilised to accomplish rural growth.

There has been a growing interest in the occurrence of disparities in rural economic performance. In the last two decades, the literature has shown increasing evidence of spatially uneven development within rural regions and the differentiated economic performance of rural areas in developed countries (Agarwal et al., 2009; Courtney & Moseley, 2008; Terluin, 2003). The differences in economic performance are also prevalent between households. Bryden et al. (2004) examined the structural change and household activity in agricultural farming in rural areas; they concluded that the economic success of these rural households depended to a large extent on the success of the surrounding economy and infrastructure. This study revealed that different types of household groups have varying characteristics in terms of economic performance and potential.

A more recent study on the differentiation of rural economic performance defined the drivers of economic performance in terms of five capitals, specifically economic, human, social, cultural, and environmental capitals (Sánchez-Zamora et al., 2014; Rashid et al., 2020; Straka & Tuzova, 2016). In overall, twenty determinants based on five capitals to assess the differentiation in the economic performance of rural households were identified, as shown in Table 1. These five capitals and twenty identified determinants were then incorporated into the instrument used in this study as factors to assess differentiation in the economic performance of rural households.

Table 4: Determinants for Differentiation in Rural Household Economic Performance

Capital	Determinants	References
Economic	Income	Agarwal et al. (2009); Kamarudin et al. (2020); Sánchez-Zamora et al. (2014); Straka & Tuzová (2016); Yusoff et al. (2022)
	Occupations	Curry & Webber (2012); Kamarudin et al. (2020); Rashid et al. (2019a); Yusoff et al. (2022)

	Remittance	Bryden et al. (2004); Rashid et al. (2019a)
	Government and Private Aid	Agarwal et al. (2009); Rashid et al. (2019a); Sánchez-Zamora et al. (2014)
	Asset Possession	Curry & Webber (2012); Rashid et al. (2019a)
Social	Trust and Norms	Klok (2011); Scott et al. (2018); Straka & Tuzová (2016)
	Membership and Participation	Agarwal et al. (2009); Rashid et al. (2019b); Roberts & Townsend (2016); Scott et al. (2018)
	Collective Action	Courtney & Moseley (2008); Sánchez-Zamora et al. (2014); Rashid et al. (2019b); Scott et al. (2018)
Human	Health	Agarwal et al. (2009); Courtney & Moseley (2008); Sánchez-Zamora et al. (2014); Yusoff et al. (2022)
	Education	Agarwal et al. (2009); Roberts & Townsend (2016); Sánchez-Zamora et al. (2014)
	Skill	Rashid et al. (2019a); Straka & Tuzová (2016)
	Leadership	Courtney & Moseley (2008); Rashid et al. (2019a)
Cultural	Attitudes	Kamarudin & Rashid (2020); Rashid et al. (2019b); Scott et al. (2018)
	Religious	Courtney et al. (2006); Rashid et al. (2019b); Scott et al. (2018); Sørensen (2018)
	Way of Life	Kamarudin et al. (2022); Rashid et al. (2019b); Scott et al. (2018); Straka & Tuzová (2016)
	Resilience	Kamarudin & Rashid (2020); Kamarudin et al. (2022); Rashid et al. (2019b); Scott et al. (2018)
Environmental	Natural Environment	Courtney et al. (2006); Kamarudin et al. (2020); Razali & Rashid (2021); Sørensen (2018)
	Environmental Quality	Klok (2011); Rashid et al. (2019b); Razali & Rashid (2021); Sørensen (2018)
	Accessibility to Facilities	Ahmad et al. (2022); Klok (2011); Razali & Rashid (2021); Straka & Tuzová (2016)
	Location	Agarwal et al. (2009); Ahmad et al. (2022); Sørensen (2018)

METHODOLOGY

For this case study, the questionnaire survey method was used as an instrument to collect data in the field. This is based on aspects of rural economic performance. Purposive sampling was used as the sampling method; with the survey involving the head of each household. A quantitative study method was utilised to collect opinions on disparities in rural household economic performance. This study investigates differences in rural economic performance that are not linked to a macro-scale of analysis. However, this research employs large-scale demographic data and includes every family that resided in traditional villages in the study area.

The primary research instrument for this study is a questionnaire-based household survey. The data gathered through the field survey included background information on rural households as well as perception of five capitals that influence the economic performance of rural villages. These capitals were

assessed using a Likert scale questionnaire, as this is the most appropriate technique for measuring the elements in each capital. The mean score analysis of factors for differentiation in village economic performance was used to assess the identification of factors in five capitals of rural economic performance. The evaluation of factors in the economic performance of household groups from each capital was done using a scale based on mean score analysis. The utilised scale consists of five (5) levels of overall household economic performance. F-test was used to determine whether there were significant differences in factors between the household groups. This step was carried out to assess if any of the 20 identified factors had an impact on the disparities in economic performance among the six household groups (Table 2).

Table 2: Aspects of Analysis

TYPE OF ANALYSIS	ASPECT
Economic performance of household groups	• Descriptive analysis using Mean Score: ▪ 0.00 – 2.00: Very low level ▪ 2.01 – 4.00: Low level ▪ 4.01 – 6.00: Moderate level ▪ 6.01 – 8.00: High level ▪ 8.01 – 10.00: Very high level
Level of significance of capitals and factors in economic performance among household groups	• Inferential analysis using F-test (part of Analysis of Variance) ▪ Significant*: Below 0.05 ▪ Not Significant: Above 0.05

Study area

Categorization of density level was a suitable approach in selecting the study area in Johor state, Malaysia. According to the OECD (2016), a rural region is defined as having a population density of less than 150 persons per square kilometre. Based on the identification of the density level of 93 sub-districts in the whole ten (10) districts in the state of Johor, only 33 sub-districts were identified with urban density level. As the study region was chosen based on its rural density level, there were 60 sub-districts classified into three (3) categories of rural density which are low density rural (0-50 people/km^2), medium-density rural (51-100 people/km^2), and high-density rural (101-150 people/km^2).

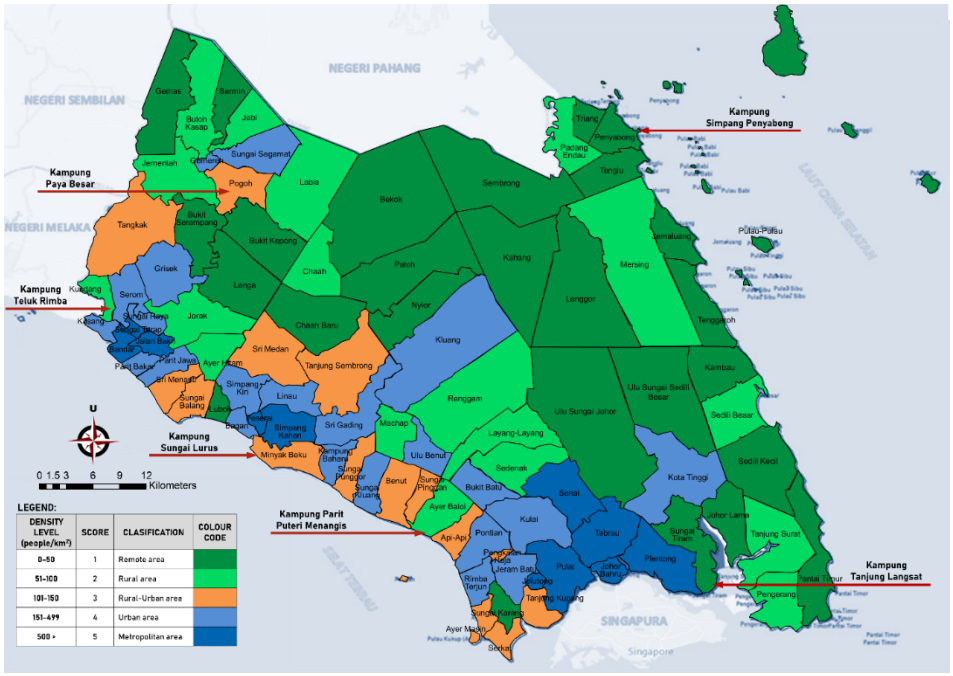


Figure1: Location of six (6) study areas in Johor

Identification of villages that would represent the selected sub-districts was chosen based on their rural density level. There were two (2) steps involved in the process of study area selection. First, the selection was carried out according to the three (3) levels of rural density as six (6) sub-districts were chosen from a total of 60 rural sub-districts in Johor. The six (6) sub-districts were chosen based on the features of the study area, particularly in terms of demographics and geographical context, representing the northern, southern, western, eastern parts of Johor (Figure 1). Second, purposive sampling was used to select the head of each household as respondents from each of the chosen rural sub-districts. A total of 302 respondents were selected from six (6) rural sub-districts and these respondents were categorised under six (6) different household income groups (Table 3).

Table 3: Background of Study Areas and Household Groups

Density Level	District	Sub-District	Total Respondent (%)	Household Income Group (RM) by %					
				B1	B2	B3	B4	M1	M2
0-50 people/km^2	Mersing	Penyabong	21.5	26.2	27.7	15.4	15.4	6.2	9.2
	Johor Bahru	Sungai Tiram	13.9	16.7	16.7	21.4	11.9	14.3	19.0
	Pontian	Ayer Baloi	17.2	7.7	13.5	21.2	23.1	7.7	26.9

51-100 people/km^2	Ledang	Kundang	10.9	6.1	30.3	18.2	18.2	9.1	18.2
101-150 people/km^2	Batu Pahat	Minyak Beku	21.5	1.5	32.3	26.2	21.5	6.2	12.3
	Segamat	Pogoh	14.9	6.7	26.7	33.3	11.1	4.4	17.8

Note: Income Classification by Malaysia's Household (DOSM, 2019): B1 (Less than RM 2,500); B2 (RM 2,500 to RM 3,169); B3 (RM 3,170 to RM 3,969); B4 (RM 3,970 to RM 4,849); M1 (RM 4,850 to RM 5,879); M2 (RM 5,880 to RM 7,099)
*Data sources are based on household survey conducted by the researcher in 2022.

Findings of household economic performance in rural areas

The finding has revealed that M2's household group (6.92), M1's household group (6.60), B3's household group (6.36) and B4's household group (6.14) have generally indicated high performance in overall economic performance at the household level. Meanwhile, Table 4 shows that the B2's household group (5.91) and B1's household group (5.59) performed moderately in terms of overall economic success at the household level.

It can be determined that the M2's household group is relatively considered the top performing household, particularly in terms of the amount of capital obtaining a good index of performance when compared to other household groups. Nonetheless, the B1's household group was relatively considered the lowest performing in overall economic performance at the household level. The general pattern indicates that households with higher income levels tend to have higher scores of indicators and factors for each of the capitals.

Table 4: Analysis of Household Economic Performance

Capital (Factor/ Indicator)		**Household Income Group (RM)**						**F-test**
		B1	**B2**	**B3**	**B4**	**M1**	**M2**	
Economic Capital (EC)		**3.88**	**4.35**	**5.01**	**5.00**	**5.32**	**5.79**	**0.000***
Factor	**Indicator**							
Income	Income increment	2.87	4.63	5.26	5.73	5.18	6.84	**0.000***
	Career stability	3.89	5.27	6.15	6.25	6.35	7.57	
	Additional source of income	3.82	5.47	5.99	6.41	6.52	7.24	
Occupations	Balanced work and salary	5.18	5.34	6.70	7.56	7.60	8.25	**0.000***
Remittance	Money transfer	5.31	4.24	5.35	5.32	7.39	4.64	**0.006***
Government and Private Aid	Financial and welfare assistance	4.67	3.39	3.30	2.75	2.72	2.26	**0.029***
	Assistance for economic activity	2.35	2.12	3.23	2.11	3.15	3.26	
Asset Possession	Considerable yields from asset	2.96	4.36	4.12	3.88	3.63	6.23	**0.000***
Social Capital (SC)		**6.23**	**5.89**	**6.50**	**6.13**	**6.84**	**7.25**	**0.000***
Factor	**Indicator**							

Trust and Norms	Trust in neighbours	8.30	8.14	8.56	8.02	8.20	8.51	**0.000***
Membership and Participation	Involved in social organisations	4.71	3.86	4.77	4.11	4.88	5.41	**0.000***
	Engaging in community activities	5.14	5.18	6.34	5.68	7.28	6.95	
Collective Action	Relationship with community leaders, creditors & entrepreneurs	5.63	5.07	5.60	5.38	5.48	6.78	**0.001***
	Prosperous community life	7.36	7.22	7.22	7.47	8.36	8.60	
Human Capital (HC)		**4.39**	**5.55**	**6.26**	**5.98**	**6.39**	**6.69**	**0.000***
Factor	**Indicator**							
Health	Level of health	6.91	8.21	8.13	8.12	8.70	8.20	**0.025***
	Ability to work hard	5.99	7.49	7.64	7.37	8.43	7.37	
Education	Perfect formal education	4.84	6.57	7.52	7.50	7.13	8.52	**0.000***
Skill	Training and skills	1.83	2.59	3.74	3.34	3.60	4.72	**0.000***
Leadership	Ability to be a leader	2.36	2.89	4.28	3.55	4.11	4.66	**0.007***
Cultural Capital (CC)		**5.96**	**6.08**	**6.26**	**6.12**	**6.42**	**7.08**	**0.000***
Factor	**Indicator**							
Attitude	Attitude and personality	8.28	8.22	8.53	8.32	8.61	8.21	**0.000***
Religious	Fulfil duty as a believer	7.65	7.62	7.80	7.58	7.72	8.21	**0.000***
Way of Life	Exercise/sport regularly	4.07	4.14	4.44	4.46	4.65	5.53	**0.000***
Resilience	Financial assistance	3.83	4.34	4.26	4.10	4.70	6.39	**0.000***
Environmental Capital (AC)		**7.51**	**7.65**	**7.76**	**7.47**	**8.03**	**7.78**	**0.000***
Factor	**Indicator**							
Natural Environment	Attractive natural resource	8.46	8.66	8.54	8.38	9.00	8.44	**0.021***
	No natural disasters occur	6.20	6.47	6.82	6.25	7.01	6.73	
Environmental Quality	No pollution problems	7.42	7.38	7.30	7.04	7.66	7.30	0.113
	Soil fertility level	8.48	8.62	8.81	8.86	9.08	8.92	
Accessibility to Facilities	Basic infrastructure	9.16	9.10	9.19	9.11	9.02	9.39	**0.005***
	Public transport services	5.22	5.11	5.08	4.14	5.11	4.40	
Location	Proximity to town	7.66	8.22	8.56	8.50	9.36	9.29	**0.000***
Overall Household Economic Performance		**5.59**	**5.91**	**6.36**	**6.14**	**6.60**	**6.92**	**0.000***

Note: Income Classification by Malaysia's Household (DOSM, 2019): B1 (Less than RM 2,500); B2 (RM 2,500 to RM 3,169); B3 (RM 3,170 to RM 3,969); B4 (RM 3,970 to RM 4,849); M1 (RM 4,850 to RM 5,879); M2 (RM 5,880 to RM 7,099)
*Significant value at 0.05

CONCLUSION

Rural areas encounter multiple obstacles in order to achieve economic equality and socio-economic sustainability; these obstacles have largely been affecting the well-being of rural communities. Since the development of rural areas is a crucial component of the nation's development, findings from this study will contribute towards providing a clear view of how rural areas particularly are in Malaysia. The findings can help to revitalise the country's economy through an aggregated framework that incorporates various determinants differentiating the economic performances of rural households. Future studies can employ the identified determinants in these five capitals of family economic performance as a holistic approach to address rural concerns and challenges at a household level. The 20 factors and 41 indicators identified in this study were significantly supported by a complex interplay of internal and external influences within the five capitals. This comprehensive approach is therefore essential for future rural economic studies and can be used as an important instrument to assess the differentiation between rural household groups' economic performance.

ACKNOWLEDGEMENT

This work was supported/funded by the Ministry of Higher Education under Fundamental Research Grant Scheme (FRGS/1/2022/SS07/UTM/02/8)

REFERENCES

Ahmad, S., Rashid, M. F., & Suratman, R. (2022). Readiness of Transit Oriented Development (TOD) Concept Implementation in Perak's suburban areas. *Planning Malaysia, 20*(1), 155-165.

Agarwal, S., Rahman, S., & Errington, A. (2009). Measuring the Determinants of Relative Economic Performance of Rural Areas. *Journal of Rural Studies*, 25, 309-321.

Bryden, J., M., Courtney, P., Atterton, J., & Timm, A. (2004). Scotland – North and South. Why Local Economies Differ: The Dynamics of Rural Areas in Europe. London: Edwin-Mellen Press.

Courtney, P., Hill, G., & Roberts, D. (2006). The Role of Natural Heritage in Rural Development: An Analysis of Economic Linkages in Scotland. *Journal of Rural Studies, 22*(4), 469-484.

Courtney, P., & Moseley, M. (2008). Determinants of Local Economic Performance: Experience from Rural England. *Local Economy, 23*(4), 305-318.

Curry, N., & Webber, D., J. (2012). Economic Performance in Rural England. *Regional Studies, 46*(3), 279-291.

Department of Statistics Malaysia (DOSM), (2020). Household Income & Basic Amenities Survey Report 2019. Putrajaya, Malaysia.

Fredericks, L., J. (2017). Exploring the Spatial Dimensions of Rural Development Models in Malaysia 1957-2007. *Institutions and Economies*, 47-62.

Jomo, K., S. (2019). Southeast Asia's Misunderstood Miracle: Industrial Policy and

Economic Development in Thailand, Malaysia and Indonesia. Routledge.

Kamarudin, K. H., & Rashid, M. F. (2020). Factors for Smallholders Persistence in Rural Malaysia: Evidence from Rice Farming Community in Selangor State. Scientific Papers Series Management, *Economic Engineering in Agriculture and Rural Development, 20*(1), 261-268.

Kamarudin, K. H., Untari, R., & Rashid, M. F. (2020). Sustaining Rural Livelihood Through Entrepreneurship and Creative Village Development: Malaysia and Indonesia Experience. Scientific Papers Series-Management, *Economic Engineering in Agriculture and Rural Development, 20*(3), 303-309.

Kamarudin, K. H., Rashid, M. F., & Chong, N. O. (2022). Local Community Knowledge for Flood Resilience: A Case Study from East Coast Malaysia. *International Journal of Built Environment and Sustainability, 9*(2), 21-34.

Klok, N. (2011). The Detection of Main Factors that Influence on the Development of Rural Tourism. *Socio-Economic Research Bulletin*, 41, 37-40.

Peet, R., & Hartwick, E. (2015). Theories of Development: Contentions, Arguments, Alternatives. New York: Guilford Publications.

Preston, D., & Ngah, I. (2012). Interpreting rural change in Malaysia. *Singapore Journal of Tropical Geography, 33*(3), 351-364.

Rashid, M., F., Ngah, I., & Misnan, S., H. (2019a). Framework for Economic Performance of Rural Areas in Malaysia: A Territorial Approach. *International Journal of Built Environment and Sustainability, 6*(1-2), 1-6.

Rashid, M., F., Ngah, I., & Misnan, S., H. (2019b). Revitalizing Rural Areas in Malaysia: A Framework for Economic Revitalization. IOP Conference Series: *Earth and Environmental Science*, (385)1, 012004.

Rashid, M., F., Sulaiman, N., K., Misnan, S., H., Samsudin, N., A., & Ngah, I. (2020). Application of Rural Web in Analyzing the Economic Performance of Rural Areas in Johor. IOP Conference Series: *Earth and Environmental Science, 447*(1), 012067.

Razali, N. M., & Rashid, M. F. (2021). A Framework for Incorporating the Global Environment of Rural Community. IOP Conference Series: *Earth and Environmental Science, 881*(1), 012057.

Roberts, E., & Townsend, L. (2016). The Contribution of the Creative Economy to the Resilience of Rural Communities: Exploring Cultural and Digital Capital. *Sociologia Ruralis*, 56, 197-219.

Sánchez-Zamora, P., Gallardo-Cobos, R., & Ceña-Delgado, F. (2014). Rural Areas Face the Economic Crisis: Analyzing the Determinants of Successful Territorial Dynamics. *Journal of Rural Studies*, 35, 11-25.

Scott, K., Rowe, F., & Pollock, V. (2018). Creating the Good Life? A Wellbeing Perspective on Cultural Value in Rural Development. *Journal of Rural Studies*, 59, 173-182.

Sorensen, J., F. (2018). The Importance of Place-Based, Internal Resources for the Population Development in Small Rural Communities. *Journal of Rural Studies*, 59, 78-87.

Straka, J., & Tuzová, M. (2016). Factors Affecting Development of Rural Areas in the Czech Republic: A Literature Review. *Procedia-Social and Behavioral Sciences*, 220, 496-505.

Terluin, I., J. (2003). Differences in Economic Development in Rural Regions of Advanced Countries: An Overview and Critical Analysis of Theories. *Journal of Rural Studies*, 19, 327-344.

Thompson, E., C. (2014). Rural Transformations. Routledge handbook of contemporary Malaysia, 236-248. Routledge.

Vorodam, J. B., Rashid, M. F., & Misnan, S. H. (2022). Settlement as a Determinant for Community's Resilience to Local Economic Development in Ghana. IOP Conference Series: *Earth and Environmental Science, 1082*(1), 012005.

Yusoff, N. S., Rashid, M. F., & Halim, N. A. (2022). The Impact of Covid-19 Pandemic Towards Socioeconomic Wellbeing of Rural Community in Malaysia. IOP Conference Series: *Earth and Environmental Science, 1064*(1), 012054.

Received: 28th Feb 2023. Accepted: 31st March 2023

PLANNING MALAYSIA:
Journal of the Malaysian Institute of Planners
VOLUME 21 ISSUE 1 (2023), Page 427 – 443

THE PERCEPTIONS OF EMPLOYEES ON ENVIRONMENTAL MANAGEMENT DIMENSIONS: A STUDY AT TWO STATES IN THE SOUTHERN ZONE OF MALAYSIA

Rusinah Binti Siron[1], Saraswathy Kasavan[2]

[1] *College of Energy Economics and Social Sciences,*
UNIVERSITI TENAGA NASIONAL
[2] *Faculty of Business Management and Professional Studies,*
MANAGEMENT AND SCIENCE UNIVERSITY

Abstract

In recent years, many companies had to make their supply chains more sustainable by focusing not only on economic goals but also on environmental goals. Employee involvement is critical to the successful implementation of environmental management dimensions in the workplace. This study aims to determine employees' perceptions of the environmental management dimensions employed for a district council in the Southern zone state of Malaysia. Using a questionnaire, data were collected from 50 respondents (16 companies/facilities) in the Johor state and 32 respondents (17 companies/facilities) in the Malacca state. The main findings show that more than half of the respondents understood environmental management and were willing to consider environmental practices in their organisation/facility. This study also verifies the environmental issues that need to be considered in environmental management implementation. Relevant recommendations are then provided to facilitate an understanding of where the attention should be directed in developing and improving environmental management in organisations.

***Keyword**:* Internal Environmental Management, Environment Information Systems, Cooperation with Customers, Eco-Design Product, Environmental Organisational Culture, Environmental Leadership

[1] Corresponding Author

INTRODUCTION

Environmental management is an activity focused on describing and monitoring environmental changes for human benefit and minimising environmental degradation due to human activities. Environmental management is concerned with improving human needs and demands for building a better quality of life for humans and the habitat. Over the past decade, human activity has been a major factor contributing to reduced earth's carrying capacity; polluted water, land, and air; and depleted natural resources. Many countries have enacted environmental policies to manage pollution by reducing greenhouse gas emissions and protecting natural resources. Previous studies have concentrated on establishing a sustainable lifestyle in households, industries, and educational institutions. However, environmental protection is tied not only to national policy but also to an individual's knowledge and behaviour concerning environmental protection.

In the business world, organisations need to take on more significant responsibility for protecting the environment and implementing business strategies that involve managing natural resources and conserving the environment. Organisations can reap the advantages of environmental management, such as cut-down costs, enhanced revenue, positive reputation, achieving sustainability initiatives, and competitive advantage. However, their efforts to create internal green plans, run environmental management systems, and use certifiable standards have become inefficient when proper employee integration is not implemented (Foster et al., 2022). At times, they would face challenges in promoting several environmental management dimensions, which among others, include reducing energy consumption, green manufacturing, and using public transportation to promote cleaner production. Although these activities may not appear substantial on an individual level, they may considerably affect an organisation's environmental performance. Notably, employee involvement is crucial to successfully implementing environmental management dimensions in the workplace (Xu et al., 2022). For example, employees may use stairs instead of lifts, turn off unnecessary electrical appliances, avoid single-sided paper printing, reduce waste, and develop environmental preservation initiatives.

Besides the importance of employees' improving environmental performance, their involvement also helps solve environmental problems and is a good way for companies to improve environmental performance. Foster et al. (2022) also highlighted that the participation of employees in environmental initiatives is a complicated topic, and employees are encouraged to get involved voluntarily instead of being compelled to do so. Therefore, businesses can encourage employees to take greater environmental responsibility in the workplace to improve environmental management strategies. However, the effectiveness of environmental practices depends on how employees perceive

environmental concerns and their subsequent actions (Omarova & Jo, 2022). If they widely adopt business practices, including natural resource management and environmental protection, the negative environmental impacts can be significantly decreased.

Compared to households, environmental management dimensions among employees in the workplace have been limitedly studied. Several studies have compared green activities at home and the office and found that the same person would recycle more at home than at work (Lee et al., 1995; Yuriev et al., 2018). Another study (Lo et al., 2012) discovered substantial differences in energy-saving behaviours inside and outside an office due to the organisation's environmental management. Workplace environmental management dimensions refer to a wide variety of environmental actions related to internal environmental management, environment information systems, cooperation with customers, eco-design products, environmental organisational culture, environmental leadership, and environmental performance. The objective of the current study is to identify employees' perceptions of environmental dimensions at the Southern Zone State in Malaysia, focusing on the Johor State and the Malacca State. Seven dimensions of environmental management were based upon to examine the perceptions of employees at a district council that deals with environmental management both internally and externally. The dimensions used in this study are shown in Table 1.

Table 1: Description of environmental management dimensions from the previous study

Dimensions	Description	Reference
1. Internal Environmental Management	The commitment and support of a strategic organisational team on the programmes and initiatives of green management	(Sourvinou & Filimonau, 2018) adapted to suit the study requirements
2. Environment Information Systems	Information systems that are used to monitor environmental practices and outcomes	(El-Gayar & Fritz, 2006) adapted to suit the study requirements
3. Cooperation with customers	Requires input and feedback from customers on cleaner production processes on environmentally sustainable impact of green management	(Grekova et al., 2016; Zhu et al., 2017) adapted to suit the study requirements.
4. Eco Design Product	Manufacturers design products that minimise the consumption of materials and energy that facilitate the reuse, recycling, and recovery of component materials of green management	(Donnelly et al., 2006) adapted to suit the study requirements.

5. Environmental Organisational Culture	As a symbolic context about environmental management and protection within which interpretations guide behaviours and processes of members' sense-making.	(Jo Hatch & Schultz, 1997; Lozano, 2015) and adapted to suit the study requirements
6. Environmental Leadership	The leader that contributes to the achievement of environmental management	(Barling, 2015; Mino & Hanaki, 2013) adapted to suit the study requirements
7. Environmental Performance	The ability of manufacturing plants to reduce air emissions, effluent waste, and solid wastes and the ability to decrease consumption of hazardous and toxic materials.	(Soedjatmiko et al., 2021) adapted to suit the study requirements

RESEARCH METHODOLOGY

The study was conducted in the Southern Zone State in Malaysia, particularly the Johor State (Johor Bahru City Centre) and Malacca State (Bandar Hilir Malacca), with a focus on the industrial areas of the city centre of each state. The respondents were employees at various managerial, operational, and administrative levels in the related industries (Table 2). Data were collected from 50 respondents from 16 companies/institutions in the Johor State and 32 respondents from 17 companies/institutions in the Malacca State. A descriptive approach was employed to identify the employees' perceptions of environmental management dimensions. A survey questionnaire was adopted based on published works on environmental management dimensions and was adapted to meet the needs and requirements of this research. All responded questionnaires were personally collected by the researchers. Responses were sought on a five-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*), as shown in Table 3. The five-point Likert scale offers more than one response option, thus allowing the respondent to choose the best answer for each item. The questionnaire consists of 7 sections and 39 items. The percentage of the agreement mentioned is based on the number of responses indicating *agree* and *strongly agree*. The reliability for each of the environmental dimensions is presented in Table 4. Cronbach's alpha was used to measure internal consistency; a higher value indicates greater reliability of the items in describing their construct (Abd Majid et al., 2020).

Table 2: Total number of companies and institutions

Industry Category	Total No of /companies and institutions	Johor State (Johor Bahru)	Malacca State (Bandar Hilir)
Transportation equipment manufacturing	3	2	1
Automobile Industries	2	1	1
Car sales and service centre	4	2	2
Metal product manufacturing	3	2	1
Machinery manufacturing	3	1	2
Government Institutions	15	8	7
TOTAL	30	16	14

Table 3: The rating constructs

Measurement	Scales
1. Internal Environmental Management	**Five-point scale** (1 –not considering it; 2 – planning to consider it; 3 – considering it currently; 4 – initiating implementation; 5 – implementing successfully)
2. Environment Information Systems	**Five-point scale** (1 – not used at all; 5 – used to a great extent)
3. Cooperation with customers	**Five-point scale** (1 –not considering it; 2 – planning to consider it; 3 – considering it currently; 4 – initiating implementation; 5 – implementing successfully)
4. Eco Design Product	**Five-point scale** (1 –not considering it; 2 – planning to consider it; 3 – considering it currently; 4 – initiating implementation; 5 – implementing successfully)
5. Environmental Organisational Culture	**Five-point Likert scale** (1 – strongly disagree to 5 – Strongly agree)
6. Environmental Leadership	**Five-point Likert scale** (1 – strongly disagree to 5 – Strongly agree)
7. Environmental Performance	**Five-point scale** (1 – not at all; 2 – a little bit; 3 – to some degree; 4 -relatively significant; 5 - significant

Table 4: The Reliability of Environmental Dimensions

Environmental Dimensions	No of Items	Alpha Cronbach Value
1. Internal Environmental Management	4	0.765
2. Environment Information Systems	8	0.682
3. Cooperation with Customers	4	0.823
4. Eco Design Product	3	0.790
5. Environmental Organisational Culture	4	0.670
6. Environmental Leadership	4	0.790
7. Environmental Performance	12	0.677

ANALYSIS AND DISCUSSION

Table 5 presents the socio-demographic characteristics of the respondents (gender, age, race, level of education, work experience and monthly income). Most of the respondents from the Johor states and Malacca states were male (70% and 68%, respectively). All the respondents from the Johor state and Malacca state were Malaysian citizens. Most of the respondents were between 31–45 years old (45% from the Johor state and 70% from the Malacca state). The majority of the respondents were Malay (55% from the Johor state and 48% from the Malacca state). Most of the respondents have an undergraduate degree (diploma and degree) (25% from Johor state and 30% from Melaka state). The majority of respondents have 5 to 15 years of work experience in their companies and institutions. The monthly household income of most of the respondents from Johor state (40%) and Malacca state (45%) was between RM1,001–RM 5000.

Table 5: The demography profile of respondents

Demographic Categories	Category	Johor State (Johor Bahru) %	Malacca State (Bandar Hilir) %
Gender	Male	70	68
Age	31- 45 Years	45	70
Race	Malay	55	48
Education Level	Diploma /Degree	25	30
Work Experience	5-15 years	55	60
Monthly Income	RM 1,001–RM 5,000	40	45

Understanding environmental management is essential in determining a business organisation's or society's behaviour, which consequently influences decision-making (Samdin et al., 2012). Therefore, the current study sought to explore the perception of selected employees of companies and institutions on environmental management, as shown in Table 6. Internal environment management is essential to keeping track of performance, alerting decision-makers about behavioural changes, and leading companies to create environmentally conscious workplaces. Overall, the results indicate that less than 42% of the respondents agreed that they were committed to and supported the consideration of internal environmental management. More companies are changing their priorities by using business intelligence to save money and become environmentally aware. A clear roadmap of internal environment management is required to link business intelligence with environmentally friendly actions. Employees that participate in internal environment management not only reduce their operating expenses, reuse resources, and meet compliance requirements, but also help create brand recognition among customers.

Environmental information systems (EIS) are organisational-technical systems for systematically getting, processing, and making environment-related information available in companies (El-Gayar & Fritz, 2006b). In other words, EIS are essential for storing and managing all relevant data and information that respond to internal and external business environments pressures. EIS are also used to monitor environmental practices and support planning and management functions. In this study, 50% of the respondents agreed that EIS could provide information to consumers on the choices of car vehicles, improve decision-making by highlighting sustainability issues online, and reduce energy consumption. Most of the respondents also believed that the EIS can efficiently support the generation and distribution of renewable energy systems and limit carbon and other emissions. Fewer than 50% of the respondents knew how to use EIS to reduce transportation costs, track environmental information, and monitor emissions and waste production.

Customers' purchasing power, trust, and loyalty are boosted to provide a transparent environmental management plan. When it comes to being environmentally conscious, customers are not only more aware and informed, but they are also concerned about the well-being of their children. Therefore, they are demanding that businesses make better products for the environment. Companies also realise that when their customers become more environmentally friendly, they create a win-win situation for everyone, such as protecting the environment, improving corporate profitability, and opening up new market opportunities. As indicated in the finding, fewer than 56% of the respondents agreed that they are concerned about customer cooperation in environmental management. For example, they agreed they were concerned about cooperative customers for eco-design, cleaner production, green manufacturing, and energy saving during product transportation. The results of this study are consistent with Burki et al. (2019), who found that maintaining close cooperation with supply chain customers is geared towards reducing the negative impact on the environment.

Most of the adverse environmental impacts take place during the design phase. In this regard, design activity with sustainable development concerns is vital to pursuing sustainable supply chain management. Eco-designs are a crucial component of the circular economy; they are designed with sustainable materials and are reusable after their useful life, unlike the buy-use-throw-away or "linear" economy. Primarily, eco-design products are more committed to the product life cycle (from raw material selection to end-of-product life management) concerning the environment and are an effective technique for encouraging sustainable supply chain operations. According to Thamsatitdej et al. (2017), deploying products is crucial in improving the eco-design approach toward more sustainable supply chain management. The analysis found that less than 62% of respondents agreed that they consider the design of eco products to be due to

reduced energy consumption, ease of disassembly (reuse, recycle, recovery of material), and minimal use of hazardous materials during their manufacturing process.

The cultural aspects of environmental management are essential to transforming corporations from profit-oriented organisations into sustainability-oriented ones (Sugita & Takahashi, 2015). Companies are taking the initiative to create more environmentally conscious workplaces through their business cultures. Businesses now have to comply with environmental standards since the activities they engage impose significant problems for the surrounding environment. Many companies must reduce their ecological footprint to improve their environmental performance. Organisational culture is crucial to move toward more sustainable and environmentally friendly activities. In this study, more than 50% of the respondents surveyed agreed that their concerns are on knowledge, collaboration, environmental agreements, and responsiveness to environmental management. This finding is consistent with Magsi et al. (2018), who found that the environmental culture in an organisation supports its environmental performance and develops its environmental strategy.

"Leaders" in most firms are responsible only for handling matters pertaining to internal operations. However, an environmental leader needs to handle not only internal environmental issues (such as waste, pollution, and resource management), but also external issues, such as the safety of other communities and their environments. Those who advocate for environmental sustainability would integrate their goal of safeguarding the natural environment into their decision-making and actions. In this study, 65% of the respondents from Johor Bahru and 35% of the respondents from the Melaka state agreed that the leaders in their company inspire a shared vision of the organisation as environmentally sustainable, creating or maintaining green values throughout the company. The remaining half of respondents agreed that their company leaders have adopted various ways to conduct environmental management, such as well-developed approaches, creative partnerships with the company's stakeholders, and providing environmental education. These findings are aligned with Xu et al. (2022), who found that employees' green innovation behaviour is strongly correlated with environmental leadership's effect on the strength of their green company identity.

According to Kim et al. (2019), employee behaviour influences environmental performance sustainability. Environmental beliefs and personal preferences may affect employees' willingness to engage in environmental performance (Adeel et al., 2022). In this study, 47% of the respondents from Johor Bahru and 52% of the resopndents from the Melaka state greed that environmental performance is geared towards investing resources in green innovations to seize opportunities and successfully lead in the market. Also,

almost half of the respondents agreed that environmental management programmes and initiatives affect waste and air pollution reduction and lower resource consumption. These findings are similar to Hameed et al. (2020), who found that environmental performance is the critical practice of green human resource management; it requires employee behaviours to achieve an organisation's green objectives.

Table 6: Perception of environmental management dimensions among employees

	Items Statement	**% of Agreement on Consideration**	
		Johor State (Johor Bahru)	**Malacca State (Bandar Hilir)**
	Internal Environmental Management is committed to and supports the consideration of:		
1.	Environmental programmes and initiatives in and outside the organisation	33	23
2.	Environment total quality management procedures	42	25
3.	Environmental compliance and auditing programme	35	23
4.	Environmental concern incentives and reward	23	22
	The use of an Environmental Information System:		
5.	can reduce transportation costs	25	34
6.	can do tracking environmental information (such as toxicity, energy used, water used and air pollution) will be efficient	44	45
7.	can do monitoring emissions and waste will be effective	36	48
8.	can provide information to encourage choices of car vehicles by consumers	47	62
9.	can improve decision-making by highlighting sustainability issues online	52	53
10.	can reduce energy consumption	35	56
11.	can support the generation and distribution of renewable energy systems efficiently	43	65
12.	can limit carbon and other emissions through information system	34	73
	The cooperation with customers on environmental management on consideration:		
13.	for eco-design is fully cooperative	56	46
14.	for cleaner production is highly attached and committed	42	50
15.	for green manufacturing is on the good move	54	53
16.	for using less energy during product transportation is acceptable and reliable	36	41
	The consideration of the design of eco product will:		
17.	reduced consumption of material/energy	45	55
18.	be reused and recycled, and recovery of material and/or components	58	63
19.	can avoid or reduce use of hazardous and /or their manufacturing process	64	61

	The company that I worked for are concerned of:		
20.	the knowledge of environmental management and protection of environment	51	43
21.	the collaboration of environmental management and protection of environment	48	52
22.	the environmental agreements of environment	45	48
23.	the responsiveness of environmental management and protection of environment	35	60
	The leaders in the company that I worked for are:		
24.	inspire a shared vision of the organisation as environmentally sustainable, creating or maintaining green values throughout the company	65	35
25.	fully utilise and well-developed approaches to environmental management which generally centre around a programme customised to the company's specific business and market	32	38
26.	creative partnerships with the company's stakeholders to solve environmental problems and accomplish environmental goals	45	34
27.	responsible for environmental education with the intent of engaging employees in environmental management initiatives	33	40
	The adoption of environmental management programme and initiatives gives impact on:		
28.	Reduction of air emission	45	39
29.	Reduction of effluent waste	52	42
30.	Reduction of solid waste	29	43
31.	Decrease in consumption of hazardous/harmful/toxic materials	31	51
32.	Decrease in frequency of environmental accidents	38	42
33.	Improvement in and environmental situation	53	55
34.	Reduction of Water and land contamination	31	43
35.	Reduction of Air and noise pollution	37	54
36.	Reduction of Waste management	61	50
37.	Often undertakes active environment-related innovation to take initiatives on new practices or products ahead of the automobiles industry	48	45
38.	Continuously invest resources in green innovations to successfully seize opportunities and to lead in the market	47	52
39.	actively improve manufacturing processes to reuse, recycle, and reduce cost of energy	50	48

RECOMMENDATIONS AND CONCLUSION

In recent years, many companies have attempted to make their supply chains more sustainable by focusing not only on economic goals but also on environmental ones. Various stakeholders, including customers and employees, have pressured businesses to take greater environmental responsibility. Consequently, companies are shifting from conventional to sustainable ways by incorporating green activities into their operations to gain a competitive

advantage. Therefore, environmental management is essential to encourage employees to engage in green initiatives that are aligned with their organisation's corporate vision. This study verifies the environmental issues that need to be considered in environmental management implementation. The findings indicate that the environmental dimensions could generate many constraints and benefits affecting an organisation's success. It is hoped that the findings can benefit managers, practitioners, researchers, or policymakers and inform future research in this area. Some recommendations are put forward in pursuing environmental management in organisations.

Internal Environmental Management

The findings on "Internal Environmental Management" suggest that the commitment and support of environmental practices from top management towards environmental management should be reliable and available to consumers and employees through:

- Rules and regulations on the environment being spelt out clearly within the organisation
- Training and development being enhanced and precisely focused on the environment
- Policy compliance on the environment
- Continuous knowledge enhancement and education
- Reliable and manageable incentives and rewards

Environment Information Systems

The findings on "Environmental Information System" show that the requirement to stay focused systematically on Environmental Programme Systems through technology:

- Relative advantage (gains of usage)
- Compatibility (technical and organisational needs are applied)
- Trial-ability (experimental) of the system is always on the move

Cooperation with Customers

The findings on "Cooperation with Customers" show that there is a need to build up good cooperation and effective communication with customers through:

- Behavioural and attitudes positive to customers on providing information and education
- Awareness and benefits to the customer on the eco-design product
- Information and dissemination of programmes and initiatives

Eco Design Product

The findings on "Eco Design Product" show that it should provide efficient information on the eco-design of the product to encourage people to understand the eco-design purpose, particularly on the:

- Installation or upgrading of new equipment for the design
- Services of the eco-design product
- Processes of the eco-design product
- Policies for eco-design product
- Efficient enhancement of eco-design products

Environmental Organisational Culture

The findings on "Environmental Organisational Culture" suggest the need for organisations to build up the organisational culture environment positively and efficiently through:

- Effective and quality working life
- Increased job satisfaction in the environmental management
- Employee engagement and involvement in environment management
- Continuous organisational learning on environment management

Environmental Leadership

The findings on "Environmental Leadership" show that the leaders within the company should take on the responsibility of environmental education and responsibility effectively to the organisation and society by:

- Giving full commitment and cooperation to subordinate
- Building team-based leadership
- Cooperating with green leadership
- Communicating with subordinates on environmental management
- Shared vision and mission on environmental programmes and initiatives

Environmental Performance

The findings on "Environmental Performance" indicate the need for the management to educate their staff and customers on the benefits of environmental activities through:

- On-the-job training and development
- Quality assurance environment programme
- Research and development
- Promotion and evaluation of green initiatives

ACKNOWLEDGMENTS

We would like to thank the Ministry of Higher Education (MOHE) Malaysia for funding this research under FRGS Grant project code 201601339FRGS entitled

"*Developing the Rating System Model for Assessing the Green Environmental Management for Malaysian Public Organization*s". The authors would like to thank MOHE, UNITEN, and the team collaborators for their support upon completing this research.

REFERENCES

Abd Majid, M. Z., Hussin, M., Norman, M. H., & Kasavan, S. (2020). The employability skills among students of Public Higher Education Institution in Malaysia. *Malaysian Journal of Society and Space*, *16*(1), 36–45. https://doi.org/10.17576/geo-2020-1601-04

Adeel, M., Mahmood, S., Khan, K. I., & Saleem, S. (2022). Green HR practices and environmental performance: The mediating mechanism of employee outcomes and moderating role of environmental values. *Frontiers in Environmental Science*, *0*(October), 1793. https://doi.org/10.3389/fenvs.2022.1001100

Barling, J. (2015). Environmental Leadership. *Academy of Management Proceedings*, *2015*(1), 13791. https://doi.org/10.5465/ambpp.2015.13791symposium

Burki, U., Ersoy, P., & Najam, U. (2019). Top management, green innovations, and the mediating effect of customer cooperation in green supply chains. *Sustainability (Switzerland)*, *11*(4). https://doi.org/10.3390/su11041031

Donnelly, K., Beckett-Furnell, Z., Traeger, S., Okrasinski, T., & Holman, S. (2006). Eco-design implemented through a product-based environmental management system. *Journal of Cleaner Production*, *14*(15–16), 1357–1367. https://doi.org/10.1016/j.jclepro.2005.11.029

El-Gayar, O. F., & Fritz, B. D. (2006a). Environmental management information systems (EMIS) for sustainable development: A conceptual overview. *Communications of the Association for Information Systems*, *17*(April), 756–784. https://doi.org/10.17705/1cais.01734

El-Gayar, O. F., & Fritz, B. D. (2006b). Environmental management information systems (EMIS) for sustainable development: A conceptual overview. *Communications of the Association for Information Systems*, *17*(May), 756–784. https://doi.org/10.17705/1cais.01734

Foster, B., Muhammad, Z., Yusliza, M. Y., Faezah, J. N., Johansyah, M. D., Yong, J. Y., Ul-Haque, A., Saputra, J., Ramayah, T., & Fawehinmi, O. (2022). Determinants of Pro-Environmental Behaviour in the Workplace. *Sustainability (Switzerland)*, *14*(8). https://doi.org/10.3390/su14084420

Grekova, K., Calantone, R. J., Bremmers, H. J., Trienekens, J. H., & Omta, S. W. F. (2016). How environmental collaboration with suppliers and customers influences firm performance: Evidence from Dutch food and beverage processors. *Journal of Cleaner Production*, *112*, 1861–1871. https://doi.org/10.1016/j.jclepro.2015.03.022

Hameed, Z., Khan, I. U., Islam, T., Sheikh, Z., & Naeem, R. M. (2020). Do green HRM practices influence employees' environmental performance? *International Journal of Manpower*, *41*(7), 1061–1079. https://doi.org/10.1108/IJM-08-2019-0407

Jo Hatch, M., & Schultz, M. (1997). Relations between organizational culture, identity

and image. *European Journal of Marketing*, *31*(5/6), 356–365. https://doi.org/10.1108/eb060636

Kim, Y. J., Kim, W. G., Choi, H. M., & Phetvaroon, K. (2019). The effect of green human resource management on hotel employees' eco-friendly behavior and environmental performance. *International Journal of Hospitality Management*, *76*(May 2018), 83–93. https://doi.org/10.1016/j.ijhm.2018.04.007

Lee, Y. J., de Young, R., & Marans, R. W. (1995). Factors Influencing Individual Recycling Behavior in Office Settings: A Study of Office Workers in Taiwan. *Environment and Behavior*, *27*(3), 380–403. https://doi.org/10.1177/0013916595273006

Lo, S. H., Peters, G. J. Y., & Kok, G. (2012). Energy-Related Behaviors in Office Buildings: A Qualitative Study on Individual and Organisational Determinants. *Applied Psychology*, *61*(2), 227–249. https://doi.org/10.1111/j.1464-0597.2011.00464.x

Lozano, R. (2015). The psychology of human thought Edited by. *Corporate Social Responsibility and Environmental Management*, *22*(February), 32–44.

Magsi, H. B., Ong, T. S., Ho, J. A., & Hassan, A. F. S. (2018). Organizational culture and environmental performance. *Sustainability (Switzerland)*, *10*(8), 1–17. https://doi.org/10.3390/su10082690

Mino, T., & Hanaki, K. (2013). Environmental leadership capacity building in higher education: Experience and lessons from Asian program for incubation of environmental leaders. In *Environmental Leadership Capacity Building in Higher Education: Experience and Lessons from Asian Program for Incubation of Environmental Leaders* (Vol. 9784431543). https://doi.org/10.1007/978-4-431-54340-4

Omarova, L., & Jo, S. J. (2022). Employee Pro-Environmental Behavior: The Impact of Environmental Transformational Leadership and GHRM. *Sustainability (Switzerland)*, *14*(4). https://doi.org/10.3390/su14042046

Samdin, Z., Bakori, K. A., & Hassan, H. (2012). Factor Influencing Environmental Management Practices Among Hotels in Malaysia. *International Jiournal of Social, Education, Economic and Management Engineering*, *6*(5), 5–8.

Soedjatmiko, Bambang, & Noorlailie. (2021). Do Environmental Performance and Environmental Management Have a Direct Effect on Firm Value? *Journal of Asian Finance, Economics and Business*, *8*(1), 687–696. https://doi.org/10.13106/jafeb.2021.vol8.no1.687

Sourvinou, A., & Filimonau, V. (2018). Planning for an environmental management programme in a luxury hotel and its perceived impact on staff: an exploratory case study. *Journal of Sustainable Tourism*, *26*(4), 649–667. https://doi.org/10.1080/09669582.2017.1377721

Sugita, M., & Takahashi, T. (2015). Influence of corporate culture on environmental management performance: An empirical study of japanese firms. *Corporate Social Responsibility and Environmental Management*, *22*(3), 182–192. https://doi.org/10.1002/csr.1346

Thamsatitdej, P., Boon-itt, S., Samaranayake, P., Wannakarn, M., & Laosirihongthong, T. (2017). Eco-design practices towards sustainable supply chain management: interpretive structural modelling (ISM) approach. *International Journal of*

Sustainable Engineering, *10*(6), 326–337. https://doi.org/10.1080/19397038.2017.1379571

Xu, B., Gao, X., Cai, W., & Jiang, L. (2022). How Environmental Leadership Boosts Employees' Green Innovation Behavior? A Moderated Mediation Model. *Frontiers in Psychology*, *12*(January), 1–9. https://doi.org/10.3389/fpsyg.2021.689671

Yuriev, A., Boiral, O., Francoeur, V., & Paillé, P. (2018). Overcoming the barriers to pro-environmental behaviors in the workplace: A systematic review. *Journal of Cleaner Production*, *182*, 379–394. https://doi.org/10.1016/j.jclepro.2018.02.041

Zhu, Q., Feng, Y., & Choi, S. B. (2017). The role of customer relational governance in environmental and economic performance improvement through green supply chain management. *Journal of Cleaner Production*, *155*, 46–53. https://doi.org/10.1016/j.jclepro.2016.02.124

Abd Majid, M. Z., Hussin, M., Norman, M. H., & Kasavan, S. (2020). The employability skills among students of Public Higher Education Institution in Malaysia. *Malaysian Journal of Society and Space*, *16*(1), 36–45. https://doi.org/10.17576/geo-2020-1601-04

Adeel, M., Mahmood, S., Khan, K. I., & Saleem, S. (2022). Green HR practices and environmental performance: The mediating mechanism of employee outcomes and moderating role of environmental values. *Frontiers in Environmental Science*, *0*(October), 1793. https://doi.org/10.3389/fenvs.2022.1001100

Barling, J. (2015). Environmental Leadership. *Academy of Management Proceedings*, *2015*(1), 13791. https://doi.org/10.5465/ambpp.2015.13791symposium

Burki, U., Ersoy, P., & Najam, U. (2019). Top management, green innovations, and the mediating effect of customer cooperation in green supply chains. *Sustainability (Switzerland)*, *11*(4). https://doi.org/10.3390/su11041031

Donnelly, K., Beckett-Furnell, Z., Traeger, S., Okrasinski, T., & Holman, S. (2006). Eco-design implemented through a product-based environmental management system. *Journal of Cleaner Production*, *14*(15–16), 1357–1367. https://doi.org/10.1016/j.jclepro.2005.11.029

El-Gayar, O. F., & Fritz, B. D. (2006a). Environmental management information systems (EMIS) for sustainable development: A conceptual overview. *Communications of the Association for Information Systems*, *17*(April), 756–784. https://doi.org/10.17705/1cais.01734

El-Gayar, O. F., & Fritz, B. D. (2006b). Environmental management information systems (EMIS) for sustainable development: A conceptual overview. *Communications of the Association for Information Systems*, *17*(May), 756–784. https://doi.org/10.17705/1cais.01734

Foster, B., Muhammad, Z., Yusliza, M. Y., Faezah, J. N., Johansyah, M. D., Yong, J. Y., Ul-Haque, A., Saputra, J., Ramayah, T., & Fawehinmi, O. (2022). Determinants of Pro-Environmental Behaviour in the Workplace. *Sustainability (Switzerland)*, *14*(8). https://doi.org/10.3390/su14084420

Grekova, K., Calantone, R. J., Bremmers, H. J., Trienekens, J. H., & Omta, S. W. F. (2016). How environmental collaboration with suppliers and customers influences firm performance: Evidence from Dutch food and beverage processors. *Journal of Cleaner Production*, *112*, 1861–1871.

https://doi.org/10.1016/j.jclepro.2015.03.022

Hameed, Z., Khan, I. U., Islam, T., Sheikh, Z., & Naeem, R. M. (2020). Do green HRM practices influence employees' environmental performance? *International Journal of Manpower*, *41*(7), 1061–1079. https://doi.org/10.1108/IJM-08-2019-0407

Jo Hatch, M., & Schultz, M. (1997). Relations between organizational culture, identity and image. *European Journal of Marketing*, *31*(5/6), 356–365. https://doi.org/10.1108/eb060636

Kim, Y. J., Kim, W. G., Choi, H. M., & Phetvaroon, K. (2019). The effect of green human resource management on hotel employees' eco-friendly behavior and environmental performance. *International Journal of Hospitality Management*, *76*(May 2018), 83–93. https://doi.org/10.1016/j.ijhm.2018.04.007

Lee, Y. J., de Young, R., & Marans, R. W. (1995). Factors Influencing Individual Recycling Behavior in Office Settings: A Study of Office Workers in Taiwan. *Environment and Behavior*, *27*(3), 380–403. https://doi.org/10.1177/0013916595273006

Lo, S. H., Peters, G. J. Y., & Kok, G. (2012). Energy-Related Behaviors in Office Buildings: A Qualitative Study on Individual and Organisational Determinants. *Applied Psychology*, *61*(2), 227–249. https://doi.org/10.1111/j.1464-0597.2011.00464.x

Lozano, R. (2015). The psychology of human thought Edited by. *Corporate Social Responsibility and Environmental Management*, *22*(February), 32–44.

Magsi, H. B., Ong, T. S., Ho, J. A., & Hassan, A. F. S. (2018). Organizational culture and environmental performance. *Sustainability (Switzerland)*, *10*(8), 1–17. https://doi.org/10.3390/su10082690

Mino, T., & Hanaki, K. (2013). Environmental leadership capacity building in higher education: Experience and lessons from Asian program for incubation of environmental leaders. In *Environmental Leadership Capacity Building in Higher Education: Experience and Lessons from Asian Program for Incubation of Environmental Leaders* (Vol. 9784431543). https://doi.org/10.1007/978-4-431-54340-4

Omarova, L., & Jo, S. J. (2022). Employee Pro-Environmental Behavior: The Impact of Environmental Transformational Leadership and GHRM. *Sustainability (Switzerland)*, *14*(4). https://doi.org/10.3390/su14042046

Samdin, Z., Bakori, K. A., & Hassan, H. (2012). Factor Influencing Environmental Management Practices Among Hotels in Malaysia. *International Jiournal of Social, Education, Economic and Management Engineering*, *6*(5), 5–8.

Soedjatmiko, Bambang, & Noorlailie. (2021). Do Environmental Performance and Environmental Management Have a Direct Effect on Firm Value? *Journal of Asian Finance, Economics and Business*, *8*(1), 687–696. https://doi.org/10.13106/jafeb.2021.vol8.no1.687

Sourvinou, A., & Filimonau, V. (2018). Planning for an environmental management programme in a luxury hotel and its perceived impact on staff: an exploratory case study. *Journal of Sustainable Tourism*, *26*(4), 649–667. https://doi.org/10.1080/09669582.2017.1377721

Sugita, M., & Takahashi, T. (2015). Influence of corporate culture on environmental

management performance: An empirical study of japanese firms. *Corporate Social Responsibility and Environmental Management*, *22*(3), 182–192. https://doi.org/10.1002/csr.1346

Thamsatitdej, P., Boon-itt, S., Samaranayake, P., Wannakarn, M., & Laosirihongthong, T. (2017). Eco-design practices towards sustainable supply chain management: interpretive structural modelling (ISM) approach. *International Journal of Sustainable Engineering*, *10*(6), 326–337. https://doi.org/10.1080/19397038.2017.1379571

Xu, B., Gao, X., Cai, W., & Jiang, L. (2022). How Environmental Leadership Boosts Employees' Green Innovation Behavior? A Moderated Mediation Model. *Frontiers in Psychology*, *12*(January), 1–9. https://doi.org/10.3389/fpsyg.2021.689671

Yuriev, A., Boiral, O., Francoeur, V., & Paillé, P. (2018). Overcoming the barriers to pro-environmental behaviors in the workplace: A systematic review. *Journal of Cleaner Production*, *182*, 379–394. https://doi.org/10.1016/j.jclepro.2018.02.041

Zhu, Q., Feng, Y., & Choi, S. B. (2017). The role of customer relational governance in environmental and economic performance improvement through green supply chain management. *Journal of Cleaner Production*, *155*, 46–53. https://doi.org/10.1016/j.jclepro.2016.02.124

Received: 28th Feb 2023. Accepted: 31st March 2023

PLANNING MALAYSIA:
Journal of the Malaysian Institute of Planners
VOLUME 21 ISSUE 1 (2023), Page 444 – 458

A GIS-BASED SUSTAINABILITY AND HIGHEST-BEST USE (SHBU) FOR FELDA LANDS DEVELOPMENT PLANNING DECISION-MAKING

Mohd Fadzil Abdul Rashid[1], Salbiah Mokhtar[2], Siti Mazwin Kamaruddin[3], Muhamad Asri Abdullah Kamar[4], Suzanah Abdullah[5], and Mohamad Azal Fikry Ali[6]

[1,2,4,5,6]*Department of Built Environment Studies and Technology,*
College of Built Environment,
UNIVERSITI TEKNOLOGI MARA, PERAK BRANCH, MALAYSIA
[3]*Centre of Studies for Town and Regional Planning,*
College of Built Environment,
UNIVERSITI TEKNOLOGI MARA, PUNCAK ALAM, MALAYSIA

Abstract

FELDA is enforcing a new direction of sustainable FELDA development in the future. It has timely developed a Sustainability and Highest and Best-use (SHBU) framework based on a GIS-based Multicriteria Decision Analysis (MCDA) approach for optimising FELDA lands, particularly crops, and other possible developments. This paper attempts to demonstrate the application of the GIS-based SHBU for FELDA Bukit Rokan discovering its capabilities. It includes generating criterion maps and sub-criterion maps, weighting criterion maps, and creating outcomes – composite maps of cropland suitability and future-physical development. The geospatial analyses for a Bukit Rokan confirmed that the SHBU model could provide the needed information for crop and settlement area developments. The production of the composite crop and physical land development maps significantly helps FELDA management or crop plantation planners optimise lands for crop plantation and future physical development. Hence, its application provides valuable information about the areas and support attributes enhancing FELDA lands development planning decision-making.

***Keyword**:* FELDA, Sustainability & highest and best use, GIS, MCDA, UAV

[1] Associate Professor at Universiti Teknologi MARA Perak Branch. Email: mohdf032@uitm.edu.my

INTRODUCTION

A FELDA blueprint, the so-called report of Kertas Putih, aims at enforcing a new direction of sustainable FELDA development in the future through two catalyst projects, namely: (a) the Settlers Development Programme (SDP); and (b) the Smart farming initiative via Smart Plantation Management System (SPMS). By working on it, Rashid et al. (2022) have developed a sustainability and highest and best use (SHBU) framework as a missing link approach to the SDP and SPMS to oversee the optimisation of FELDA lands for crops and other possible developments comprehensively. It is timely to address FELDA's fundamental issues, such as unproductive or abandoned lands, limited housing schemes for second and third generations, low-income settlers, and so on (Government of Malaysia, 2019). More importantly, it aligns with the sustainable development goals, remarkably reducing inequalities between rural and urban areas and enhancing recent work and economic growth (UNDP, 2023).

The current paper attempts to demonstrate the application of the GIS-based SHBU for FELDA Bukit Rokan discovering its capabilities in optimising FELDA lands, particularly crops, and for other possible developments. FELDA Bukit Rokan located in Mukim of Gemencheh, District of Tampin, Negeri Sembilan. The selection is based on the developed criteria (i.e., strategic issues of land development and residents' economic activities) and consent from representative FELDA officers.

SHBU MODEL FOR FELDA LANDS DEVELOPMENT PLANNING

The SHBU framework (Figure 1) developed by Rashid et al. (2022) is tailored to the prospects and fundamental issues in the FLEDA settlements.

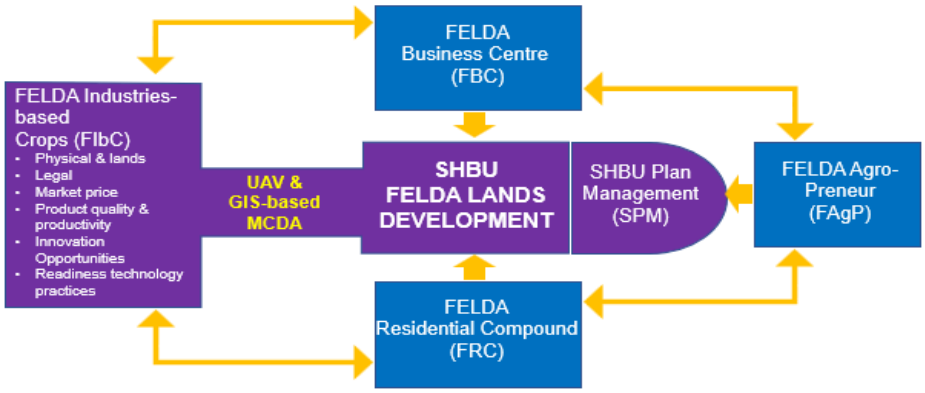


Figure 1. Five-Dimension-Objectives Measure-based SHBU Framework for FELDA Lands Development
Source: Rashid et al. (2022)

The SHBU measure is aimed at synergising FELDA transformation towards diversifying economic catalysts in the settlement schemes by five-dimension-objectives measure: FELDA industries-based crops (FIbC) and SHBU plan management (SPM) from the highest-best use (HBU) domain; and the remaining FELDA business centre (FBC), FELDA residential compound (FRC) and FELDA agro-preneur (FAgP) are from the sustainability domain. It is a strategic and comprehensive approach to realising the FELDA lands development by integrating with a GIS-based Multicriteria Decision Analysis (MCDA) approach. Furthermore, an Unmanned Aerial Vehicle (UAV) would be embedded as a tool for obtaining real spatial data and their attributes on-site, as well as enhancing SHBU geospatial analysis and results. Further discussion of the SHBU model can be obtain from Rashid et al. (2022).

METHODOLOGY

A Detailed Process of A GIS-MCDA Application

Figure 1 depicts the overall process of generating the SHBU's FELDA lands development at the execution stage using a GIS-based MCDA approach.

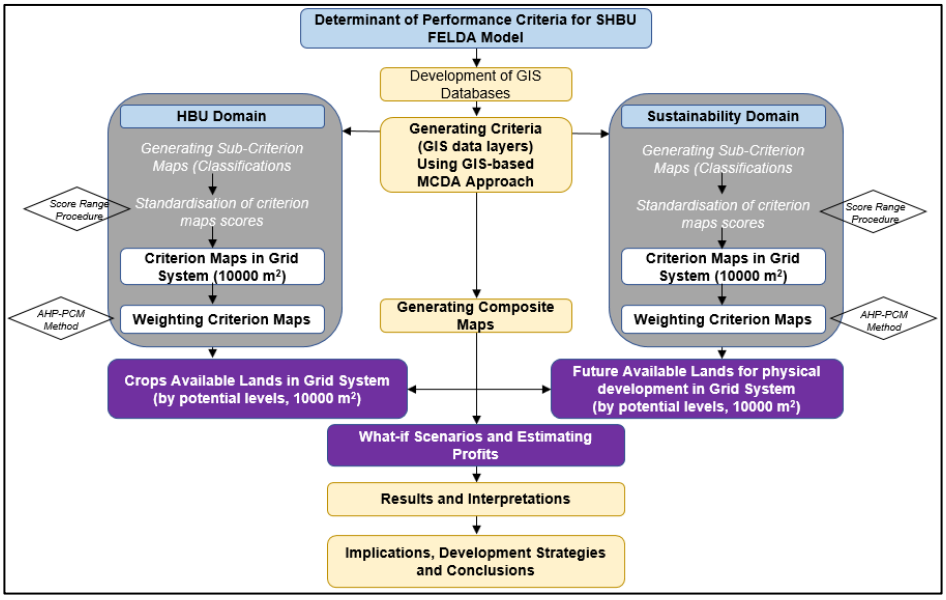


Figure 01: An entire process of executing the SHBU model based on a GIS-based MCDA approach

A GIS-based MCDA approach is an excellent analysis tool for dealing with and managing spatial decision problems (Prieto-Amparán et al., 2021), such as FELDA lands development planning decision-making. It includes identifying

the suitability of lands for crops and future-physical potential projects such as a business centre, residential compound and agro-preneur centre. The process then involves three main stages in order to accomplish the execution of the SHBU model: (a) Generating criterion maps and sub-criterion maps, (b) Weighting criterion maps, and (c) Creating outcomes – composite maps of cropland suitability and future-physical development.

The SHBU outcomes can be breakdown into three main stages so as to provide planning scenarios, intervention strategies, and profit estimations. These anticipated outcomes include: (a) Stage 1 – Assessment for crops available lands by potential levels, (b) Stage 2 - Assessment of available areas for future-physical development, and (c) Stage 3: What-if scenarios for feasible FELDA lands development and estimating profits. However, stage 3 will not be included in this paper due to the complex process and shall be presented in other publications. Additionally, only areas within 2km from centric points of the case study have been delineated for the SHBU model execution due to cost constraints to capture Unmanned Aerial Vehicle (UAV) images and generate GIS data layers.

Stage 1: Assessment for Crops Available Lands by Potential Levels

*(a)*Generating the criterion maps

The croplands suitability assessment will be executed on the five determined performance criteria. These performance criteria, with their sub-criteria and standardised scores, are described in detail in Table 1.

Table 1: Five selected performance criteria and classifications with the standardised scores for crops lands potential levels

	Criterion Maps with Weights	**Sub-Criterion Map in Raster System (Classifications by 10000 m^2)**	**Justifications**	**Raw Score**	**Standardisation of Scores**
1	Crops map	Productive areas	Areas with healthy (productive) oil palm trees	2	1.0
	(W=0.402)	Productive areas but require replanting	Areas with unproductive oil palm trees (trees above 25 years old)	1	0.5
		Non-productive areas with constraint (or merged with constraint areas)	Constraint areas due to a higher slope level and difficult to access	0	0.0
2	Slope levels	Suitable areas for crops (slope level 0-12 degree)	Acceptable slope levels for oil palm and others (multiple interim crops)	3	1.0
	(W=0.273)	Suitable areas for crops (slope level 13-20 degree)	Acceptable slope levels for oil palm and others (short term crops)	2	0.7
		Suitable areas for crops (slope level 21-25 degree)	Acceptable slope levels for oil palm and others (medium-long term crops)	1	0.3
		Constraint areas (slope level above 25 degree)	Constraint slope levels for oil palm	0	0.0

3	Access to estate (Estate access network) (W=0.110)	Areas within radius (buffer) 100m	Areas with a higher accessibility (for crops management)	1	1.0
		Areas outside radius (buffer) 100m	Areas with a lower or no accessibility (for crops management)	0	0.0
4	Fertile areas (W=0.146)	Vacant estate lands (with no existing crops)	Areas that can take into consideration for crops planting (based on the current physical features)	1	1.0
		Vacant estate lands with constraint (or merged with constraint areas)	Constraint areas due to a higher slope level and difficult to access	0	0.0
5	River/water bodies (water resources) (W=0.068)	Areas within radius (buffer) 50m	Areas with a higher accessibility to water resources (for crops management)	2	1.0
		Areas outside radius (buffer) 50m	Areas with a lower accessibility to water resources (for crops management)	1	0.5
		The existing river/water bodies (as constraint)	Constraint area (no development on river/water bodies)	0	0.0

Table 1 shows that each criterion has gone through two important processes in order to be ready for generating a composite map of cropland suitability, namely, (1) classification, and (2) criterion scores standardisation. Each classification process involves various geospatial analyses in the ArcGIS environment, such as buffers, clips, merges, vector to raster conversion, and so on. The crop criterion map, for instance, is classified into three sub-criterion maps. Each sub-criterion map has an unequal importance (or effect) on the cropland suitability. They were evaluated by giving 'raw' scores by their magnitude of effect. The more effects on the cropland suitability, the higher score will be given.

To reduce all the raw scores in the direct comparable format, all the sub-criterion maps need to be transformed into one common measurement unit, through implementation of the standardisation of the criterion scores. At this extent, the score range procedure method has been applied with an equation, as follows:

$$z_j = \frac{x_j - x_j^{\min}}{x_j^{\max} - x_j^{\min}} \quad (1)$$

where zj is the standardised score for jth sub criterion (attributes), xj is the raw score for jth sub criterion, and xj min and xj max are the minimum and maximum score for the jth sub criterion, respectively. The numerator measures the range of the jth value from the minimum. Meanwhile, the denominator measures the range of the data (i.e. the variability). Thus, zj is a standardised value. The value of the standardised scores ranges from 0 to 1, where the worst standardised score is

always equal to 0, and the best score equal to 1 (Table 1). Then, all the criterion maps are converted into a grid system in the value of 10000m^2 to complete the process of generating the criterion maps of the cropland suitability assessment (Figure 2).

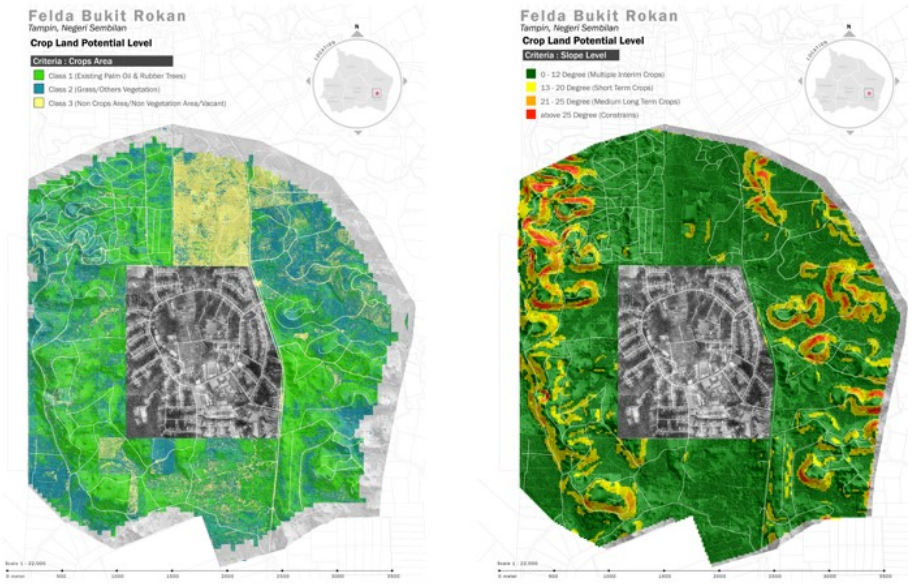


Figure 02: Examples of criterion maps (with classifications and standardization of scores) for cropland suitability assessment (Bukit Rokan)

*(b)*Weighting the criterion map

One more important step, that is required for generating the composite map of cropland suitability is the weighting criteria. It is due to the five criterion maps of the cropland suitability assessment have different extents of importance in the overall assessment. Hence, relative importance exercises are needed. This issue was then handled by an MCDA-based Analytic Hierarchy Process based Pairwise Comparison Matrix (PCM) to strengthen the decision-making process (Saaty, 1980; Saaty & Kearns, 1985). The AHP-based PCM is a relatively easy and effective approach to handle the spatially related problems of development strategies (Malczewski, 2004). The PCM dealing with positive reciprocal matrices in which each matrix table is determined by the equation,

$$\frac{n(n-1)}{2} \quad (2)$$

where n is the total number of performance criteria (criterion maps) being

compared. So that, the size of pairwise comparison table for the assessment is calculated as $n = 5$ (performance criteria), so $5 \times (5\text{-}1) \div 2 = 10$, by means that only 10 comparative judgements were needed to accomplish the weighting task.

Table 2 shows that the values (scores) in the upper right corner (shaded values) were derived from pairwise comparisons of the relative importance among the five performance criteria. This exercise was accomplished through the researcher's group discussion. The other values were derived using logic (reciprocal), where C1 > C2 = 2; thus, C2 < C1 = 0.5 and C1 > C3 = 3; thus, C3 < C1 = 0.33. When comparing a dimension to itself, the evaluation scale (ratio) must equal one, which indicates "equal importance." A similar procedure was applied to the balance judgment process.

Table 2: Three results (shaded scores) croplands potential levels

Criterion Maps	**Judgment Process**					**Weights**
	C1	C2	C3	C4	C5	
C1	1	2	3	3	5	0.402
C2	0.5	1	2	3	4	0.273
C3	0.33	0.5	1	0.5	2	0.110
C4	0.33	0.33	2	1	2	0.146
C5	0.2	0.25	0.5	0.50	1	0.068
					Total	**1.000**
					Consistency ratio (CR)	**0.012**

Note: C1=Crops map, C2=Slope levels, C3=Access to estate (Estate access network), C4=Fertile Areas map, and C5=River/water bodies (water resources)

Accordingly, C1 was weighted at 0.402, C2 (0.273), C3 (0.110) with a low value compared to C4 (which is 0.146), and the last is C5 with 0.068. The judgment process confirmed that when the Consistency Ratios (CR) were less than 0.10. This would portray each area in its best light for the crops according to their criteria' performances.

*(c)*Generating the composite map

The final stage is generating the composite map by applying the standardised scores for each sub-criterion of the five criterion maps (in the GIS raster system), and the weights for each criterion map. This process is a weighted linear combination (WLC) or scoring method that is based on the concept of a weighted average. The WLC uses the following formula (Malzewski, 2004):

$$A_i = \sum_{j=1}^{n} w_j \, x_{ij} \quad (3)$$

where x_{ij} is the score of the *i*th alternative (pixel of lands in the grid system) with respect to the *j*th attribute (criterion maps), and the weight w_j is a normalised weight, so that $\sum_{i=1}^{n} w_i = 1.$ The weights represent the relative importance of the criterion maps. The most preferred alternative (very potential of land) is selected by identifying the maximum value of A_i (i = 1,2,...,m). In the case of the cropland availability problems, alternatives can be the whole pixel of lands of the study area but different in their degree (potential levels).

Stage 2: Assessment of Available Areas for Future-physical Development
This assessment follows a similar procedure to the first, but with a different set of data (Table 3).

Table 3: Five selected performance criteria and classifications with the standardised scores for a Business Centre and Residential lands potential levels

	Criterion Maps with Weights	Sub-Criterion Map in Grid System (Classifications by 10000 m^2)	Justifications	Raw Score	Standardisation of Scores
1	Reserve/ alternative development lands (W=0.433)	Reserve/ vacant lands within 100m from the existing residential areas	Potential areas for physical-future developments	3	1.0
		Reserve/ vacant lands within 100m from the existing settlement service centre	Potential areas for a business centre	2	0.7
		Reserve/ vacant lands outside 100m from the existing residential areas and settlement service centre, and 100m within the existing PPP projects.	Areas that could consider for any possible physical-future developments (including PPP projects)	1	0.3
		Existing residential, public facilities, other land use activities (built-up areas)	Built-up areas that constricted for a new development	0	0.0
2	Access to settlement (Settlement access network) (W=0.280)	Areas within radius (buffer) 100m	Areas with a higher accessibility (for physical-future land development)	1	1.0
		Areas outside radius (buffer) 100m	Areas with a lower or no accessibility (for physical-future land development)	0	0.0
3	Slope levels (W=0.110)	Suitable areas for physical-future land development (slope level 0-10 degree)	Higher potential slope levels for physical-future land development	2	1.0
		Suitable areas for physical-future land development (slope level 11-17 degree)	Acceptable potential slope levels for physical-future land development	1	0.5
		Constraint areas for physical-future land development (slope level >17 degree)	Least or Constraint slope levels for physical-future land development	0	0.0

	Criterion Maps with Weights	Sub-Criterion Map in Grid System (Classifications by 10000 m^2)	Justifications	Raw Score	Standardisation of Scores
4	River/water bodies	Areas outside radius (buffer) 50m	Areas with a potential for physical-future land development	1	1.0
		Areas within radius (buffer) 50m (as constraint)	Constraint area (no development on river/water bodies)	0	0.0
	(W=0.110)				
5	Legal (if applicable)	No restricted areas for development	Areas that allow for any potential possible development	1	1.0
		Restricted areas for development	No development is allowed due to restrictions by legal	0	0.0
	(W=0.066)				

Aforementioned, the classification of sub-criterion maps and the standardisation of scores in Table 3 follows the same process as in Stage 1. For the weighting exercise, Table 4 shows the judgment process for each criterion map to another and weights for each criterion map.

Table 4: Three results (shaded scores) for a Business Centre and Residential lands potential levels

Criterion Maps	Judgment Process					Weights
	C1	C2	C3	C4	C5	
C1	1	2	4	4	5	0.433
C2	0.5	1	3	3	4	0.280
C3	0.25	0.33	1	1	2	0.110
C4	0.25	0.33	1	1	2	0.110
C5	0.2	0.25	0.5	0.5	1	0.066
					Total	**1.000**
					Consistency ratio (CR)	**0.012**

Note: C1= Reserve/ alternative development lands, C2= Access to settlement (Settlement access network), C3= Slope levels, C4= River/water bodies, and C5= Legal (if applicable)

Accordingly, as shown in Table 4, C1 was weighted at 0.433, C2 (0.280), C3 and C4 got the same weight values which is 0.110, and the last is C5 with 0.066. The judgment process also confirmed that the Consistency Ratios (CR) were less than 0.10 which is 0.012. This would portray each area in its best light for the expected projects according to their indicators' performances.

RESULTS AND DISCUSSIONS

Croplands Available by Potential Levels

The expected results from this assessment can be classified into three main outputs: (a) Areas that have the potential for the main crop (palm oil trees), (b) Areas that have potential for interim crops/ integrated agricultural, and (c) Constraint areas for crops.

Moreover, to complete the application of the SHBU's croplands suitability for generating a composite map using a weighted linear combination

(WLC) - the weighted average of the five performance criteria. The WLC for the SHBU's croplands suitability was defined as the following:

$$FCLands_{ij} = \sum_{j=1}^{n} w_j \, x_{ij} \quad (4)$$

Where $(FCLands)_{ij}$ is FELDA croplands suitability at the coordinate *i*th row and *j*th column, i = 1, 2,…, nk, j = 1, 2,…, mk; *Wj* is normalised weights for the *j*th criterion map so that $\sum wj = 1$, j = 1, 2,…,n; x_{ij} is the standardised score of the *j*th criterion map concerning the destination at coordinate *i*th row, *j*th column, i = 1, 2,…,nk, j = 1, 2,…,mk. nk is the number of rows in the *j*th criterion map, and mk is the number of columns in the *j*th criterion map. The values of x*ij* and W*j*, where k = 1, 2,…,5, are shown in Table 1.

Figure 3 shows the result of cropland suitability by potential levels for Bukit Rokan. Four potential levels (or areas) were generated to demonstrate the croplands' suitability, namely: (a) the most potential, (b) potential, (c) less potential, and (d) the areas with constraints. The results were then transformed into size and distribution (Table 5).

Figure 03: Croplands suitability by potential levels in Bukit Rokan

Table 5: The generated size of crop areas by their potential levels and intervention strategy for Bukit Rokan

The Existing Crop Planted Area (H)	The Generated Size by Potential Levels		Crop Areas - Potential Intervention Strategy
	Potential Levels	Size (H)	
860.50	The most potential	526.10	It is the most productive area that remains for the oil palm trees and adds on with interim crops (e.g., cili merah, cili hijau, jagung manis) planted within the oil palm trees, particularly in replanting areas.
	Potential	139.20	This area also remains for oil palm plantation with mitigation to better manage the trees, production and harvesting support.
	Less Potential	115.20	This area also remains for oil palm plantation with all the needed mitigations to better manage the trees, production, and harvesting support.
	Constraint areas	91.58	The highly land area has potential to be created for plantation tourism-based recreation and extreme sports for adventure and fun such as mountain biking, ATV off-roading, etc.
	Total	872.10	

Table 5 shows the existing size of crop plantation areas compared to the generated size by their potential levels. It shows that approximately 525 hectares (60%) of the total areas were identified as the most potential areas for crops based on performance criteria, such as existing productive lands, suitable slopes, higher accessibility for crop management, and nearby sources of water. It is followed by potential and less potential levels with 139.20 hectares (16%) and 115.20 hectares (13%), respectively. The remaining (92 hectares or 11%) is identified as a constraint area due to its steep slope. As such information, the potential crops and any other development activities could be suggested for each respective area according to FELDA aspirations, settlers' needs, locations and geographical features such as high land areas suitable for recreational activities. More importantly, the results shall provide a solution room to the issue of less diversification of crops at the farm level, as highlighted by Khazanah Research Institute (2020).

It is worth noting that the results of the SHBU composite crop map generation can also indicate cropland optimisation in comparison to existing plantation areas. This can be seen in increasing and optimising the potential cropland areas instead of planting on the total with constraints. Mitigation plans can be properly designed to cater to the areas with less potential while avoiding the constraint areas for crop planting. In this case, only 780.5 hectares of cropland are suitable for crop planting. Subsequently, the SHBU results can significantly

increase crop production and quality, and generate more profits. It reflects the concept of the HBU, that is, dedicated the measurable results with physically, reasonably and financially feasible (Utomo et at., 2018), and offers an approach for resilience in cropland and rural areas (Knickel et al., 2018). So, this attempt gives a value-addition to croplands development and crop plantation literature as well.

Future-physical Land Availability

This stage is the SHBU model application for identifying the suitable locations (lands) for future-physical development in the FELDA residential/settlement areas, especially for a business centre and residential units. As such, as aforementioned, the two expected outcomes to be produced from a composite map of future-physical development are: (a) Areas that have the potential for residential units, a business centre (mini-RTC including FELDA Agro-Preneur centre), and (b) Other areas with no potential.

Then, the SHBU's future-physical development lands suitability is generated in the GIS environment to produce a composite map using a weighted linear combination (WLC) - the weighted average of the five performance criteria. The WLC for the SHBU's future-physical development lands suitability was defined as the following:

$$FFLands_{ij} = \sum_{j=1}^{n} w_j \, x_{ij} \quad (5)$$

Where $(FFLands)_{ij}$ is FELDA future-physical development lands suitability at the coordinate *i*th row and *j*th column, i = 1, 2,…, nk, j = 1, 2,…, mk; *Wj* is normalised weights for the *j*th criterion map so that $\sum wj = 1$, j = 1, 2,…,n; x_{ij} is the standardised score of the *j*th criterion map concerning the destination at coordinate *i*th row, *j*th column, i = 1, 2,…,nk, j = 1, 2,…,mk. nk is the number of rows in the *j*th criterion map, and mk is the number of columns in the *j*th criterion map. The values of x*ij* and W*j*, where k = 1, 2,…,5, are shown in Table 3.

Figure 4 shows the result of future-physical development lands suitability by potential levels for Bukit Rokan. Four potential levels were generated to demonstrate the future-physical development lands' suitability, namely: (a) the most suitable areas, (b) potential, (c) less potential, and (c) constraint areas. Out of those four, only the areas with the most potential and potential levels will be considered for future development. The result indicates the capability of the SHBU measure in producing a composite map of future-physical development land potential, which significantly helps FELDA management to optimise the uses of lands for future needed development.

Additionally, the SHBU measure provides some information (attributes), such as the size and distribution of the best areas and scenario planning that is relevant to consider in making decisions for future land development.

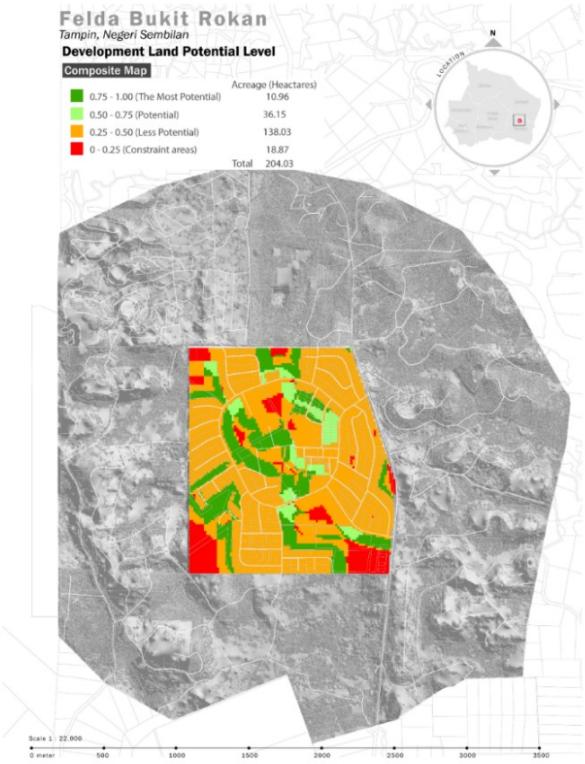


Figure 04: Future-physical development lands by potential levels in Bukit Rokan

Therefore, it indicates only the alternative areas of approximately 10.95 hectares suitable for physical development focusing on the three elements of the SHBU, which are a business centre, a residential compound and an agro-preneur hub. With the suitable areas, the determinant physical projects are based on the current needs of the residents incorporating the study area background (i.e., demographic profiles), the surrounding development (i.e., population threshold), and the size and distribution of the suitable lands as well.

Considering all the above matters, the future development projects in FELDA Bukit Rokan are a small-scale residential compound and agro-entrepreneur hub to cater to the resident's needs, particularly the youth generation. They are the most needed people to sustain FELDA lands for crops yielding the FELDA contribution to the nation. To that extent, as highlighted in Rashid et al.

(2021), the youth is the driven people to bring rural transformation towards a modern rural engaging technology in their livelihood, economic activities, and enhancement of rural solutions.

CONCLUSIONS

The geospatial analyses for a Bukit Rokan confirmed that the SHBU model could provide the needed information for crop and settlement area development decisions. The production of the composite crop and physical land development maps significantly helps FELDA management or crop plantation planners optimise lands for crop plantation and future physical development. That is, through generating the required information (spatial map and their attributes), such as the size and distribution of areas that are relevant for crop plantation management and the best location of lands for physical development and cost or profit estimation as well. This attempt adds value to cropland development, and FELDA lands development literature as well. The performance criteria, processes, and methods or techniques involved in generating FELDA land composite maps are new contributions in this field and could be endorsed as a novelty.

All research would not be exempt from limitations. The implementation of the SHBU model for Bukit Rokan is only within 2 km of the centroid points. It is due to the time and budget constraints, especially in developing a GIS database ready for the intended analysis. There is also an unavailable dataset to meet all the 'SHBU's performance criteria, such as criteria for fertile areas, so it was done with a manipulation process. This limitation, however, was well-managed and maintained the reliability and quality of the research outcomes. So, the identified shortfall and weakness would be avoided in future research.

ACKNOWLEDGEMENT

This paper is part of a project funded by the National Real Property Research Coordinator (NAPREC), National Institute of Valuation (INSPEN), Valuation & Property Services Department (JPPH), Ministry of Finance, Malaysia.

REFERENCES

Government of Malaysia (2019). Kertas Putih ke arah Kelestarian Lembaga Kemajuan Tanah Persekutuan (FELDA). Kuala Lumpur: Government of Malaysia.

Khazanah Research Institute. (2020). Implications of the Dominant Shift to Industrial Crops in Malaysian Agriculture Phase II: System Dynamics Model of Industrial Crops. Khazanah Research Institute.

Knickel, M. Redman, I. Darnhofer, A. Ashkenazy, T. C. Chebach, S. Sumane, et al. (2018). Between aspirations and reality Making farming, food systems and rural areas more resilient, sustainable and equitable. *Journal of Rural Studies*, 2018(59), 197-210

Malczewski, J. (2004). GIS-based Land-use Suitability Analysis: A Critical Overview. *Progress in Planning*, 62(1), 3–65.

Rashid, M.F.A., Mokhtar, S., Kamaruddin, S.M., ...Abdullah, S., Ali, M.A.F. (2022). Felda Lands Development based on Sustainability and Highest-best Use Approach: How To Go About It?. *Planning Malaysia*, 20, 207–220.

Rashid, M.F.A., Muhamad, A.K., Rashid, K., Ahmad, A.L., Azman, M.A.A. (2021). Formulation of a Malaysia modern rural development framework: Synergising rural for change. *Planning Malaysia, 19*(16), 14–26.

Saaty, T. L. (1980). The analytic hierarchy processes. New York: McGraw-Hill.

Saaty, T. L., & Kearns, K. P. (1985). Analytical planning: The organisation of systems. New York: Pergamon Press.

UNDP. (2023). The SDGs in Action. (Accessed on 30 March 2023). https://www.undp.org/sustainable-development-goals

Utomo, C., Rahmawati, Y., & Krestawan, I. (2018). Development of urban market spatial for highest and best use of land productivity and sustainability. *Planning Malaysia*, *16*(5). 163-172.

Received: 28th Feb 2023. Accepted: 31st March 2023

PLANNING MALAYSIA:
Journal of the Malaysian Institute of Planners
VOLUME 21 ISSUE 1 (2023), Page 459 – 469

THE IMPACT OF ON-TIME PERFORMANCE TOWARDS QUALITY OF URBAN BUS SERVICES: A CASE STUDY IN STATE CAPITALS OF PENINSULAR MALAYSIA

Muhammad Fadhlullah Abu Bakar[1], Shuhairy Norhisham[2], Noorazizun Mohd Saad[3], Herda Yati Katman[4], Mohd Rasdan Ibrahim[5], Sotaro Yukawa[6], Siti Aliyyah Masjuki[7], Noor Insunfatima Abu Bakar[8]

[1,2, & 4]*Department of Civil Engineering, College of Engineering,*
[2,3 & 4]*Institute of Energy Infrastructures (IEI),*
[3]*Department of Informatics, College of Computing & Informatics,*
UNIVERSITI TENAGA NASIONAL MALAYSIA
[5]*Centre of Transportation Research,*
Department of Civil Engineering, *Faculty of Engineering*
UNIVERSITI MALAYA
[6]*Department of Mathematics, Faculty of Economic,*
OSAKA UNIVERSITY OF COMMERCE
[7]*Department of Civil Engineering, Kulliyyah of Engineering,*
INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA
[8]*Office of Honorary President,*
PERDANA LEADERSHIP FOUNDATION

Abstract

Urbanisation have given significant impact on escalating the traffic volume as the tremendous traffic congestion daily, especially during peak hours in weekdays. The objective of this paper is to assesses the impact of on-time performance towards quality of urban bus services in Malaysia. Therefore, this study was conducted at 11 state capitals in Peninsular Malaysia. The main local bus terminals had been designated in this study. The Transit Capacity and Quality of Service Manual (TCQSM, 2013) was chosen as the guideline used in this study. The results showed that Johor Bahru recorded a total 648 departure daily which considered the highest departure. There were 4 state capitals that recorded more than 80% of overall on-time departure for each route, such as Kuala Terengganu (94.39%), Shah Alam (82.45%,), Ipoh (80.74%) and Kangar (80.06%). The overall quality of services for on-time performance in state capitals of Peninsular Malaysia was classified as QOS D. Based on the study results, several rectifications on bus services in state capitals of Peninsular Malaysia is highly required.

***Keyword**:* sustainable urban bus services, quality of service (QOS), on-time performance, carbon footprint, green energy

[2] Senior Lecturer at Universiti Tenaga Nasional Malaysia. Email: shuhairy@uniten.edu.my

INTRODUCTION

Urbanisation have given significant impact on people's migration from rural to urban area for the last few decades (Farahani et al., 2016). In 2013, world's population passed 7.3 billion and forecasted that the Earth will have 10 billion inhabitants by year 2100 (Irwan et al., 2022). Therefore, the migration process had caused an extreme traffic volume and environmental change as the tremendous movement occurred daily and caused a rapid traffic congestion daily, especially during peak hours in weekdays (Al-Mansob et al., 2022; Chow et al., 2019). Unlike in many developed countries, urban public transport in this country only just reached the development phase as first option by public, not self-sustain and more towards government funded model in which only 20% of people were urban public transport users (Ministry of Transport Malaysia, 2019). Land-use and transport planning inevitably linked to the development of working, people oriented and energy efficient in urban area (Najib et al., 2020). However, the authority is still in the process to improve urban bus services in other state capitals by underlying and implementing a significant policy in identified locations (Minhas et al., 2020). Comparison and differentiation in terms of regulations, policy implementation and bus services performance should be assessed between developing and developed countries (Sotaro et al., 2014).

Malaysia Government via Agensi Pengangkutan Awam Darat (APAD) gave full commitment to improve the quality of urban bus services in Malaysia despite challenges and competitions faced by bus operators in this country (Norhisham et al., 2021; Mohamad et al., 2017). Transportation is categorised under the economic well-being Malaysian Well-Being Index (MWI) component as to evaluate the population quality of life in this country and promoting for balance in every aspect of people's daily life (Rabe et al., 2018). Public transport including bus services is still one of the travel options from one place to another in major cities in this country, especially in Klang Valley (Ramli et al., 2017). Bus performance should be assessed in terms of various key areas, such as quality, effectiveness, reliability, and efficiency of the system (Ponrahono et al., 2017). The authority is highly suggested to deal with various issues that raised continuously by urban stakeholder (Pira et al., 2021). Every public transport has specific attributes that will influence their service performance. The public had emphasised the demand on effective public transportation system, especially bus services to accommodate their daily movement. Passengers had expressed their concerns on the consistency of performance and dependability of the service according to schedule provided in bus terminals (Ngadiman et al., 2020). On-time departure of bus services according to existing schedule would develop a significant trustworthiness by passengers and users towards the public transportation services (Bakar et al., 2022).

The inclination of dependency towards bus services as a main public transport mode has decrease recently as this transportation mode had found less competitive service performance as compared to motorised mode (Shukri et al., 2020). It is reported that the problem on public transportation, especially bus services in this country that caused by current demand (passengers)–supply (operators) which is not well-planned and proper monitoring. Therefore, it required a vigorous and definite solution to mitigate the current problem of urban public transportation in this country (Ponrahono et al., 2018). Quality of services (QOS) rating would be a preference approach to assess the quality of transportation based on specific element and attributes (Georgiou et al., 2021). On-time performance was recognised as one of the main attributes and addressed as reliability of bus services based on the timetable approved by the authority (Rohani et al., 2013). The knowledge of bus performance is essential to be shared between stakeholders as to facilitate better information flow between the authority, bus operators and passengers (Saad, 2016). Punctuality of the services would influence passengers' decision about their daily travel movement from one place to another (Borhan et al., 2019). A previous study stated that on-time performance was highly influenced by the passengers' expectation and perception as users of bus services (Deb & Ahmed, 2018). These attributes would develop a significant trustworthiness towards bus services if the bus operators could provide an accurate time of departure according to their schedule (Norhisham et al., 2019). It is important to measure the urban bus services, particularly on the quality of urban bus performance provided by the bus operators. Hence, this paper aimed to assess the impact of on-time performance towards quality of urban bus services in state capitals of Peninsular Malaysia.

RESEARCH METHODOLOGY

Study Area

This section described all essential methods taken to evaluate the impact of on-time performance towards quality of urban bus services in Peninsular Malaysia. The data was collected at every state capitals in Peninsular Malaysia as shown in Figure 1. Main local bus terminals were chosen in this study as these terminals were considered as public transport hub for each state. The selected location details for each state in Peninsular Malaysia is listed in Table 1. There were numerous bus operators that operated local bus services which were also known as stages bus in selected area. Due to demand on specific routes, bus operators were allowed to use different type of buses but subject to service approval by the authority. This study only selected local bus which covered bus services within the local area of each state capital only.

Figure 1: Selected State Capitals in Malaysia (Qoura, 201; Google Maps, 2022)

Table 1: Selected State Capitals location

States	State Capitals	Selected Bus Terminal
Johor	Johor Bahru	JB Sentral
Kedah	Alor Setar	Terminal Bas Shahab Perdana
Kelantan	Kota Bahru	Stesen Bas Kota Bahru
Melaka	Bandaraya Melaka	Melaka Sentral
Negeri Sembilan	Seremban	Terminal 1
Pahang	Kuantan	Hentian Bas Bandar Kuantan
Perak	Ipoh	Medan Kidd
Perlis	Kangar	Terminal Bukit Lagi
Pulau Pinang	Georgetown	Pangkalan Raja Tun Uda
Selangor	Shah Alam	Terminal Bus Seksyen 17
Terengganu	Kuala Terengganu	Hentian Bas Majlis Perbandaran Kuala Terengganu

Quality of Services (QOS)

To measure the bus services quality performance, Transit Capacity and Quality of Service Manual (TCQSM, 2013) (Transportation Research Board, 2013) was chosen as guidelines in this study. Therefore, this study would present the impact of on-time performance towards quality of urban bus services in selected location. At the end of this study, on- time performance attributes for each state were categorised based on grades stated in the guidelines and overall QOS for Peninsular Malaysia were identified as well.

On-time Performance

On-time performance of bus service refers to reliability of bus departure compared with the preliminary schedule posted by the bus operators. On- time performance also refers to actual time of bus departure and arrival on each stop. On-time performance results normally presented in percentage value with higher percentage of on-time performance shows a higher punctuality on bus departure or arrival as compared to its schedule. Next, the average results of QOS for each location were categorised based on QOS of 'A' until 'F' by the score of '6' until '1', respectively. Lastly, average of QOS scores was measured, and the results of average QOS were categorised according to guidelines as a QOS overall of on-time performance in state capitals of Peninsular Malaysia. Specific bus terminals have been selected in this study. Actual time of bus departure time for all routes in selected terminal were taken and actual time of bus departure were compared with departure scheduled for all routes provided by the bus operators. On-time performance could be classified as actual time of departure between one minute earlier and five minutes later. To determine the bus service quality, the percentage of on-time performance was calculated by using a formula as shown in Equation 1.

$$\text{Percentage of on time performance (\%)} = \frac{\text{Total of on time service}}{\text{Total of scehuled service}} \text{X } 100\% \quad (1)$$

Table 2 indicates the grade of quality of services (QOS) for on-time performance. Table 2 would be referred after comparison between actual time of departure and departure schedule have been made. The results of on-time performance of every route were calculated. Percentage of each route was classified accordingly based on Table 2.

Table 2: Quality of services (QOS) for On-Time Performance [27]

Quality of Service (QOS)	A	B	C	D	E
On Time Performance (%)	95 - 100%	90 - 94%	80 - 89%	70 - 79%	< 70%

RESULT AND DISCUSSION

Summary of Departure

This section described the outcome of this study in details. The on-time performance data were collected according to the method described in Methodology section. Bus services in most of state capitals were operated by single bus operators and these bus operators were semi-funded by the Government through Agensi Pengangkutan Awam Darat (APAD) and

Government Linked Agency (GLC) under Treasury of Malaysia (MOF). On the other hand, there were bus operators in several states that managed to continue bus services despite all the challenges faced recently. Figure 2 explains the summary of overall departure and daily on-time departure for each state capital in Peninsular Malaysia.

The results showed that Johor Bahru recorded the highest number of departures with total of 648 daily departure and 438 of daily on-time departure followed by Georgetown that recorded total of 476 daily departure and 230 of daily on-time departure. Whereas 3 state capitals recorded less than 100 of daily departure were Alor Setar, Kuala Terengganu and Kangar (89, 77 and 74 of total departure, respectively). The results highlighted difference of total daily departure between the most developed states (Johor and Penang) and the less developed states (Kedah, Terengganu and Kangar).

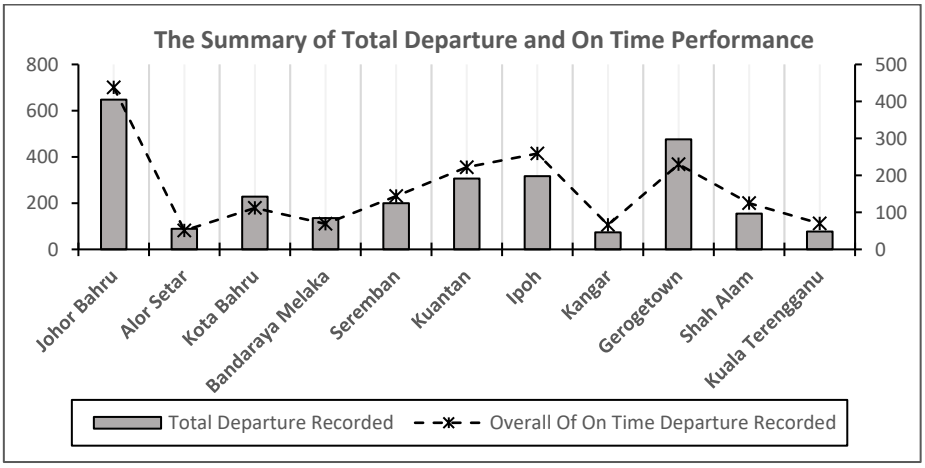


Figure 2: Summary of total departure and on-time departure

On-Time Performance

Next, on-time performance percentage based on respective routes were calculated based on Equation 1 in previous section. Figure 3 shows the on- time performance percentage based on routes for all state capitals in this study. The average of on-time performance percentage based on routes for each state capital in Peninsular Malaysia was 71.17%. There were 4 state capitals that recorded more than 80% of overall on-time departure for each route, such as Kuala Terengganu (28 routes), Shah Alam (3 routes), Ipoh (21 routes) and Kangar (8 routes) calculated at 94.39%, 82.45%, 80.74% and 80.06%, respectively. On the other hand, 2 state capitals recorded less than 60% of overall on-time performance for each route, such as Bandaraya Melaka (15 routes) and Alor Setar (13 routes) representing

56.15% and 53.42%, respectively. Based on observations, there were several external factors highlighted by the bus operators in developed capital cities, such as heavy traffic congestion during peak hour (morning and late afternoon) and excessive number of passengers that affecting the overall of on-time performance for certain routes.

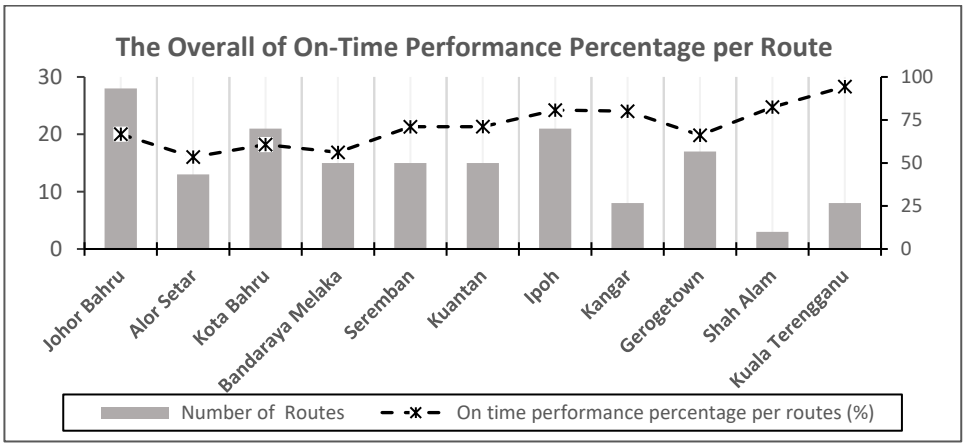


Figure 3: The overall of on-time performance percentage per route

Quality of Services (QOS)

Table 5 shows the quality of services (QOS) for each state capital and overall quality of services (QOS) of on-time performance attributes for Peninsular Malaysia. The overall QOS score for on-time performance in state capitals of Peninsular Malaysia was classified as QOS D. The results indicated that 1 state capital achieved to be categorised as QOS B, followed by 2 state capitals classified as QOS C and the remaining state capitals were classified as QOS D & QOS E representing 5 state capitals and 3 state capitals, respectively. The results showed that there were a significant number of departures recorded in urban area of developed states, such as Johor Bahru, Penang and Shah Alam as compared to urban area of less developed states, such as Alor Setar, Kuala Terengganu and Kangar.

From the findings, the authority had made several improvements in monitoring the actual bus departure in certain state capitals in Peninsular Malaysia. Since on-time performance had given a significant impact towards quality of services (QOS), several rectifications should be made by bus operators to improve quality of services (QOS), especially in big urban states, such as Johor Bahru and Penang. On the other hand, the authority, local council, and bus operators should cooperate closely to ensure that bus services could depart according to the designated routes. Based on the results, it can be observed that

the bus operators had difficulties to provide a significant number of trips due to inadequate demand by passengers and users.

Table 5: The overall quality of service (QOS) of on-time performance attribute

Capital States	QOS	QOS Score	Mean QOS	Overall QOS
Johor Bahru	E	2		
Alor Setar	D	3		
Kota Bahru	D	3		
Bandaraya Melaka	E	2		
Seremban	D	3		
Kuantan	D	3	3.09	D
Ipoh	C	4		
Kangar	D	3		
Georgetown	E	2		
Shah Alam	C	4		
Kuala Terengganu	B	5		

**Score range: A = 6, B = 5, C = 4, D = 3, E = 2, F = 1*

In addition, there were significant concerns by passengers and users which required a real-time information of bus departure for the whole bus route to encourage people to use bus services as their mode of transportation. This study was conducted before the Covid-19 pandemic. Therefore, it is highly recommended to assess the impact of on- time performance during the post Covid-19 pandemic. The major limitation of this study was the concentrated quantitative engineering approach which focused directly to on-time performance attributes in urban area of Peninsular Malaysia only. However, current study would be used as a fundamental knowledge on quality of urban bus services in this country and it is highly suggested to combine both the quantitative and qualitative approach in future study.

CONCLUSION AND RECOMMENDATION

This study focused on evaluating the impact of on-time performance towards quality of urban bus services in state capitals of Peninsular Malaysia. This study utilised a method that stated by Transit Capacity and Quality of Service of Manual (TCPRM). A total of 2,706 departure were recorded in this study from 164 routes. The results showed that Johor Bahru achieved the highest departure with total of 648 departure. There were 4 state capitals that recorded more than 80% of overall on-time departure for each route, such as Kuala Terengganu (94.39%), Shah Alam (82.45%), Ipoh (80.74%) and Kangar (80.06%). The overall QOS for on-time performance in state capitals of Peninsular Malaysia was classified as QOS D. Based on the results, several rectifications on bus services should be made, especially in major state capitals like Johor Bahru and Penang as on- time

performance would impact the quality of services. Both cities had accommodated a high volume of passengers, specifically during weekdays for both peak hour and non-peak hour.

In terms of practical implications, this research found that on-time performance of bus services in state capitals of Peninsular Malaysia showed empirical evidence and must be monitored continuous by the authority. System on departure information also should be upgraded for passengers' trustworthiness towards bus services. It is an opportunity to explore related attributes other than on-time performance in state capitals of Peninsular Malaysia. The outcomes of this study can be a reference by the authority and bus operators to upgrade the quality of services (QOS) of urban bus services. Further study in this topic by other researchers is highly recommended.

ACKNOWLEDGEMENTS

The authors would like to thank Universiti Tenaga Nasional for facilitating this research and publication under Pocket Grant 2022 (J510050002/P202232). The authors sincerely thank the Institute of Energy Infrastructure (IEI), Innovation Research Management Centre (IRMC) and Yayasan Canselor of Universiti Tenaga Nasional for supporting this research as well.

REFERENCES

Al-Mansob, R. A., Katman, H.Y., Al-Sabaeei, A.M., Zamzami, M., Al-Fakih, A., Wei, W.K., Jassam, T.M., Alsharef, J., Surol, S.B., Yusof, N.H., & Koting, S. (2022). Effect of carbon nanofibres on physical, adhesion and rheological properties of liquid epoxidised natural rubber modified asphalt. *Material*, 15:3870.

Bakar, M.F.A., Norhisham, S., Katman, H.Y., Chow, M.F., Azlan, N. N. I. M., & Samsudin, N. S. S. (2022). Service quality of bus performance in Asia: A systematic literature review and conceptual framework. *Sustainability*, 14:7998.

Borhan, M.N., Ibrahim, A. N. H., Syamsunur, D., & Rahmat, R. A. (2019). Why public bus is a less attractive mode of transport: A case study of Putrajaya, Malaysia. *Periodica Polytechnica Transportation Engineering*, 47(1):82-90.

Chow, M. F., & Bakar, M. F. A. (2019). Environmental benefits of green roof to the sustainable urban development: A review. *Lecturer Notes in Civil Engineering,* 9:1525-1541.

Deb, S., & Ahmed, M. A. (2018). Determining the service quality of the city bus service based on users' perceptions and expectations. *Travel Behaviour Society*, 12(2018):1-10.

Farahani, Z. R., Fallah, S., Ruiz, R., Hosseini, S., & Asgari, N. (2019). OR models in urban services facility location: A critical review of applications and future developments. *European Journal of Operational Research,* 276:1-27.

Google Maps (2022). [https://www.google.com.my/maps].

Georgiou, A., Skoufas, A., & Basbas, S. (2021). Perceived pedestrian level of service in urban network: The case of a medium size Greek city. *Case Studies on Transport Policy,* 9:889-905.

Irwan, D., Basri, N. E. A., Watanabe, K., & Ahmed, A. N. (2022). Age and Household Solid Waste Arising in Suburban Malaysia: A Statistical Approach. *Sustainable Cities and Resilience*, 183:275-288.

Minhans, A., Chatterjee, A., & Popli, S. (2020). Public perceptions: an important determinant of transport users' travel behaviour. *Journal of Studies and Research in Human Geography*, 14(2): 1-20.

Ministry of Transport Malaysia. (2019). National Transport Policy 2019-2030. Retrieved from https://rb.gy/bo7avg.

Mohamad, A. M., Jaafar, M. Z., Ishar, N. I. M., Adnan, A., Aziz, N. A., Ramli, M. Z., Shabu, S. F., & Azman, J. J. (2017). Using Integrated Technologies for Lifelong Learning: Case study of Doctorate Support Group Webinars. *Advanced Science Letters*, 23(8):7809-7812.

Najib, W. Z. W. M., Noor, N. M., & Hamsa, A. A. K. (2020). Transit-Oriented Development (TOD) Planning Analysis by Integrated Information System (GIS) Approach. *Journal or Architecture, Planning & Construction Management,* 10(1):1-15.

Ngadiman, N. I., Roslan, N. F., Rahman, A. F., Ahmad, F., Daud, M. M. S., & Abdullah, R. (2020). Survey on Quality of Service (QoS) at Larkin Central Terminal (LCT), Johor Bahru. *International Journal of Advanced Trends in Computer Science and Engineering,* 9:229-232.

Norhisham, S., Bakar, M. F. A., Samad, A. Z. H., Syamsir, A., Zaini, A., Katman, H. Y., & Ramli, M. Z. (2019). Services Frequency and service hours evaluation for bus services in West Klang Vally. *IOP Conference Series: Materials Science and Engineering*, 636(2019):012008.

Norhisham, S., Bakar, M. F. A., Syamsir, N., Baharin, N. L., Shkuri, N. S. M., & Saad, N. M. (2021). Evaluating the quality of service for bus performance in Alor Setar. *IOP Conference Series: Earth and Environmental Science*, 708(2021):012038.

Pira, M. L., Attrad, M., & Ison, S. G. (2021). Urban transport planning and policy in a changing world: Bridging the gap between theory and practice. *Research in Transportation Business & Management,* 39:100634.

Ponrahono, Z. (2018). Transformation of public bus services in Kuantan, Malaysia, Journal of Architecture. *Planning & Construction Management*, 8(1);87-97.

Ponrahono, Z., Bachok, S., Osman, M. M., Ibrahim, M., & Abdullah, M. F. (2017). Public bus level of services performance in Peninsular Malaysia: correlation analyses on level of services (LOS) and passengers' satisfaction level. *Malaysia Planning Journal of the Malaysia Institute of Planners*, 15(1):229-234.

Qoura. (2017). How many states are there in Malaysia [https://www.quora.com/How-many-states-are-there-in-Malaysia?].

Rabe, N. S., Osman, M. M., Bachok, S., Rosli, N. F., & Abdullah, M. F. (2018). Perceptual study on conventional quality of life indicators. *Malaysia Planning Journal of the Malaysia Institute of Planners*, 16(1):303-313.

Ramli, M. Z., Hanipah, H., Lee, L. G., Loo, K. F., Wong, J. K., Hafiz, M., & Fuad, N. F. S. (2017). Level of services for pedestrian movement towards the performance of passenger information in public transport in Klang Valley. *AIP Conference Proceeding,* 1885(1): 020111.

Rohani, M. M., Wijeyesekera, D. C., & Karim, A. T. A. (2013). Bus operation, quality service and the role of bus provider and driver. *Procedia Engineering*, 53:167–178. Retrieved from https://doi.org/10.1016/j.proeng.2013.02.022.

Shukri, M. N. S., Ponrahono, Z., Sunoto, N. Y, & Ghazali, W. W. N. W. (2020). Evaluation of Level of Service (LOS) on Routes of Smart Bus in Kajang, Selangor. *Malaysia Planning Journal of the Malaysia Institute of Planners*, 18;241-250.

Saad, N. M. (2016). Knowledge seeking behaviour in healthcare environment amongst Malaysia citizen. *Information (Japan)*, 19(7B):3039-3044.

Sotaro, Y., Ladin, M. A., Ismail, A., & Rahmat, R. A. A. O. K. (2014). Public transport system in local city and rural area: Comparative between Malaysia and Japan. *Journal Teknologi (Science and Engineering)*, 69(6);69-72.

Transportation Research Board. (2013). Transit Capacity and Quality of Service Manual (TCQSM). Transit Cooperative Research Programme, The Federal Transit Administration TCRP Report 165 3rd edition, Washington, USA.

Received: 28th Feb 2023. Accepted: 31st March 2023

PLANNING MALAYSIA:
Journal of the Malaysian Institute of Planners
VOLUME 21 ISSUE 1 (2023), Page 470 – 483

MOTIVATION OF OUTDOOR RECREATION PARTICIPATION AMONG RURAL AND URBAN COMMUNITIES

Hasnizam Ab Dulhamid[1], Mohd Ismail Isa[2], Badaruddin Mohamed[3] & Muhamad Ferdhaus Sazali[4]

[1,2,3] *School of Housing, Building, and Planning,*
UNIVERSITI SAINS MALAYSIA
[4] *Faculty of Architecture, Planning, and Surveying,*
UNIVERSITI TEKNOLOGI MARA PERAK BRANCH, MALAYSIA

Abstract

Motivation in outdoor recreational participation has an important position as it helps to determine why individuals engage in recreational behaviour, the way individuals do, understand the benefits of participation and serves as basic knowledge in assisting the planning process and environmental management. Each involvement is influenced by motivating factors that can generate behaviour and achievement to experience the pleasure and self-satisfaction inherent in recreation. Thus, the aim of this study was to identify motivating factors influencing outdoor recreational involvement among rural and urban communities. A set of questionnaires was used to obtain quantitative data sets and were distributed to 384 respondents who were among individuals living in rural and urban areas. The analysis revealed four broad categories of motivation using the *Recreation Experience Scales (REP) 'scales',* namely social interaction, physical health and fitness, rest, and interaction with the environment. Respondents rated activities with family members, relaxing the mind, enjoying a peaceful surrounding area, and improving personal health and fitness as the main motivating factors influencing outdoor recreation involvement.

***Keyword**:* Rural and urban, Recreation motivation, Outdoor recreation

[1] PhD Candidates at Universiti Sains Malaysia. Email:hasni43@uitm.edu.my

INTRODUCTION

The provision of recreational resources is essential for ensuring individuals' social welfare, psychology, and physical health (Hutchinson & Kleiber, 2005), improving health and well-being, social fusion, relationships and opportunities for various physical activities (Obinna et al., 2009). Therefore, more individuals are now aware of and appreciate the available of green space (Razali & Shukor, 2022). This proves why outdoor recreational activities have become part of the culture and the primary necessity for daily life among people who live in or outside the city. Recreation managers need to be aware of these population patterns if they want to comprehend and meet the requirements and motivations of their consumers (Whiting et al., 2017). The involvement of rural communities could be more extensive as it is associated with the need for more access, infrastructure and resources to perform physical activities compared to urban areas. Looking from different perspectives, several past working hours have found evidence for an association between reduced stress rates and the length of time in the recreation area.

First, each individual who spends time in recreational parks for more extended periods can generally reduce the stress rate inside (Yang et al., 2012). Second, is that a long period at home make individuals more likely to be faced with unsettled and restless situations. This is due to the limitations of the individual's opportunities for recreation. Third, the decrease in physical activity involvement has increased the number of cases of infectious diseases and caused life expectancy to be shorter. Everything is commonly reported among rural communities compared to urban communities (Althoff et al., 2017). Thus, the factors of seriousness, intense desire and the influence of individual behaviour are the primary motivations for the individual's involvement in recreation. Meanwhile, there are still many who need clarification about the use of recreational areas in rural areas, including areas based on physical activity parks (Shores & West, 2010). At the same time, the use of urban recreational areas, such as provincial and state parks, is under monitoring, for rural recreational areas, such as community parks, have yet to be systematically evaluated. Although a recreation area has similar functions, the main differences in using parks and physical activity cannot be ignored. Thus, it is clear that more physical activity engagement between communities in rural environments and the recreation itself is needed (Shores & West, 2010).

LITERATURE REVIEW

'Recreation' is a phrase commonly used in the community. However, it provides a different perspective between recreation and outdoor activities (leisure) themselves. Although giving different meanings, these two concepts are closely related (Çay, 2016). Previous working hours have often answered questions regarding the meaning of recreation itself. The explanation makes outdoor

recreation more and more necessary for rural and urban communities. It is made more accessible due to the provision of activities and complete facilities. Recreation activities based on physical and mental challenges are the main attraction of consumers and need to be managed sustainably so as not to neglect the state of natural resources (Jaffry & Hasbullah, 2015). Outdoor recreation is expected in particular cultural contexts compared to others (Mercer, 1994). It is a broad, complex activity involving a rational and systematic process and considering all existing social and physical factors. Cordell (1999) also explained that outdoor recreation areas are complex because they include different activities and interests (changes from one activity to another). However, the general understanding of outdoor recreation applies or focuses on physical activity in natural areas and forests, but now, such perceptions have changed and expanded to urban areas (Henderson et al., 2005). The view reinforces this statement by Cordell (1999) that many outdoor recreational activities take place in different settings, each of which has its own set and characteristics.

The involvement of outdoor recreation is generally motivated by various factors, with the primary purpose of meeting the leisure time owned (Kondric et al., 2013). Studies on motivation have explored different aspects of motivation in the involvement of recreational activities (e.g. challenges, exploration, experiencing nature, rest, and social relationships (Graefe et al., 2000). It's also can be seen as an internal force that influences an individual to act in a way that helps them achieve a specific desired experience or outcome (Driver, 1977; Whiting et al., 2017). Driver and Tocher (1970) proposed an "experiential approach" linking settings and leisure activities to outcomes, suggesting that recreation should be understood as an experience in which activities are undertaken in an appropriate setting to achieve specific psychological and physical goals (Manfredo et al., 1996). The experiential approach to recreation research offered insight into how recreation participation could benefit individuals and how this information "could be used in a wide array of planning and management tasks such as clarifying supply and demand, developing management objectives, avoiding conflict, and identifying recreation substitutes" (Manfredo et al., 1996, p. 190).

The body of research identified four domains of desired experiences commonly sought by individuals participating in outdoor recreation. The preference domains, which accounted for specific user types, settings, and activities, were quantified using 'Recreation Experience Preference (REP) scales' (Driver & Brown, 1975). Driver (1977) found significant differences in motivations for different types of outdoor activities, each occurring within different settings. Since then, many studies have used REP scales and shown their reliability in measuring individual recreation preferences.

Rural and Urban Communities Engagement in the Context of Outdoor Recreation

The benefits of recreational activities' physiology, psychological, and social involvement have been well explained in each literature review (Wolch et al., 2014). In addition to physiological benefits, active involvement in outdoor recreation also contributes to positive psychological benefits, such as allowing a person to raise awareness of the environment and providing opportunities for sociological and spiritual value (Jenson, 1995). Furthermore, research has proven that maintaining high activity levels and active involvement benefits psychological and biological (biomedical) aspects (Longbottom et al., 2010). It has also long been recognised that a correlational relationship exists between increased physical activity and physiological health (Duvall, 2011) and maintaining the individual mental well-being (Cai, Tedong & Zainol, 2022). Involvement in outdoor recreation is closely related to reducing stress levels (Tyrväinen et al., 2014), away from urban noise disturbances, and creating an atmosphere of calm and peace. Despite this, the results of previous research explain that outdoor recreation benefits individuals when the involvement is more frequent and lasts for an extended period (Ezebilo et al., 2013). This means that involvement in outdoor recreation is a concept that provides individual physical (psychological) renewal and positive impact, such as gaining valuable new experiences for individuals directly involved with recreational activities and affects the level of health (Hayir-Kanat & Breuste, 2020). From the perspective of Beard & Ragheb (1983) and Gaffar et al. (2019), four main categories are the reasons why individuals like to do recreational activities, among them are: Intellectual factors, skills, mind force, learning and creativity; the factor of stimulation avoidance, relaxing, avoidance activities and not being in urgent situations; social factors related to close relationships and friendships; and factors of competence or mastery, association with achievements, capabilities, challenges, and competition. Indirectly, these categories describe how each community group has the opportunity to stimulate themselves through involvement in recreational activities. Thus, sports and recreation are factors towards the unification of society, especially when the involvement comes from cultural and ethnic diversity and is followed by a particular type of activity (synonyms: such as basketballs are very well known for the Chinese and traditional sports of sepak takraw for the Malays). Finally, Each outdoor recreational participant's motivation opens up opportunities for rural and urban communities to experience the environment and improve their well-being and better way of life planning (Yang et al., 2012), self-pleasure in the activities performed (Waldron & Dieser, 2010), to enjoy the satisfaction with life, enhance self-confidence, skills and self-control, and be filled with pleasures (Yang et al., 2012), rectification activities improve individual skills, learning new things, association with friends, success, and health aspects (Waldron & Dieser, 2010).

Motivation Theory

According to Maslow (1970), the concept behind the general motivation theory is to satisfy the fundamental requirements of the humanistic point of view. He has determined that there are five fundamental requirements for a human being, all of which are included in the hierarchy: physiological, safety, belonging, self-esteem, and self-actualisation. The physiological needs are categorised as the higher-level needs in the pyramid, while the basic needs are categorised as the lower-level needs. Therefore, before deciding whether or not to fulfil the following categories or the higher class of needs, all of the needs of the lower class should be satisfied. The definition of "outdoor recreation" has morphed over many years due to the presence of many philosophical resources. Nevertheless, one of the most common definitions and interpretations of outdoor recreation entails voluntarily participating in an activity during one's free time. The activity occurs outside and involves interacting with natural resources and the surrounding environment. Garst, et al., (2001) studied adolescents who participate in outdoor recreation activities and found that the individuals positively impacted their perception while participating in those activities. This conclusion is based on the findings of international research carried out by Garst, Schneider, and Baker (2001).

Bricker & Kerstetter (2002) researched the sense of place gained by white-water boaters. They discovered that a sense of place could generate feelings of meaning and belonging in individuals. This indicates that the outdoor recreationist who participates in various outdoor recreation activities will also receive a value for personal satisfaction. This value is also directly related to the natural surroundings in which the recreationist is directly involved while engaging in activities associated with nature. As a result, it has become abundantly clear that the respondent's participation in outdoor recreation is not solely to satisfy their need for leisure time but also to serve a reason or purpose. Consequently, research on the participation motive for the respondents in Malaysia should also be focused on, and this should be done even though research on recreation in Malaysia is still in its infancy in Malaysia. Recreational activities are said to have a connection with the quality of human life, as stated by Berger and Tobar (2007). By maintaining a healthy lifestyle, improving one's level of physical fitness, and fostering a sense of spiritual fulfilment, an individual can lessen the likelihood of failing in a physical function. This assertion is also supported by the findings of Landers & Arent (2007), who discovered that an upbeat mood will improve an individual's cognitive function and that participating in physical activities will reduce the amount of anxiety experienced by the participant. The will, drive, or emotion that prompts someone to act is known as motivation, and the elements of motivation and emotion are strongly intertwined (Ab Dulhamid, Isa, Mohamed & Sazali). As a result, the study will investigate the factors that motivate people to participate in recreational activities

in urban and rural settings. This study aims to determine the primary factors that encourage people living in rural and urban areas to participate in outdoor recreation during their free time. The purpose of this study was to answer the question of what factors motivate and attract the attention of people living in urban and rural communities to participate in outdoor recreation during their free time.

METHODOLOGY

Sampling Technique and Strategy

Using Raosoft, Taro Yamane and Calculator.net online sample size calculator, the focus group from rural and urban areas was determined. Following the appropriate justification, which is a 95% of confidence level and 5% margin error, the recommended size for the study was 384 (based on the population size of 800 700 (the Ipoh population in 2020). For this study, each respondent was involved in outdoor recreational users residing in Ipoh and the surrounding areas. The selection of respondents from these two areas aims to identify motivational factors that encourage the involvement of outdoor recreation during leisure.

Data Collection

The study used a quantitative approach as the primary attribute to get the correct answers to motivational factors for outdoor recreational participation. The quantitative approach could verify and process information in detail and provide insights outdoors to understand better the phenomenon being studied. In addition, the approach to this method can provide some explanation that may help verify the accuracy and validity of the data that has to do with specific aspects under study. For Patton (2002), this method was also chosen because it allowed researchers to ask questions, understand, and investigate more deeply to discover the reasons for participation motivation and understanding of recreational experiences. The study participants were recreation users from rural and urban areas aged 18 and above. To select the potential respondents, 'Non-Probability Sampling (Purposive Sampling and Snowball Sampling)' was applied to obtain the number of respondents needed in the study. In carrying out this study, the process of collecting study data is to use a form of questionnaire or 'self-administered questionnaire'. Each question in this questionnaire is open and closed, using bilingual Malay and English. These two languages provide understanding and convenience to the respondents to complete the questionnaire, which is done online (Google Form). This questionnaire contains 25 questions and takes 10-15 minutes to complete.

Every recreational user must complete a questionnaire using an online study (Google Form). Analyses in this paper focused on a subset of data collected. Specifically, survey items focused on recreation motivations. Motivations were assessed with an abbreviated 8-item scale based on REP scales (e.g., Manfredo

et al., 1996), and state park managers observed and reported the anticipated range of visitor motivations. In measuring the motivational factors of outdoor recreational engagement, a total of 17 questions in the form of a Likert scale used scale; 1- unmotivated, 2- not very motivated, 3- slightly motivated, 4- motivated, and lastly, 5- very motivating was presented to the respondent. The questions provided are made up of five primary motivational constructs, namely, i) social interaction (togetherness) (5 items), ii) physical health and fitness (4 items), iii) rest (4 items), and iv) interaction with the environment (2 items).

RESULTS

The results showed that 199 respondents (51.8%) represented individuals in rural areas, and the remaining 185 (48.2%) were from urban areas. Of the total, 164 people (42.7%) were male, and 220 (57.3%) were female. Following the statistics, the highest age breakdown of respondents involved in the study was between 18-30 years, and 193 people (50.3%) and the lowest was aged 61 years and above, with a total of 4 people (1%) for both samples of the study area as a whole. While for the ethnicity or races involved in the study, the majority of the participants were Malays with 344 people (89.6%) and followed by Chinese 18 people (4.7%), Indians 19 people (4.9%), and others (Bumiputera) 3 people (0.8%). On average, all respondents were seen as having a high level of education, with 158 people (41.1%) being Diploma graduates and 159 (39.1%) Degrees and Post-Graduates. The amount of respondent involvement obtained from both sample groups of this study is almost balanced, providing a significant outcome.

Motivational Factors for Outdoor Recreation Involvement Among Rural and Urban Communities

Overall, the focus of the study was on assessing the four motivational domains of outdoor recreational engagement based on (REP) scales. The Relative Important Index (RII) score value has been used in context to measure the motivational factors that are a priority for the community towards outdoor recreational engagement based on rankings. In addition, the results were the result of an individual assessment (respondent) on the questionnaire of the distributed study.

Table 1: Ranking and RII Score Value for Motivational Factors of Outdoor Recreation Participants Among Urban and Rural Communities.

Rank/ Area	**Rural Area**			**Urban Area**		
	Item Scale		**RII**	**Item Scale**		**RII**
1	***p.***	***Enjoy the peaceful environment***	***0.861***	***m.***	***To relax the mind***	***0.876***
2	m.	To relax the mind	0.86	d.	Outdoor activities with the family	0.872

3	d.	Outdoor activities with the family	0.857	f.	Enjoying natural environment	0.87
4	o.	Enjoying natural environment	0.855	g.	Improve personal health/fitness	0.867
5	f.	Improve personal health/fitness	0.854	o.	Staying physically active	0.862
6	g.	Staying physically active	0.852	p.	Enjoy the peaceful environment	0.861
7	k.	To relax	0.851	k.	To relax	0.858
8	j.	Escape from routine activities of life	0.842	i.	Engage with passive activities (light)	0.852
8	i.	Engage with passive activities (light)	0.842	n.	Exploring the environment	0.847
8	n.	Exploring the environment	0.842	e.	Increase level of self-confidence	0.835
11	e.	Increase level of self-confidence	0.829	c.	To be with people of similar interests	0.834
12	c.	To be with people of similar interests	0.817	h.	Engage with active activities (heavy)	0.831
13	h.	Engage with active activities (heavy)	0.8	j.	Escape from routine activities of life	0.825
14	a.	Spending time with friends	0.782	l.	To be alone	0.793
15	l.	To be alone	0.782	a.	Spending time with friends	0.792
16	***b.***	***Socialise with club/association members***	***0.704***	***b.***	***Socialise with club/association members***	***0.738***

Table 1 shows that the RII score value for all motivational factors of outdoor recreational engagement is at the highest level, as the value of each index of the RII score obtained for each item is more than .50. The acquisition of the RII score proves that there is a difference in motivational factors between the rural community and the city itself. Looking at rural areas, the motivating factor that earned the majority and the highest RII value was the 'tranquillity', i.e. item 'p' 'to enjoy the peaceful environment' with an RII value of 0.861 for rural. Besides that, the most important motivational factor for the urban area was the 'rest' i.e item 'm' 'to relax the mind'. Based on this score, it is believed that individuals and the society are constantly struggling with various stress factors due to the higher burden of daily routine activities, such as getting stuck in traffic

jams and threats of pollution. Therefore, a visit to the recreational area is an opportunity for individuals to relax and connect with nature in increase their energy and improving their fitness. Thus, the involvement of outdoor recreation plays a vital role in providing a free mind, reducing stress, generating enthusiasm and motivation, as well as positive emotions. Followed next as the second highest factor of choice is the 'social interaction' domain or item 'd', i.e. 'doing outdoor activities with family', with an RII value of 0.872. These finding indirectly reflects that outdoor recreation engagement is also one of the best platforms to create opportunities for togetherness and forming quality time for family members. Furthermore, these results show that the involvement of outdoor recreational activities also serves as a platform for better relationships between family members.

A peaceful surrounding area usually refers to a natural environment that is a source of recreation (e.g. forests, lakes and rivers), free from any form of pollution; this element is a space found only in rural areas. Therefore, the availability of natural recreational resources and high opportunities for involvement are among the reasons that are likely to make item 'o' achieve a high-value score among rural communities. What is interesting about the results of this study is that it is also in line with other previous studies which highlights the factor of wanting to enjoy natural environments as the main purpose of recreational society (Walker et al., 2010; Whiting et al., 2017). This motivating factor is slightly different for the community in urban areas where they describe the 'f' item as to 'increase the level of health/self-fitness as a motivation that encourages outdoor recreational engagement. The selection of health/fitness level enables each individual to lead a healthy life, mind, and constant exercise while maintaining a physically active self. Finally, what draws attention from this analysis is that the RII score value of item 'b,' i.e. 'socialising with club/association members,' is among other motivating factors that are also considered necessary. However, the score value is low compared to other factors (RII score value of .704 rural and .738 urban). Therefore, it is considered as a less important factor in recreational involvement for both study samples. To support the findings of this analysis, Zeidenitz et al., (2007) has presented the view that the search for pleasure from recreational involvement has become as unimportant among the community as is often assumed/thought when doing recreational activities. This means that each community's recreational involvement is more directed towards psychological factors (self-expression and appreciation of natural resources), physical aspects (such as health and fitness) and physiology (feelings and emotions) as a medium in the formation of better- and better-quality life patterns.

Therefore, the overall results proved that there was a difference between the motivating factors for the two study samples. Urban communities have made the 'tranquillity' factor (the item of enjoying a peaceful surrounding area) a

motivation for outdoor recreational engagement compared to their urban counterparts, which makes the 'rest' factor (an item to relax the mind) as the primary motivation. From a different point of view, reverting to the goal of recreational engagement, although the motivational factors of choice between the two areas are slightly different, they are still closely related to natural environmental factors. This is because the availability of a natural environment provides the space and opportunity for the community to enjoy and experience a peaceful environment and thus, become the best space and platform to relax and restore the mind and body in order to escape from the burdens of daily routine activities.

DISCUSSION

The reason why people in both urban and rural areas participate actively in outdoor activities is that they take pleasure in sharing those activities with their families. In most cases, spending time with family is the most critical factor in determining a person's level of interest in and enthusiasm for participating in outdoor activities. The urban respondents are entirely swamped with their respective workloads. Because they take on more specialised and high-profile responsibilities, they are expected to demonstrate a more remarkable dedication to their work. Due to their high commitment to the job programme, while they are on the clock, they only have a little spare time to participate in activities that provide them with a recreational experience. As a result, they gravitated toward the recreational pursuits available to them within the recreation centre areas since those areas offered more accessible access to the respective recreational regions. As a result, urban parks require serious consideration on the part of their planners and managers to maintain the quality for patrons (Rosli, et al., 2020).

This indicates that the programme in the remote and undeveloped forest areas is not their top priority for outdoor recreational experiences. Instead, they prioritise the modern or developed recreational areas available to them. They were also aware that leading a healthy lifestyle was necessary to keep up with the demands of their busy lives; consequently, they participated in activities that took place outside to maintain the healthy lifestyle practices that were already a part of their lives. The respondents strongly desire to participate in activities outside, whether in an urban or rural setting. According to Shobri et al., (2021), the preferred passive activities of the adult who is reporting stress are enjoying peace, resting and relaxing, appreciating the fresh air, letting go of stress, appreciating nature, and taking pleasure in the sun and the sound of birds. They enjoy being outside and doing physically demanding things, making them more willing to participate in challenging activities. In addition, they want to increase their self-confidence as a component of their overall personal growth and spiritual fortitude. They also believe that engaging in activities that take place outside can help them maintain a healthy body. Therefore, their outside activities serve as a

form of physical training. Indirectly it will be able to diversify the functions of the area, as well as offer another added advantage to the public (Isa, 2020). In general, urban and rural respondents are motivated to participate in activities outside as part of recreation. In this particular scenario, the respondents' motivation to participate in outdoor recreation activities is significantly higher. Despite this, they still need to participate in outdoor recreation to keep up with healthy lifestyle practices because it is a requirement for living.

The respondents are highly motivated to participate in outdoor recreation. They are interested in participating in challenging outdoor recreation activities to gain recreational experiences, improve their self-confidence, and get physically fit. In the meantime, they take pleasure in themselves while they are engaged in natural settings. In light of this, extreme forms of outdoor recreation should be made available in order to satisfy their desired forms of outdoor recreation. As a result, the concept of leisure recreational activities and contemporary forms of outdoor recreation ought to approach. In addition, the outdoor education concept should be implemented during the respondent's participation in outdoor recreation activities to guarantee that the activities are beneficial and that the respondents can experience the highest possible level of satisfaction while participating in the outdoor recreation activities.

CONCLUSION

The purpose of this research is to determine the reasons why people from both urban and rural communities participate in outdoor recreation activities. It is essential to know, and the purpose of this study is to learn, that the participation motive for both urban and rural communities in Malaysia still needs to be improved in the field of research. Nevertheless, providing sufficient facilities is necessary to ensure that the recreational facilities live up to the anticipations of the visitors (Anuar & Muhamadan, 2018). Even previous research in outdoor recreation has been looked into, but this time it will only focus on the other group of people. In addition, there needs to be more research conducted in Malaysia on recreation in urban and rural communities. This is due to several limitations, including demographics and the social economy.

The rural community needs access to fully equipped facilities for various sports and recreational pursuits. Their location is in the heart of the recreation centre district; however, they need more space to provide all sporting and recreational amenities. However, motivation is significant in outdoor recreation studies because it helps to determine the reason people participate in leisure behaviour in the manner they do, and it assists in understanding the consequences of recreation participation. Studies of motivation for outdoor recreation can provide underlying knowledge in planning processes and environmental management, and may help practitioners and managers when

planning programmes to minimise conflict between users or to minimise the impact of outdoor recreation activities on the natural environment.

ACKNOWLEDGEMENTS

The authors would like to thank the Universiti Sains Malaysia under Short Term Grant Scheme with Project Code: 304/PPBGN/6315315 and School of Housing, Building and Planning, Universiti Sains Malaysia for financially supporting this research.

REFERENCES

Ab Dulhamid, H., Isa, M. I., Mohamed, B., & Sazali, M. F. (2022). Motivational Factors Influencing the International Tourists' Travel to Tourism Attractions in Penang. Planning Malaysia Journal: Vol. 20 Issues 1, 22.

Althoff, T., Sosič, R., Hicks, J. L., King, A. C., Delp, S. L., & Leskovec, J. (2017). Large-scale physical activity data reveal worldwide activity inequality. Nature.

Anuar, A. N. A., & Muhamadan, N. H. (2018). The Demand of Recreational Facilities in Neighbourhood Parks: Visitors'perspectives. Planning Malaysia, 16.

Beard, J. G., & Ragheb, M. G. (1983). Measuring Leisure Motivation. Journal of Leisure Research, 15(3), 219–228.

Berger, B. G. & Tobar, D. A. (2007). Physical activity and quality of life:Key considerations. In G. Tenenbaum & R. C. Eklund (Eds.), Handbook of sport psychology (3rd ed., pp. 598-620). New York.

Bricker, K. S., & Kerstetter, D. L. (2002). An interpretation of special place meanings white-water recreationists attaches to the South Fork of the American River. Tourism Geographies, 4(4), 396-425.

Cai, X., Tedong, P. A., & Zainol, R. (2022). Inadequate Exposure to Greenspace and Its Effects on Mental Health During the Pandemic. *Planning Malaysia*, *20*(24).

Cordell, H. K., Betz, C., Bowker, J. M., English, D. B., Mou, S. H., Bergstrom, J. C., & Loomis, J. (1999). Outdoor recreation in American life: A national assessment of demand and supply trends. Champaign, IL: Sagamore Publishing. xii, 449 p.

Driver, B. L., & Tocher, S. R. (1970). Toward a behavioral interpretation of recreational engagements. *Elements of outdoor recreation planning*, 9-31.

Driver, B. L., & Brown, P. J. (1975). Social psychological definition of recreation demand, with implications for recreation resource planning. *Assessing demand for outdoor recreation*.

Driver, B. L. (1977). Item pool for recreation experience preferences. *Fort Collins, co: Rocky Mountain Forest and Range Experiment Station*.

Duvall, J. (2011). Enhancing the benefits of outdoor walking with cognitive engagement strategies. Journal of environmental psychology, 31(1), 27-35.

Ezebilo, E. E., Boman, M., Mattsson, L., Lindhagen, A., & Mbongo, W. (2013). Preferences and willingness to pay for close to home nature for outdoor recreation in Sweden. Journal of Environmental Planning and Management, 58(2), 283–296.

Gaffar, V., Yuniawati, Y., & Ridwanudin, O. (2019). A Study of Outdoor Recreation Motivation and Activity Preferences. Journal of Southwest Jiaotong University.

Garst, B., Scheider, I., & Baker, D. (2001). Outdoor adventure program participation impacts on adolescent self-perception. Journal of Experiential Education, 24(1), 41-49.

Graefe, A.R., Thapa, B., Confer, J.J., & Absher, J.D. (2000). Relationships between trip motivations and selected variables among Allegheny National Forest visitors. In USDA Forest Service Proceedings RMRS-P-15 (Vol. 4, pp. 107–113).

Hayir-Kanat, M., & Breuste, J. (2020). Outdoor recreation participation in Istanbul, Turkey: An investigation of frequency, length, travel time and activities. Sustainability (Switzerland).

Henderson, K. A., Presley, J., & Bialeschki, M. D. (2005). Theory in Recreation and Leisure Research: Reflections from the Editors. Leisure Sciences, 26(4), 411–425.

Hutchinson, S. L., & Kleiber, D. A. (2005). Gifts of the ordinary: Casual leisures contributions to health and Well-being. World Leisure Journal, 47(3), 2–16.

Jaffry, Z., & Hasbullah, N. A. (2015). Pelancongan Rekreasi Berasaskan Cabaran Dan Biodiversiti: Isu Dan Konflik. Pelancongan Rekreasi Berasaskan Cabaran Dan Biodiversiti: Isu Dan Konflik.

Jenson, C. R. (1995). Outdoor recreation in America (5th Edition). Champaign, IL: Human Kinetics.

Kondric, M., Sindik, J., Furjan-Mandik, G., & Schiefler, B. (2013). Participation Motivation and Student's Physical Activity Among Sport Students in Three Countries. Journal of Sports Science and Medicine (2013) 12, 10-18.

Landers, D.M. & Arent, S.M. (2007). Physical activity and mental health. In G. Tenenbaum & R.C. Eklund (Eds.), Handbook of sport psychology (3rd ed., pp. 469-491).

Longbottom, J. L., Grove, J. R., & Dimmock, J. A. (2010). An examination of perfectionism traits and physical activity motivation. Psychology of Sport and Exercise, 11(6), 574-581.

Manfredo, M., J., Driver, B., L. & Tarrant, M., A. (1996). Measuring leisure motivation: A meta-analysis of the Recreation Experience Preference Scale. Journal of Leisure Research 28, 188213.

Maslow, A (1970). Motivation and Personality (2nd Edition). New York: Harper & Row.

Mercer, D. (1973). The Concept of Recreational Need. Journal of Leisure Research, 5(1), 37–50.

Obinna, V., Owei, O., Ayodele, A., & Okwakpam, I. (2009). Patterns and determinants of recreational behaviour in Port Harcourt, Rivers State, Nigeria. Theoretical and Empirical Researches in Urban Management, 3(12), 150–165.

Patton, M. Q. (2002). Qualitative research & evaluation methods. Sage.

Razali, M., I., A., K., & Shukor, A., S., F. (2022). Comparison of Malaysian Urban Green Spaces Use Prior and During the Covid-19 Pandemic and Preferences for Post-Pandemic Design Improvements. *Planning Malaysia*, *20*(24).

Rosli, S., Ling, O. H. L., Adzmi, N. A. M., & Marzukhi, M. A. (2020). Relationship between quality of urban parks and physical activity: A case study in Changkat public park, Batu Gajah, Perak. Planning Malaysia, 18.

Shores, K. A., & West, S. T. (2010). Rural and urban park visits and park-based physical activity. Preventive Medicine, 50, S13–S17.

Shobri, N. I. M., Rahman, N. A., & Saman, N. H. M. (2021). Stressed Adult's Preferences for Outdoor Recreational Activity in Urban Parks. Planning Malaysia, 19.

Tyrväinen, L., Ojala, A., Korpela, K., Lanki, T., Tsunetsugu, Y., & Kagawa, T. (2014). The influence of urban green environments on stress relief measures: A field experiment. Journal of Environmental Psychology.

Yang, J. J., Kim, G. T., & Lee, T. J. (2012). Parks as leisure spaces for older adults' daily wellness: A Korean case study. Annals of Leisure Research, 15(3), 277–295.

Waldron, J. J., & Dieser, R.B. (2010). Perspectives of Fitness and Health in College men and women. Journal of College Student Development, 51, 65-78.

Walker, G. J., Deng, J., & Dieser, R. B. (2010). Ethnicity, acculturation, self-construal, and motivations for outdoor recreation. *Leisure Sciences*.

Whiting, J. W., Larson, L. R., Green, G. T., & Kralowec, C. (2017). Outdoor recreation motivation and site preferences across diverse racial/ethnic groups: A case study of Georgia state parks. *Journal of Outdoor Recreation and Tourism*, *18*, 10-21.

Wolch, J. R., Byrne, J., & Newell, J. P. (2014). Urban green space, public health, and environmental justice: The challenge of making cities 'just green enough. Landscape and urban planning, 125, 234-244.

Zeidenitz, C., Mosler, H. J., & Hunziker, M. (2007). Outdoor recreation: From analysing motivations to furthering ecologically responsible behaviour. Forest Snow and Landscape Research.

Received: 28th Feb 2023. Accepted: 31st March 2023

PLANNING MALAYSIA:
Journal of the Malaysian Institute of Planners
VOLUME 21 ISSUE 1 (2023), Page 484 – 494

HERITAGE TOURISM: A DISABLED PERSON'S RIGHTS TO ENGAGE IN SOCIAL ACTIVITY

Nurul Fadzila Zahari[1], Hikmah Kamarudin[2], Zuraihana Ahmad Zawawi[3], Robiah Abdul Rashid[4], Mariaty Mohd Bahari[5]

[1,3,5]*College of Built Environment,*
UNIVERSITI TEKNOLOGI MARA,
SERI ISKANDAR CAMPUS, PERAK, MALAYSIA
[2,4]*College of Built Environment,*
UNIVERSITI TEKNOLOGI MARA,
SHAH ALAM, SELANGOR, MALAYSIA

Abstract

Heritage tourism is a growing sector in the travel industry. However, disabled persons often face barriers in accessing heritage sites due to physical, informational, and attitudinal barriers. This paper examines the right of persons with disabilities to engage in social activity through heritage tourism. Drawing on the principles of the United Nations Convention on the Rights of Persons with Disabilities, the paper argues that heritage tourism must be made accessible to all, regardless of their disabilities. The paper highlights the importance of disability-inclusive design and the need for heritage site managers to adopt a disability-inclusive approach. Additionally, this paper highlights the benefits of accessible heritage tourism for disabled persons, such as increased social participation, cultural enrichment, and improved well-being. This paper opted to use the go-along interview method to gain findings for disabled person's lived experiences pertaining to their rights to engage in social activity. Physical barriers and difficulties in negotiating those barriers in accessing heritage buildings and sites are among the significant hurdles for disabled persons to participate in social activities offered in heritage tourism.

***Keyword**:* heritage tourism, rights, disabled person, social engagement

[2] Senior Lecturer at Universiti Teknologi MARA, Shah Alam. Email: hikmah@uitm.edu.my

INTRODUCTION

Heritage tourism is a rapidly expanding contributor to the global tourist business that gives tourists the chance to discover a destination's cultural and historical landmarks (Strategic Planning Division Tourism Malaysia, 2019). However, physical, informational, and attitudinal barriers frequently make accessing these sites difficult for people with disabilities. In 2006, Malaysia ratified the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD), which affirms that individuals with disabilities have a right to equitable participation in social and cultural activities, including tourism.

Heritage buildings have recently gained popularity as tourism destinations for both domestic and foreign visitors. They have a keen interest in the historical narrative and distinctiveness of the architectural style that our forebears left behind. Tourism is becoming a social construct that influences people's daily lives. The COVID-19 pandemic has ceased the tourism industry globally, including in Malaysia. According to statistics, Malaysia welcomed 134,728 visitors in 2021 (post-COVID-19 pandemic), slowly bringing in RM238.73 million (MYR) (www.tourism.gov.my/statistics). Thus, to gain more interest from local and global tourists, it is essential to offer high-quality services and facilities in order to welcome and draw more tourists to Malaysia.

Accessibility is a crucial component of facilities and services offered to visitors. How easy people can access a point of interest makes it easier for them to visit and enjoy the place. When discussing accessibility, it is frequently forgotten that some visitors may have disabilities. Disabled persons have the same wants and aspirations for travel as able-bodied (Gondos & Narai, 2019). However, their ability to participate in various social activities, including tourism, has been hampered by accessibility difficulties (Zahari et al., 2020). Compared to other disabled persons, in terms of accessibility, wheelchair users experience the most hurdles in their daily lives (Page & Thorsteinsson, 2018; Zahari et al., 2019). To participate in the social events around them, they travelled around on their wheels. However, they feel discriminated against because they are unable to access numerous locations, especially tourist hotspots.

HERITAGE TOURISM

The tourism industry is becoming more competitive and globally diversified. Researchers started investigating the demographics, motivations, and experiences of individuals visiting historical sites and museums in the 1980s (Herbert et al., 1989). According to some observers, different nationalities seek out different types of heritage experiences, with Europeans generally being more knowledgeable about World Heritage Sites than other travellers and Chinese generally wanting cultural encounters at the increasing number of "ethnic theme parks" in China (Di Giovine, 2009; Li, 2011). In order to incorporate greater experiential depth and effects of visiting, modern scholars have pushed beyond

these more normative and descriptive interpretations of heritage demand. However, the motivations and experiences of heritage consumers as a niche tourist market have not yet been investigated. The degree of interest among tourists and how it translates into their reasons for going are valuable indicators of the general demand for cultural assets.

According to Garcia et al. (2012), essential tourist development challenges include quality, sustainability, image, innovation, and accessibility. Sustainability encompasses economic, social, cultural, and environmental facets, with a social component emphasising eradicating poverty and advancing human rights, equality of opportunity, political freedom, and self-determination (Telfer & Sharpley, 2008). The tourism industry has been paying more attention to the needs and requests of tourists with disabilities, acknowledging that these people have the same needs and desires for travel as others, which has given rise to the concept of accessible tourism from the perspective of promoting human rights and equal opportunity (Yau, McKercher, & Packer, 2004).

JUSTICE AND DISABLED PERSON'S RIGHTS TO ENGAGE IN SOCIAL ACTIVITIES

Accessibility has emerged as a pressing issue in modern societies, where everyone has the right to a life free of physical or mental impediments (Yakob et al., 2022). According to Rahman et al. (2018), disabled person's home must be in close proximity to facilities that allow them to move around with minimal supervision. However, disabled persons still desire to visit other places for a variety of reasons. Freedom of movement is one of the basic lists of social primary goods (Rawls, 1999). According to Sen (1993), the capability approach views that humans have varying needs based on various circumstances and environments, which affect their capacity to function. To achieve a similar result in life, disabled persons might require a different number of resources. The capability approach seeks to alter the conceptions of human well-being and the evaluations of deprivation, equality, and claims of justice and injustice (Day, 2018). The "good life" is a life one chooses for themselves, not what is forced upon them (Sen, 1993), as disabled persons usually receive. Thus, it is argued that an accessible environment may provide disabled persons with significantly more opportunities for empowerment and inclusion. Without any restrictions on physical access, disabled persons can fully enjoy and participate in society as they wish, with complete control over where they can be as opposed to where they are only permitted to be.

Meanwhile, the idea of procedural justice emphasises the participation of citizens in decision-making that has an impact on people's lives (Faburel, 2012). Individuals are more likely to view decisions as just when they are given the opportunity to participate in the decision-making process (Cohen, 1985). By providing disabled persons with the opportunity to participate in the process of

promoting heritage tourism, procedural justice can increase their chances of being heard as citizens (and receiving recognition). Hence, to effectively address issues on heritage tourism, disabled person's feedback on issues related to accessibility seems vital.

The UNCRPD is a human rights instrument (Lid, 2022). Disabled persons have the same rights as others to engage in social and cultural activities. The rights of disabled persons to participate in cultural life, recreation, leisure, and sport is expressly recognised in Article 30 of the UNCRPD (United Nations, 2006). Article 30 covers access to cultural heritage buildings and sites, as well as participation in other heritage tourism activities. However, visiting historic buildings and sites might be difficult for those with impairments. These barriers can be both physical (such as staircases, limited entrances, and uneven surfaces) and informational (such as a dearth of readily available site information). Furthermore, stigmatising and unfavourable opinions regarding impairments may be a barrier for disabled persons (Reeve, 2014). This paper holds that when promoting heritage tourism, disabled persons should be recognised by having their participation in decision-making. Moreover, disabled persons are experts in barriers since they confront them daily (Kamarudin et al., 2022).

METHODOLOGY

This paper opted to use a qualitative method to achieve its aim. The go-along interview was explicitly used to evaluate the social activity engagement of disabled persons. Unlike traditional interview methods, this approach allows the researcher to evaluate not just the participants' spoken responses but also their expressions, bodies, and voice tones as they transmit their experiences when visiting a facility, such as their joy or irritation (Zahari et al., 2019, 2018). Self-reports revealed people's perceptions of many parts of the built environment, their features and the sentiments they elicited. The data were arranged around walkers' self-reported background emotions (well-being, stress, security, and insecurity) and principal emotions (happiness, sadness, fear, wrath, and disgust). They revealed which built environment components and attributes influenced walkers' "walking moods" positively and adversely (Herrmann-Lunecke et al., 2021). The go-along interviews, also known as walking interviews, have recently been shown to be beneficial in studies where, for example, "understanding primarily depends on knowing how participants perceive their environment" (Garcia et al., 2012)

Power dynamics between interviewer and interviewee can considerably impact the types of data obtained in every interview context. When interviewing socially excluded people, for example, the fact that researchers are often more educated and wealthier creates an unequal relationship that risks making respondents hesitant to share their ideas for fear of looking silly. Movement adds another dimension to these tangled concerns of power. Walking interviews are an

excellent method for investigating topics concerning people's relationships with space (Burns et al., 2020). One of the primary goals of go-along or walking interviews is to analyse a participant's relationship with the environment, yet, spatial location is frequently dealt with coarsely. The go-along interview approach is a variety of qualitative interviewing techniques that can be used alone or in conjunction with other methods to explore and improve understanding of people's experiences in their local home context (Carpiano, 2009; Samatar et al., 2021). After a sit-down interview, the participant accompanies the researcher on a walk around sites that they initially described in the sit-down interview, providing further details while (re)experiencing the place (Polkinghorne & Carlson, 2017).

Four impaired volunteers volunteered to participate in this study. These four participants are physically challenged and use a wheelchair to get from their homes to the location where the go-along interviews were held (at three distinct heritage tourism sites) to share their perspectives on their accessibility. Participants must be at least 18 years old in order for the material to be presented calmly and maturely. The individual must enjoy travelling and exploring other places in order to provide rich information on the accessibility of a facility that they have entered.

FINDINGS AND DISCUSSION

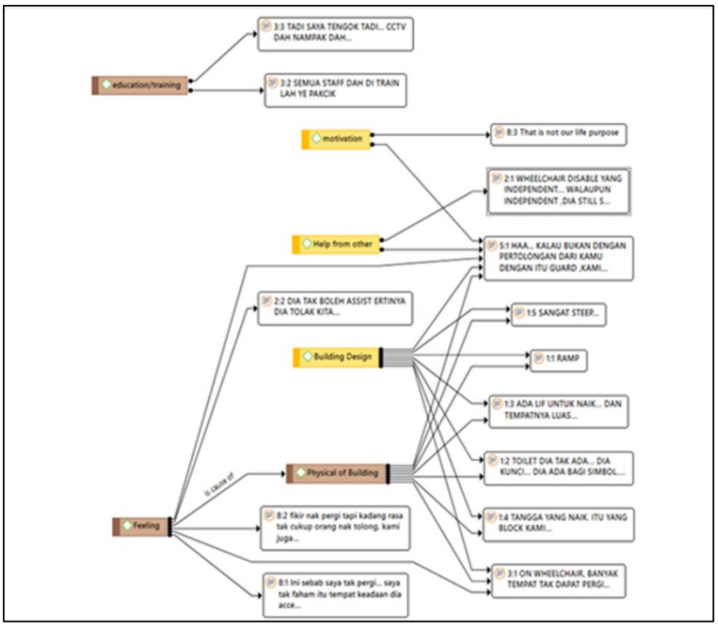


Figure 1: Transcribed respondents' statements diagram

Based on Figure 1, transcribed statements were used based on four participants. These statements were selected based on statements considered different from other general statements made by the participants. The following Table 1 shows the translation of these transcribed statements:

Table 1: Translation of selected transcribed respondent statement

Respondent	Statement Number	Original Statements (Malay)	Translated (English)	Researcher's Evaluation
1	1	Ramp (Tanjakan)	Ramp	The way for wheelchair users used to access buildings or higher grounds.
	2	Toilet dia tak ada. Dia kunci, dia ada bagi simbol…	The toilet is not available. They locked it, but there is a symbol…	Referring to buildings that do not allow wheelchair users to use toilets even though the facility is available.
	3	Ada lift untuk naik… dan tempatnya luas…	Lift available for ascend... and the place is spacious…	Referring to the lift facility available in the building available for wheelchair users.
	4	Tangga yang naik… itu yang block kami	Upward staircases… it blocked us…	There are stairs inside the building that is not accessible for wheelchair users.
	5	Sangat steep…	Too steep	Referring to the ramps being too steep for ascending.
2	1	Wheelchair disabled yang independent… walaupun independent, dia still…	Wheelchair users is independent… Even though independent, they still…	Referring to the fact that wheelchair users still need to be assisted even though they are independent.
	2	Dia tak boleh assist maknanya dia tolak kita…	They cannot assist, which means they rejected us…	Referring that there is no service to entertain or accept wheelchair users.
3	1	On wheelchair, banyak tempat tak dapat pergi…	On wheelchair, many places can't be reached	Referring to the fact that wheelchair users are unable to access many places.

	2	Semua staff dah di train lah ye pakcik…	All staff had been trained, uncle…	Referring to the satisfaction of services for staff at the building.
	3	Tadi saya tengok tadi… CCTV dah nampak dah…	I watched just now... I saw in CCTV.	Referring to the facility that was alert with arrivals of wheelchair users.
4	1	Maa… kalau bukan dengan pertolongan dari kamu dengan itu guard, kami…	Maaa…. if it's not with the help from you and the guard, we are….	Referring to gratitude towards help from the staff.
	2	Ini sebab saya tak pergi … saya tak faham itu tempat keadaan dia accept...	This is the reason I don't go… I don't understand the place's situation or acceptance…	Referring to the mixed feeling about visiting the building.
	3	Rasa nak pergi tapi kadang rasa tak cukup orang nak tolong kami juga…	Felt like visiting but were afraid that there were not enough people to help us…	Referring to the fact that not many staff are trained to assist wheelchair users.
	4	That is not our life purpose…	That is not our purpose…	Referring to the motivation that wheelchair users have when it comes to accessibility issues.

The majority of these establishments had granted admission at their own risk without providing complete help. Disabled persons must heal for themselves, or their company (friends or relatives) will be left to care for them alone. However, one of these heritage buildings provided full assistance to wheelchair users from the moment they arrived at the main gate. This heritage tourism site is extremely helpful and follows the group during their visits to ensure that they have a pleasant experience. As depicted in Figure 2 and Figure 3 as the example below, most heritage tourism sites have limited access for disabled persons. Thus, indirectly, social activity engagement is limited.

Figure 2: Difficulties to enter a heritage building
(Source: Zahari, 2022)

Figure 3: Unsuitable material used for the route to the accessible toilet
(Source: Zahari, 2022)

Heritage tourism is a cultural and social activity that is supposed to offer people a chance to interact with their past, cultural ties, and social context. It provides opportunities for social interaction, education about one's cultural heritage, and the growth of a feeling of self and belonging, including for disabled persons. Due to a number of physical and social barriers, however, many areas of heritage buildings and sites have not been accessible to disabled persons. Inadequate infrastructure, a lack of accessible features, and unfavourable attitudes from society are just a few of the difficulties that disabled persons have while trying to visit heritage tourist destinations. However, the study noted some successful attempts to increase accessibility in heritage tourism, including using adaptive technology, accessible transportation, and inclusive tour guides.

CONCLUSION

It is significant to recognise heritage tourism as a legitimate form of social interaction for disabled persons. Heritage sites must be made accessible to all visitors to enjoy any activities offered to the fullest. When promoting historic buildings, monuments and places, it is suggested that the management takes into account the requirements and preferences of disabled persons by adopting universal design concepts within the specific site. In addition to providing accessible material like Braille or audio guides, providing accessible facilities such as accessible parking, restrooms, and ramps are valued by disabled visitors. Managers of heritage sites must also take an inclusive approach to serving disabled visitors by making sure that staff members have received the necessary training to comprehend the requirements of disabled visitors and to be able to offer the right help and support. It also involves implementing policies and practises that encourage disability inclusion and the participation of disabled persons.

Input from disabled persons is critical in developing policies that affect them, including in heritage tourism. Generally, they will be able to contribute valuable ideas based on their life experiences to the planning and design of buildings, infrastructures, facilities, and services. Moreover, participation as in procedural justice is viewed as improving the quality of life for disabled persons, where the ability to contribute to society is valued as freedom as in the capability approach. With disabled person's participation in the development of heritage tourism taken into account, they may be able to freely access heritage buildings and sites and have more opportunities for inclusion that will empower their lives.

ACKNOWLEDGEMENTS

The authors would like to thank the Department of Built Environment Studies and Technology, College of Built Environment, Universiti Teknologi MARA, Perak Branch and College of Built Environment (CBE), Universiti Teknologi MARA, Shah Alam, Selangor, for the support and encouragement in completing this article. The data collection was funded by the Ministry of Education, Malaysia.

REFERENCES

Burns, R., Gallant, K. A., Fenton, L., White, C. & Hamilton-Hinch, B. (2020). The go-along interview: a valuable tool for leisure research. *Leisure Sciences*, 42(1), 51–68.

Carpiano, R. M. (2009). Come take a walk with me: The "Go-Along" interview as a novel method for studying the implications of place for health and well-being. *Health and Place*, 15(1), 263–272.

Cohen, R. L. (1985). Procedural justice and participation. *Human Relations*, *38*(7), 643–663.

Day, R. (2018). A capabilities approach to environmental justice. In R. Holifield, J.

Chakraborty & G. Walker (Eds.), *The Routledge Handbook of Environmental Justice* (pp. 124–135). Routledge.

Di Giovine, M. A. (2009). *The Heritage-scape: UNESCO, World Heritage, and Tourism*. Lexington Books.

Faburel, G. (2012). The Environment as a Factor of Spatial Injustice: A New Challenge for the Sustainable Development of European Regions? *Sustainable Development – Policy and Urban Development – Tourism, Life Science, Management and Environment*, 431–478.

Garcia, C. M., Eisenberg, M. E., Frerich, E. A., Lechner, K. E. & Lust, K. (2012). Conducting go-along interviews to understand context and promote health. *Qualitative Health Research*, *22*(10), 1395–1403.

Gondos, B. & Narai, M. (2019). The Opportunities in Accesible Tourism. *The USV Annals of Economics and Public Administration2*, *19*(1 (29)), 48–57.

Herbert, D. T., Prentice, R. C. & Thomas, C. J. (1989). *Heritage Sites: Strategies for Marketing and Development.* Ashgate.

Herrmann-Lunecke, M. G., Mora, R., & Vejares, P. (2021). Perception of the built environment and walking in pericentral neighbourhoods in Santiago, Chile. *Travel Behaviour and Society*, 192–206.

Kamarudin, H., Bakri, A. F. & Zaman, N. Q. (2022). Identifying physical barriers through a real-life experience with mobility difficulties city travelers: a go-along interview method. *IOP Conference Series: Earth and Environmental Science*, *1067*(1).

Li, Y. (2011). Ethnic Tourism And Cultural Representation. *Annals of Tourism Research*, 38(2), 561–585.

Lid, I. M. (2022). 6. The significance of relations. Rethinking autonomy in a disability perspective. *Lived Citizenship for Persons in Vulnerable Life Situations*, 99–113.

Page, T. & Thorsteinsson, G. (2018). An Inclusive Design Study of Wheelchair Users in the Built Environment. *Journal of Engineering and Architecture*, *6*(1), 1–18.

Polkinghorne, S. & Carlson, L. (2017). Interviews that attend to emplacement : the " walk-through " method (Paper). *The 45th Annual Conference of the Canadian Association of Information Science, "The Warp & Weft of Knowledge: Information Threads Connecting Disciplines, Identities, and Perspectives"*, Toronto, Canada, 1–5.

Rahman, S. A. A., Samsudin, N., Osman, M. M., Bachok, S., & Rabe, N. S. (2018). Housing for disabled people: What do they need? *Planning Malaysia*, 16(2), 266–274.

Rawls, J. (1999). *A Theory of Justice* (Revised Ed). Oxford University Press.

Reeve, D. (2014). Psycho-emotional disablism and internalised oppression. In J. Swain, S. French, C. Barnes & C. Thomas (Eds.), *Disabling Barriers – Enabling Environments* (Third, pp. 92–98). Sage.

Samatar, A., Madriaga, M. & McGrath, L. (2021). No love found: how female students of colour negotiate and repurpose university spaces. *British Journal of Sociology of Education*, 42(5–6), 717–732.

Sen, A. (1993). Capability and well-being. In M. Nussbaum & S. Amartya (Eds.), *The Quality of Life*. Clarendon Press.

Telfer, D. J. & Sharpley, R. (2008). Tourism and Development in the Developing World. In *Tourism and Development in the Developing World*. Routledge.

United Nations. (2006). *Convention on the Rights of Persons with Disabilities and Optional Protocol* (p. 37). United Nations.

Yau, M. K. sang, McKercher, B. & Packer, T. L. (2004). Traveling with a disability - More than an Access Issue. *Annals of Tourism Research*, 31(4), 946–960.

Zahari, N.F., Ani, A. I. C. & Rashid, R. A. (2020). Profiling disabled facilities and accessibility provided in national heritage buildings in Malaysia. *Journal of Critical Reviews*, *7*(5).

Zahari, N.F., Che-Ani, A. I., Abdul Rashid, R. B., Mohd Tahir, M. A. & Amat, S. (2019). Factors contribute in development of the assessment framework for wheelchair accessibility in National Heritage Buildings in Malaysia. *International Journal of Building Pathology and Adaptation*, *38*(2).

Zahari, N.F. (2022). *Assessment Framework for Wheelchair Accessibility in National Heritage Building*. Universiti Kebangsaan Malaysia.

Received: 28th Feb 2023. Accepted: 31st March 2023

PLANNING MALAYSIA:
Journal of the Malaysian Institute of Planners
VOLUME 21 ISSUE 1 (2023), Page 495 – 515

THE DETERMINANTS OF HOUSE BUYERS' PURCHASE DECISIONS IN KOTA BHARU, KELANTAN

Chai Li Cheam[1*], Zarina binti Ismail[2], Puteri Nor Rhubiatul Adawiyah Binti Mohd Zulkifli[3], Nor Aliza Binti Baharuddin[4] and Nor Aidil Abdul Aziz[5]

[1,3,5]Faculty of Business and Management,
UNIVERSITI TEKNOLOGI MARA KELANTAN
[2]PMBK Development Sdn. Bhd
[4]Department of Director General of Lands and Mines (JKPTG)

Abstract

The issue of unsold homes in Malaysia has recently caused the housing developers great anxiety. The nationwide issue of unsold homes was caused by the fact that more homes were built than were purchased by customers. As a result, it is important to figure out what factors can influence potential homebuyers to make a purchase. In order to better understand this issue, the study's objective was to determine the factors that influence homebuyers' decisions in Kota Bharu, Kelantan. The study specifically sought to ascertain whether variables including quality, price, location, promotion, and corporate image had an effect on consumers' decisions to purchase homes. Since the nation was dealing with the Covid-19 outbreak, which made face-to-face questionnaire distribution on the ground nearly impossible to carry out, 382 respondents from Kota Bharu, Kelantan, participated in this study through questionnaires disseminated using the Google Form technique. This study used the Principal Axis Factor and Promax Rotation to evaluate the instruments. Before doing a bootstrapped regression analysis, all seven multiple regression assumptions were examined and verified. The findings showed that only location and promotion variables were positive and significantly influencing the house buying decision. These findings led to a number of strategy recommendations that helped the industry develop the best plans for boosting upcoming sales. It is hoped that by identifying the variables influencing homebuyers' purchasing decisions, housing developers can get an understanding of this phenomenon and be better able to plan and build homes that will live up to buyers' expectations.

***Keyword**:* Purchase decision, quality, price, location, promotion and corporate image

[1] Corresponding Author

INTRODUCTION

One of our life's most essential goals, especially after obtaining a job, is home ownership. A shelter or a house, according to Maslow's (1943) theory, is an example of a physiological need that must be met by a person after those for food and water. Consequently, a home can be regarded as a fundamental need for each and every person (Aragones et. al, 2010). Because most people value their homes, it is crucial for a family to find a suitable and comfortable place to call home (Spetic et. al., 2005).

The global residential housing sector has become known as the most successful economic activity in recent years. A rise in population size, factors influencing rural-to-urban migration, and significant economic growth in a variety of sectors have all contributed to Malaysia's rapid population growth rate from the 1950s (5,226,500 people) to the present (32,761,883 people) (Department of Statistic Malaysia, 2021). Demand increases in line with population growth, per the theory of demand. This circumstance represents socio-economic stability for the development of a nation and has indirectly fueled the rise of the residential property market (Bujang et al. 2010). However, according to an article about the housing glut in Malaysia that appeared in BH Online (Abllah, 2018), the number of unsold homes in Malaysia during the previous ten years was surprisingly large. It was discovered that 79% of houses being built in Malaysia cost RM250,000 or higher (middle cost and high cost category). As a result, homes in this category made up 70% of the unsold homes. In addition, Liew and Haron (2013) discovered that due to the robust economic expansion, housing prices have been increasing faster than real income growth. It will be very difficult for buyers, especially middle-class households, to purchase a home with the ongoing rise in property prices brought on by the rapid economic expansion. This was corroborated by a report published by Bank Islam in 2015, which indicated that rising material costs were responsible for a 3.97% increase in the price of new homes in Malaysia, and that developers also raised their pricing by an estimated 4%. Because homebuyers will undoubtedly become more thorough in their decision-making, this price increases will definitely contribute to the numbers of unsold homes.

The situation, which was already bad owing to price hikes, got worse since too many units of middle- and high-priced homes were being built. This may have influenced buyers' decisions to acquire a home because the prices were too high for them to afford. This circumstance was confirmed by data from Jabatan Perumahan Negara in Table 1 regarding the quantity of housing units built, sold, and unsold in Peninsular Malaysia between 2017 and September 2019.

Table 1: The Number of Housing Unit Built, Sold and Unsold in Peninsular Malaysia (2017 - September 2019)

NO.	STATE	2017					2018							2019				
		UNIT BUILD	HOUSE SOLD		HOUSE UNSOLD		UNIT BUILD	HOUSE SOLD			HOUSE UNSOLD			UNIT BUILD	HOUSE SOLD (Estimation)		HOUSE UNSOLD (Estimation)	
			UNIT	(%)	UNIT	(%)		UNIT	(%)	% CHANGE	UNIT	(%)	% CHANGE		UNIT	(%)	UNIT	(%)
1	JOHOR	108,697	45,892	42.22%	62,805	57.8%	111,249	49,903	44.86%	9	61,346	55.14%	(2)	14,671	3,668	25.00%	11,003	75.00%
2	KEDAH	21,087	11,246	53.33%	9,841	46.67%	20,813	11,278	54.19%	0	9,535	45.81%	(3)	3,670	918	25.00%	2,753	75.00%
3	MELAKA	18,690	14,016	74.99%	4,674	25.01%	13,789	7,963	57.75%	(43)	5,826	42.25%	25	3,668	917	25.00%	2,751	75.00%
4	NEGERI SEMBILAN	14,234	6,599	46.36%	7,635	53.64%	14,214	6,687	47.05%	1	7,527	52.95%	(1)	4,362	1,091	25.00%	3,272	75.00%
5	PAHANG	21,361	7,562	35.40%	13,799	64.60%	21,257	7,933	37.32%	5	13,324	62.68%	(3)	4,956	1,239	25.00%	3,717	75.00%
6	PERAK	22,962	10,091	43.95%	12,871	56.05%	24,049	7,560	31.44%	(25)	16,489	68.56%	28	10,386	2,597	25.00%	7,790	75.00%
7	PERLIS	690	347	50.29%	343	49.71%	660	359	54.39%	3	301	45.61%	(12)	602	151	25.00%	452	75.00%
8	PULAU PINANG	35,309	16,630	47.10%	18,679	52.90%	38,996	15,461	39.65%	(7)	23,535	60.35%	26	7,395	1,849	25.00%	5,546	75.00%
9	SELANGOR	137,338	64,532	46.99%	72,806	53.01%	142,281	63,866	44.89%	(1)	78,415	55.11%	8	32,840	8,210	25.00%	24,630	75.00%
10	TERENGGANU	4,247	2,041	48.06%	2,206	51.94%	4,247	2,041	48.06%	-	2,206	51.94%	-	642	161	25.00%	482	75.00%
11	W.P KUALA LUMPUR	114,210	51,575	45.16%	62,635	54.84%	114,735	51,937	45.27%	1	62,798	54.73%	0	23,384	5,846	25.00%	17,538	75.00%
12	KELANTAN	5,831	1,708	29.29%	4,123	70.71%	5,932	1,489	25.10%	(13)	4,443	74.90%	8	2,473	618	25.00%	1,855	75.00%
		504,656	**232,239**	**46.02%**	**272,417**	**53.98%**	**512,222**	**226,477**	**44.21%**	**(2)**	**285,745**	**55.79%**	**5**	**109,049**	**27,262**	**25.00%**	**81,787**	**75.00%**

(Source: *Jabatan Perumahan Negara, 2020)*

In 2017, housing developers developed roughly 504,656 units of homes across Malaysia, as shown in Table 1. This figure climbed to 512,222 units in 2018, but due to the effects of Malaysia's weak economic growth starting in late 2018, the number of homes built in 2019 decreased to 109,049 units up through the month of September 2019. The homes constructed, however, do not match the homes the customers have purchased. There have been more unsold housing units in every state in Peninsular Malaysia since 2017 as a result of less homes being acquired by consumers than have been developed during the same period. The number of unsold homes in 2017 was 272,417 (53.98 percent). A 5% increase over 2017 was seen in the number of unsold homes in 2018, which stood at 285,745. While the number of unsold homes climbed in 2019 to 81,787 units (estimated) by the month of September. The statistics of unsold homes in Peninsular Malaysia increased as a result of this significant gap between constructed homes and those actually acquired by purchasers, which became a worrying trend for real estate developers. Specifically, based on Kelantan state scenario, Table 1 shows that housing developers in Kelantan are expected to have constructed 5,831 units of homes in 2017, 5,932 units in 2018, and 2,473 units from January to September of 2019. However, between 2017 and 2019, more than 50% of the homes that were built remained unsold. For the years 2017, 2018, and 2019, the percentage of unsold homes was 70.71, 74.9%, and 75.0%, respectively.

A few elements from the demand perspective influence the consumers home buying decisions. Firstly, according to a recent Malaysian study by

Rachmawati et al. (2019), quality has a substantial impact on consumers' purchase decisions. Consumers typically think about the quality they will get from a premium product while making purchases. If their expectations are not satisfied, purchasers' desire to switch to other developers. Secondly, house price hikes were mentioned as one of the factors influencing housing demand by Berry and Dalton (2004) and Rahman (2008). Thirdly, decisions regarding the location are in conflict. Tan (2012), however, found that location, such as distance, was viewed as an important factor for home buyers' demand, despite Mang et al. (2018) finding that location does not actually affect the purchase decision in the housing market. Fourthly, the study carried out by Cheng and Cheok (2008) emphasized the value of a buyer taking the developer's brand into account. Last but not least, Dalmendo (2020) discovered that advertising, such as very simple lending restrictions and procedures, increases home demand. Others prefer to put up a sales team, hire real estate agents, use aggressive marketing strategies in mass and social media, or even lower home prices in order to boost sales. However, the number of unsold homes has not yet been significantly decreased as a result of promotion efforts (Yin Yip et al. 2020).

Logically, the developers' businesses' profitability will be impacted by the number of unsold homes. The housing developers are likely to stop operating in the near future since they cannot afford the high operational costs to run the businesses due to the lack of sales and earnings when the number of unsold homes keeps rising each year. The downward sales trend and demand raised the key question of whether or not potential homebuyers are getting more picky and cautious when making a decision to find a home. Housing developers will benefit from addressing this issue by determining the elements that affect homebuyers' purchasing decisions in Kota Bharu, Kelantan based on the research framework shown in Figure 1 in order to produce homes that live up to buyers' expectations and contribute to further understanding about this phenomenon.

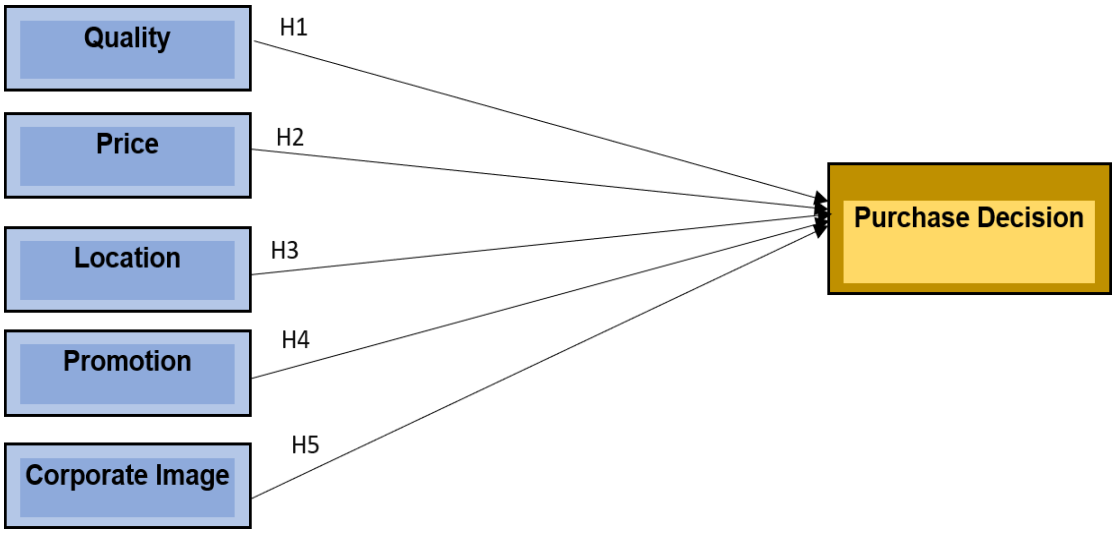


Figure 1: Research Framework

It is hoped that this study will be able to determine the most important variables and produce the ideal housing development approaches for housing developers to deal with the issue of low house sales in the housing market.

LITERATURE REVIEW

Most studies show that customers usually take into account their decisions of how, where, and why to buy things when making purchases. According to Kotler and Levy (1969), consumers' purchasing decisions are the actions they take when they purchase, use, and discard goods and services. A decision-making process known as the consumer purchasing decision is used by people who engage in physical activity to evaluate, purchase, use, or dispose of goods and services (Frazer, 1979). The process of thinking about buying a home is known as a house purchase decision. The primary event or action in a purchase decision is a buyer's choice to carry out a transaction or make a purchase. One aspect affecting how firms can achieve their goals is the quantity of consumers who make decisions. Customers can choose from a variety of options when come to a good or service (Rachmawati et. al., 2019). To understand a buyer's purchasing decision-making process, it incorporates a number of sociological, psychological, and economics concepts (Azad & Roshan, 2014). Consumer behavior is complicated, and spending a lot of money on something like a home makes it even more complicated (Frederiks et. al., 2015). The factors that affect purchasers' perceptions of a home's suitability and happiness with housing arrangements must therefore be understood (Mariadas et. al., 2019). It may be inferred that a customer's choice of a product or brand is the

result of the cognitive process that leads them from identifying a need to generating possibilities and making that decision.

Quality significantly affects customers' purchase decisions, according to a recent Malaysian study by Rachmawati et al. (2019). When making purchases, consumers frequently consider the quality they will obtain from a high-grade product. The intention of buyers to switch to other goods or services is possible if the value is lower than anticipated (Ahmad Syed et. al., 2019). Housing quality is a broad concept with many facets and both an objective and a subjective component. The objective dimension is made up of a variety of specific relevant factors, like the type of lodging, the quantity of spaces, the availability of services, and the standard of housing (Elsinga and Hoekstra, 2005). The subjective method includes client characteristics that give rise to distinct needs, preferences, and goals. The features or characteristics of the home environment and the characteristics of its buyers are just a few examples of the housing requirements that make up the housing quality criteria (Streimikiene, 2015).

One of the topics discussed in recent years is the cost of housing. Price was the most crucial consideration for buyers of residential real estate (Rachmawati et al., 2019). Nasar and Manoj (2015) and Harahap (2018) revealed a favorable association between price and purchase decision, making pricing the most significant element influencing a customer's decision to buy a residential unit. Whether in larger cities or smaller towns, depending on the region, housing prices have dramatically increased in Malaysia over the past ten years. According to Ismail (2019) Malaysian housing prices are excessively high and have exceeded wages and inflation. Based on the index, the huge rise in housing prices from 2009 to 2016 was 1.86 percent, which is a more dramatic increase than the 2.12 percent increase that also occurred at the same period (Abdul Lateef et. al., 2018). There are numerous factors that contribute to the rise in housing expenses, including demographics, interest rates, population growth, and unpredictable construction processes that raise development costs (Ismail, 2019). Poudyal et al. (2008) found that the closeness of a home to other places that serve the same purposes—such as offices, shopping malls, colleges, recreation centers, public transportation, open space, entertainment venues, and places of worship—determines the price of a property. House prices may also be significantly influenced by the uniformity of building materials and the extent of construction alterations to homes.

The next major considerations in a housing purchase is location (Xio and Tan, 2006; Asad Poor and Jusan, 2012; Lip and Tan, 2014; Al-Nahdi et. al., 2015; Monica 2018; and Yap and Ng, 2018). Customers would be drawn to areas that are both convenient and strategically placed. The location of a house was discovered to be important to home purchasers in the UK, Australia, and Ireland (Plimmer et al. 2003). Studies also show that in the context of Malaysia, those who were looking to buy a home felt that the location was important. Distance is therefore becoming

a more important factor in decision-making for residential properties in Malaysia (Plimmer et al. 2003; Asad Poor and Jusan, 2012). The housing's proximity to businesses, colleges, clinics, workplaces, and the city appears to be quite important, especially when making a purchasing decision. The desire to buy a residential home increases the moment one is located near one of these locations. For homebuyers who do not want to spend a lot of time traveling, Karsten (2007) recommended that distance from the place of employment is crucial. Lip and Tan (2014) also concur that if a person lives close to their place of employment, they will likely save money on travel expenses. Haussman (2018) found that while purchasers with young children may favor a location with greater natural surroundings, single professionals may prefer a location with better job, cultural, and service options. However, the location factor revealed contradictory results. Despite the result of Mang et al. (2018) that location had no real impact on a buyer's decision to buy a home, Tan and Saw (2014) discovered that location, such as distance, was perceived as a significant determinant for home buyers' demand.

Kotler and Armstrong (2006) defined marketing as activities that convey the benefits of the product and influence customers to buy it. Niazi et al. (2012) state that promotion is a means of persuasion used to inform customers and urge others to decide to buy a good or service. Promotion is the coordination of marketing. Marketing tactics attempt to disseminate information, influence, persuade, and/or remind the company's goods to embrace, purchase, and demonstrate loyalty to the company's goods. A good customer relationship, interactive communication, advertising strategy, personal purchases, promotional sales, and digital marketing are all examples of promotion strategies. Studies found that promotion has a positive impact on consumers' purchasing decisions (Putra, 2019; Huang Quang et al. 2019; and Brata et al. 2017). By providing information that will motivate purchases, promotional initiatives assist consumers in making selections.

Generally speaking, a company's corporate image is made up of a collection of perceptions and experiences that develop in the public's consciousness and reflect the success of that company's business operations in fostering goodwill (Rahmiati et al., 2017). Corporate image is also a company's overall representation; it goes beyond the representation of its products and services (Farida et al., 2018). Since the company's reputation is an inherent asset that drives growth, it turns into a commercial enterprise. Nguyen et al. (2013) found that corporate image is thought to share the same traits as schemes connected with purchasing decisions. Customers could form solid corporate relationships if a brand had a positive image. Additionally, trust enables a company to take the needs and wants of the client into serious consideration (Tjiptono, 2018). A study verified that home buyers in Malaysia view the developer brand as an important factor (Cheng and Cheok, 2008). This is supported by the findings from Idham et al. (2013) that developer's

reputation had a big influence on consumers' decisions to buy houses. The best course of action is to carefully construct communication tactics based on possible clients and try to make sales to them after carefully considering all that has been explained. Gaining a positive image and reputation is one of the most important tasks to be completed in this industry, and even companies operating in this industry for an extended period of time might choose to use branding to set their special services apart from competitors (Karaduman and Kaya, 2016).

RESEARCH METHODOLOGY

The study's target population is made up of persons who participate in working groups in Kota Bharu. According to statistics from the Malaysian Department of Statistics (2020), there are roughly 1.89 million people living in Kelantan, with 608,600 of them residing in Kota Bharu. This study distributed 400 questionnaires in order to get at least 382 replies as recommended by Krejcie and Morgan (1970).

By utilizing the SPSS scree plot and the statistical method of parallel analysis, it is possible to determine the number of components in this study that should be kept as the factor for analysis. The Kaiser-Meyer-Olkin (KMO) Test was used to establish whether the data was appropriate for factor analysis, and factor analysis was conducted as a result of the significant KMO findings. Factor analysis, in general, is one of the best methods for studying and validating an instrument's internal structure (Nunnally, 1978; Pedhazur & Schmelkin, 1991; Kieffer, 1999; Henson & Roberts, 2006). The Principal Axis Factor and Promax Rotation, as well as a reliability test, were used in this study to examine the instruments. Seven multiple regression assumptions, including normality, normality of the error term, linearity, multicollinearity, constant variance, outliers, and autocorrelation, were evaluated before regression analysis. The final step was to utilize bootstrapped multiple regression to examine the factors that influence homebuyers' decisions. The measurement items and their sources are exhibited as below:

Table 2 Measurement Items for The Variables and sources

Variable	Sources	No of Items
Purchase Decision	Chin (2016)	6
Quality	Lip and Tan (2014) and Chin (2016)	5
Price	Zyed (2014) and Lin (2016)	7
Location	Shaqra'a et al. (2015)	6
Promotion	Mohammadzadeh (2015) and Lin (2016)	6
Corporate Image	Chia et al. (2016)	6

ANALYSIS AND FINDINGS

Table 3 Respondent's Profile

	Categories	Frequency (n=389)	Percentage (%)
Gender	Male	153	39.3
	Female	236	60.7
Marital Status	Single	81	20.8
	Married	303	77.9
	Divorce	5	1.3
Education Level	SPM	32	8.2
	STPM/ Diploma	82	21.1
	Bachelor Degree	201	51.7
	Master	55	14.1
	PhD.	15	3.9
	Others	4	1
Employment Sector	Professional	35	9
	Public Sector	150	38.6
	Private Sector	145	37.3
	Self Employed	52	13.4
	others	7	1.8
Age	< 21 Years	2	0.5
	21-30 Years	78	20.1
	31-40 Years	181	46.5
	41-50 Years	109	28
	> 50 Years	19	4.9
Household Size	0-2 Persons	60	15.4
	3-4 Persons	132	33.9
	5-6 Persons	142	36.5
	7-8 Persons	48	12.3
	> 8 Persons	7	1.8

The following is a quick description of the respondents' demographics. Table 3 revealed that at 236 respondents, women make up more than half of the

respondents (60.7 percent). The remaining 153 responses are men (39.3 percent). Out of 382 samples, there are 81 single (20.8%), 303 married (77.9%), and 5 divorced (1.3%). More than half of respondents (201 @ 51.7%) have bachelor's degrees, followed by 82 respondents (21.1%) with STPM or Diploma, 55 respondents (14.1%) with master's degrees, 32 respondents (8.2%) with SPM certificates, 15 respondents (3.9%) with PhDs, and the balance was (1.0%) with other education levels. In terms of age, there are 181 respondents (46.5%) between 31 and 40 of age, 109 respondents (28.0%) between 41 and 50, 78 respondents (20.1%) between 21 and 30, 19 respondents (4.9%) are above 50, and two respondents (0.5%) are discovered to be under 21. 150 respondents (38.5%) work in the public sector, followed by 145 respondents (37.3%) in the private sector, 52 respondents (13.4%) are self-employed, 35 respondents (9.0%) are professionals, and the remaining (1.8%) are employed in other occupations.

When using Kaiser-Meyer-Olkin (KMO) to determine whether the data were appropriate for factor analysis, the test returned a result of 0.885, indicating a meritorious index. Similar to this, the results of the Barlett's test are significant ($p < 0.001$). These results demonstrated that the data were appropriate for factor analysis. The diagonal value with the letter "a" next to each value in the table within SPSS (not displayed) was examined to ascertain the Anti Image Correlation, and it was discovered to be more than 0.5 in every case.

Table 4: KMO and Bartlett's Tests

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.885
Bartlett's Test of Sphericity	Approx. Chi-Square	7294.851
	df	406
	Sig.	0.000

The existence of numerous factors influencing decisions to buy a house has been revealed in recent research. Exploratory Factor Analysis was used in this study to inform the system that there were six variables included in the data set. To determine if SPSS analysis and the study's framework consistent, the study extracted six fixed numbers of factors for factor analysis, Principal Axis Factoring and Promax rotation were used, the results demonstrating that the loading (i.e., correlation between the items and construct) and cross loading were both more than 0.5 (see Table 5).

Seven of the identified problematic items (4 from price, 2 from location, and 1 from corporate image variables) were taken from the list because their communality values were less than 0.5 threshold, leaving only 29 of the original 36 items (see Table 5). In addition, Table 5 displays the proportion of variation that can be explained by condensing the prior 29 elements into six factors. This

resulted in a loss of about 30% and a 70% retention of the original 100%. Six factors were ultimately identified by the factor analysis because the number of components that were extracted was in line with the theory by which they could affect the decisions made by homebuyers (see literature review section).

The data set's independent and dependent variables were used to identify the items that fell under particular categories of factors. Following that, items PD1 through PD6 were loaded into Factor 1, whereas things QTY1 through QTY5 were loaded onto Factor 2. Items PRI1 to PRI3 were simultaneously loaded on Factor 3, Items LCT1 to LCT4 were simultaneously loaded on Factor 4, Items PRM1 to PRM6 were simultaneously loaded on Factor 5, and Items CPI1, CPI3, CPI4, CPI5, and CPI6 were simultaneously loaded on Factor 6. Following the identification of Factors 1 through 6 based on the items' loadings on each component, it was suggested that they be named Purchase buying decision, Quality, Price, Location, Promotion, and Corporate Image respectively. The six factors (i.e., purchase buying decision, quality, price, location, promotion, and cooperate image) were then subjected to reliability testing. Nunnally (1978) asserted that established scales should have a reliability of 0.8 to 0.9. Following the testing, it was discovered that all of the Cronbach's alpha values found in this study exceeded 0.80 (see Table 5).

Table 5: Results of Factor Analysis

Items	1	2	3	4	5	6	Communalities
PD1	0.726						0.681
PD2	0.772						0.704
PD3	0.731						0.700
PD4	0.762						0.549
PD5	0.784						0.638
PD6	0.820						0.669
QTY1		0.725					0.636
QTY2		0.906					0.780
QTY3		0.885					0.764
QTY4		0.882					0.766
QTY5		0.846					0.700
PRI1			0.896				0.819
PRI2			0.884				0.791
PRI3			0.906				0.827
LCT1				0.856			0.730
LCT2				0.876			0.777
LCT3				0.686			0.559

LCT4				0.723			0.602
PRM1					0.779		0.627
PRM2					0.798		0.668
PRM3					0.779		0.633
PRM4					0.782		0.628
PRM5					0.818		0.674
PRM6					0.760		0.681
CIG1						0.549	0.525
CIG3						0.905	0.824
CIG4						0.912	0.818
CIG5						0.846	0.709
CIG6						0.806	0.785
Cronbach	0.868	0.901	0.898	0.812	0.889	0.901	
Eigenvalue	8.904	3.089	2.572	2.164	1.889	1.645	
% of Variance	30.703	10.650	8.868	7.461	6.515	5.672	69.869

To get insight and evaluate the relationship between house purchase decisions and its independent factors, Pearson's correlation analysis was then used. Table 6 displayed the findings, which reveal that all independent variables are favourable and modestly connected with decision to buy a house (the dependent variable).

Table 6: Correlations

	PD	QTY	PRI	LCT	PRM	CIG
Purchase Decision (PD)						
Quality (QTY)	0.276					
Price (PRI)	0.138	0.003				
Location (LCT)	0.338	0.252	0.181			
Promotion (PRM)	0.519	0.347	0.170	0.367		
Corporate Image (CPI)	0.325	0.400	0.120	0.350	0.489	

(note: all the variables were significant at α=.01, 2 tailed, N=376)

The assumptions for linear regression must be verified before the study's findings can be interpreted. First, the Webpower multivariate normality testing software was used to assess multivariate normality using Mardia's coefficient (Cain et al., 2017). The multivariate skewness value for Mardia in this case was 4.957 (t=310.580, p<.01), and the kurtosis value was 53.151 (t=5.0973, p<.01). The acquired data was not multivariate normal because the skewness and kurtosis values exceeded the cut-off values of 3 and 20, respectively. Therefore, the

standard errors, t-values, and p-values were produced using bootstrapping processes with a resampling of 1000.

The normality of error terms was then established using a histogram and a normal Probability-P plot. According to the histogram analysis, the residuals for the dependent variable were fairly normally distributed, with mean (-1.48E-15) and standard deviation (0.993) values close to 0 and 1, respectively (refer appendix a). The normal Probability P-Plot showed that some of the spots were very close to the line while others were exactly on the line; as a result, the errors were normally distributed (refer Appendix a). Additionally, a partial regression plot between the dependent and independent variables was used to test the study's linearity; all plots were random and free of any discernible trends (refer Appendix c). Furthermore, the Variance Inflation Factor (VIF), which yielded values lower than 3.3, was used to determine the multicollinearity feature. Apart from one variable with a condition index of 35, all the variables in collinearity diagnostics had values of less than 30. At the same time, it was found that all independent variables had a variance proportion of less than 0.9. As a result, it was established that the data did not exhibit multicollinearity. Meanwhile, the distribution was checked for constant variance in the associated regression studentized residual and regression standardised residual scatter plots (homoscedasticity). The variance was then found to be constant, demonstrating that the constant variance was not problematic (refer Appendix b). Last but not least, the Durbin-Watson value for autocorrelation was 1.905; according to the literature, autocorrelation is unimportant as long as the value is between 1.5 and 2.5.

Table 7: Hypothesis Testing

	Variables	**unstd. Beta**	**Std. Error**	**t-value**	**p-value**	**LL**	**UL**	**VIF**	**F^2**	**Decision**
H1	Quality	0.139	0.083	1.673	0.048	-0.024	0.302	1.254	0.007	Not supported
H2	Price	0.030	0.036	0.829	0.204	-0.041	0.101	1.056	0.0014	Not supported
H3	Location	0.147	0.049	3.030	0.001	0.052	0.243	1.240	0.0244	Supported
H4	Promotion	0.472	0.060	7.910	0.000	0.355	0.590	1.451	0.1693	Supported
H5	Corporate Image	0.038	0.058	0.656	0.256	-0.076	0.152	1.477	0.0014	Not supported

The analysis to predict home purchase decisions for the five factors of quality, price, location, promotion, and corporate image was conducted once the multiple regression assumptions were satisfied. As a consequence, the ANOVA results ($F(5, 370) = 32.144$, $p<.001$) indicating that the model is statistically significant and that further analysis using regression can be performed. Meanwhile, the SPSS software identified 7 cases as outliers. This is based on Casewise Diagnostics' standard residuals value of greater than ± 3.3. These 7 cases were thus dropped from the analysis leaving the total equals 382. As a result, the R^2 value increased slightly from 0.295 to 0.303. The value of R^2=0.303 detailed that 30.3% of the house buyer decision could be explained by all four independent variables collectively, whereas the remaining 41.7% denoted the unexplained variance.

Only two of the analysed variables were statistically significant at 1% level and had similar positive values across the confidence intervals. The decision to purchase a home was positively and significantly related with location (B=0.147, t(376)=3.030, p<.01, BCa 95% CI [0.052, 0.243]) and promotion (B=0.472, t(376)=7.910, p<.001, BCa 95% CI [0.355, 0.590]). Quality was significant at the 5% level (B=0.139, t(376)=1.673, p.05, BCa 95% CI [-0.024, 0.302]), however the confidence intervals ranged from negative to positive values. Effect size was examined to see which variables in the model were substantial. It was discovered that promotion and location both had small and medium effect sizes (F2) respectively. This showed that the most important considerations for home purchase decisions were promotion, followed by location, with quality, price, and corporate image having no effect.

CONCLUSION

The research focused on factors that affect consumers' decisions while buying residential property in Kota Bharu, Kelantan. Based on the 382 responses, the study has concluded that location and promotion have positively impacted consumer housing purchase decisions in Kota Bharu, Kelantan. Kotler and Amstrong (2009) defined promotional techniques as any methods used by a company to explain the benefits and features of its goods and encourage potential customers to make a purchase. Promotion is the most important factor that influences the factors that determine whether someone will buy a home, and this finding is consistent with those of earlier studies by Niazi et al. (2012) and Huang Quang et al. (2019) and Putra (2019), and Brata et al. (2017). This further demonstrates how effective promotion is at persuading people to decide to buy a good or service. By providing information that encourages buying, promotional efforts help consumers decide what to buy.

Additionally, location is another factor found to be influencing a person's decision to purchase a home in Kota Bharu. The house is strategically

situated in relation to the neighborhood's market, schools, and other sites of interest (Yap and Ng, 2018). Plimmer et.al. (2003), Xio and Tan (2006), Asad Poor and Jusan (2012), Rinner and Heppleston (2006) and Monica (2018) provide evidence in favour of the favourable and significant association between location and the decision to buy a home. In other words, when choosing a place to live and work, consumers take location into account.

Price and buying decisions have a favourable association, according to the study. However, the relationship was insignificant. The variable is therefore less important than the other two variables (promotion and location) based on the study's findings. The insignificant impact most likely resulted from consumer perception and knowledge that prices in the Kota Bharu area are marginally higher than those in other Kelantan districts. Since Kota Bharu is a state capital and significant metropolitan hub in Kelantan, it became clear that buyers of homes in this region may often anticipate higher prices and strategic location are in line with the pricing factor.

Quality, which had a positive link with the purchase decision but was not statistically significant, was the fourth independent variable under examination. The lack of importance of quality in this study's buying decisions suggested that consumers are likely aware that developers in Kota Bharu typically offer a limited number of homes, ensuring that each one's quality. Customers are eager to purchase the home regardless of the price offered if the features correspond to their criteria.

The company image comes last but not least. It is a company's whole image; it goes beyond the representation of its products and services (Farida et al., 2018). According to the study, there is a small but beneficial association between the constructed corporate image and the decision to buy. This may be due to the fact that the survey was largely conducted in large cities, where home developers had a good reputation.

This study provided housing developers with an overview of homebuyers' purchasing decisions and revealed the factors new homeowners consider when making a purchase decision. Based upon those, developers may decide what kind of housing has to be built before providing a home that meets market need while utilizing effective marketing strategies to attract potential consumers' interest.

For customers considering buying a home, this study serves as guidance. In light of the many elements examined in this study, homebuyers can comprehend and assess the factors that must be taken into account when deciding their ability to finance a home. The homebuyer will then be able to assess their purchasing power in relation to the cost and type of affordable housing they are interested in, as well as their capacity to make mortgage payments on time each month based on their income level.

In order to realize the goal of ensuring that every person owns a house, it is hoped that this study would give an overview of the responsibilities of policy makers in the implementation of housing plans and regulations. In order to draw investors to the area and plan a development in the state administrative area, this study can also be utilised as a guide. In order to regulate the real estate market and lessen the issue of an excess of housing supply, authorities are also in charge of regulating housing development, where the supply must be made in accordance with the requirements, preferences, and demands of the homebuyers.

REFERENCES

Abllah, N. (2018, October 11). Jumlah Rumah Siap Tidak Terjual Menigkat. Retrieved from BH Online: https://www.bharian.com.my/bisnes/hartanah/2018/10/484651/jumlah-rumah-siap-tidak-terjual-meningkat

Ahmad Syed, Z., Ahmad, N., & Papastathopoulos, A. (2019). Measuring Service Quality and Customer Satisfaction of the Small and Medium Sized Hotels (SMSHs) Industry: Lessons from United Arab Emirates (UAE). Tourism Review, 349-370.

Al-Nahdi, T., Ghazzawi, O., & Bakar, A. H. (2015). Could Behavioral Factors Affects Purchaser's Behavior of Real Estate in Jeddah. *International Journal of Business and Management*, 87-95.

Aragones, J. I., Perez-Lopez, R., & Amerigo, M. (2010). Perception of Personal Identity at Home. *Psicothema*, 872-879.

Asad Poor, J., & Jusan, M. (2012). Exploring Housing Attributes Selection Based on Maslow's Hierarchy of Needs. *Procedia - Social and Behavioral Sciences*, 42, 311-319.

Azad, N., & Roshan, A. (2014). Measuring Purchase-decision Involvement. *Management Science Letter* 4(8), 1859-1864.

Bank Islam. (2015). Malaysia's residential property market. Kuala Lumpur: Economic Research.

Berry, M., & Delton, T. (2004). Housing Prices and Policy Dilemmas: A Peculiarly Australian Problem? *Urban Policy and Research*, 22 (1), 69-91.

Brata, B. H., Husani, S., & Ali, H. (2017). The Influence of Quality Products, Price, Promotion and Location to Product Purchase Decision on Nitchi At PT. Jaya Swarasa Agung in Central Jakarta.

Bujang A. A., Shapee N. A. S., Abu Zarin, H., & Ismail. A. (2017). Factors Influencing The Housing Affordability Stress Among Bumiputera. *International Journal of Real Estate Studies*. 11 (4), 125-127

Cheng, Fan Fah and Cheok, Jason (2008) Importance of branding for property developers in Malaysia. *Sunway Academic Journal*, 5, 65-81.

Dalmendo, C. L. (2020, June 27). Malaysia's Great House Price Boom Is Over. Retrieved from GlobalProperty Guide: https://www.globalpropertyguide.com/Asia/Malaysia/Price-History

Daly, J., Gronow, S., Jenkins, D. and Plimmer, F. (2003), Consumer behaviour in the valuation of residential property: A comparative study in the UK, Ireland and

Australia, *Property Management*, 21(5), 295-314. https://doi.org/10.1108/02637470310508653.

Department of Statistic Malaysia. (2021, Mac 26). The Source of Malaysia Official Statistics. Retrieved from Department of Statistic Malaysia: https://www.dosm.gov.my/v1_/

Elsinga, M., & Hoekstra, J. (2005). Home Ownership and Housing satisfaction. *Journal of Housing and the Built Environment*, 20, 401-424.

Farida, A. R., Fitriana, & Mohammad, N. Z. (2018). The Effects of Corporate Image, User Image, and Product Image Towards Purchasing Interest of Suzuki Motorcycle. DOI: 10.18502/kss.v3i3.1877

Frazer, C. (1979). Consumer Behavior: Concepts and Applications. *Journal of Advertising*, 46-46.

Frederiks, E., Stenner, K., & Hobman, E. (2015). Household Energy Use: Appliying Behavioral Economics to Understand Consumer Decision Making and Behavior. *Renewable and Sustainable Energy Review.* 41, 1385-1394

Harahap, N. Z. (2018). Pengaruh Kualitas Produk, Harga dan Promosi Terhadap Keputusan Pembelian Mie Instan Merek Sedaap Pada Mahasiswa Asrama Putri Universitas Sumatera Utara.

Haussman, R. (2018). Economic Development and the Accumulation of Know How.

Henson, R. K and J. Kyle Roberts (2006), Use of Exploratory Factor Analysis in Published Research: Common Errors and Some Comment on Improved Practice. *Educational and Psychological Measurement.* 66(3), 393-416

Huang Quang, N. G., Thang Quyet, N., Nguyen Thanh, L., Tung Van, T., & Tri, M. H. (2019). Factors Affecting Brand and Student Decision Buying Fresh Milk: A Case Study in Ho Chi Minh City, Vietnam. *The Journal of Asian Finance, Economics and Business*, 6(3), 247-258.

Idham, M., Razak, I., Shaifa, N., Abdullah, H., Hoo, J., & Aliaz, Z. (2013). Purchasing Intention Towards Real Estate Development in Setia Alam, Shah Alam: Evidence from Malaysia. 3(6), 66-75.

Ismail, S. (2019). Rethinking Housing: Between State, Market and Society. *Khazanah Research Institute.*

Karaduman, L., & Kaya, E. (2016). Branded Real Estate Agencies: The Impact of Brand on Consumer Behavior in Real Estate Market. International Journal of Research, 3(4), 5-14.

Karsten, L. (2007). Barbara Adam, Time. Time & Society, 16(1), 131-134. https://doi.org/10.1177/0961463X07074107

Kieffer, K. M. (1999). An introductory primer on the appropriate use of exploratory and confirmatory factor analysis. *Research in the Schools*, 6, 75-92.

Kohler, M. J. (2013). Why You Should Be Investing Your Money in Real Estate? Entrepreneur.

Kotler, P., & Amstrong, G. M. (2009). Marketing: An Introduction. Pearson Prentice Hall.

Kotler, P., & Armstrong, G. (2006). Principles of Marketing. Perason Prentice Hall.

Kotler, P., & Levy, S. (1969). Broadening the Concept of Marketing. Journal of Marketing, 10-15.

Krejcie, R. V., & Morgan, D. W. (1970). Determining Sample Size for Research Activity. *Educational and Psychological Measurement*, 30, 607-610.

Liew, C., & Haron, N. A. (2013). Factors Influencing the Rise of House Price in Klang Valley. *International Journal of Research in Engineering and Technology*, 2(10), 261- 272.

Lip, S., & Tan, T. (2014). Factors Affecting the Purchase Decision of Investors in the Residential Property in Malaysia. *Journal of Surveying, Construction and Property (JSCP*), 5(2), 1985-7527.

Malaysian Department of Statistics. (2020). Kelantan Socioeconomic Report. Putrajaya: Malaysian Department of Statistics.

Mang, J., Zainal, R., & Mat Radzuan, I. S. (2018). Influence of Location Attributes on Home Buyers' Purchase Decision. *International Journal Supply Chain Management*.7(3).

Mariadas, P. A., Abdullah, H., & Abdullah, N. (2019). Factors Effecting Purchasing Decision of Houses in the Urban Residential Property Market in Klang Valley, Malaysia. *Journal of Social Science and Humanities.* 16(4), 1-9.

Maslow, A. H. (1943). A Theory of Human Motivation. *Psychological Review.* 50 (4), 370-396.

Monica, E. (2018). Pengaruh Harga, Lokasi, Kualitas Bangunan dan Promosi Terhadap Minat Beli Perumahan Taman Safira Bondowoso. *International Journal of Social Science and Business*. 2(3), 141-149.

Nasar, K. K., & Manoj, P. K. (2015). Purchase Decision for Apartments: A Closer Look Into the Major Influencing Factors. *CLEAR IJRMST*, 4(8).

Nguyen, N., Leclerc, A., & Leblanc, G. (2013). The Mediating Role of Customer Trust on Customer Loyalty. *Journal of Service Science and Management*, 6, 96-109

Niazi, G., Siddiqui, J., Shah, B., & Hunjra, A. (2012). Effective Advertising and Its Influence on Consumer Buying Behavior. *Information Management and Business Review*, 4(3), 114-119.

Nunnally, J. C. (1978). Psychometric theory (2nd ed.). New York: McGraw-Hill.

Olanrewaju, A. L., Lim, X. Y., Tan, S. Y., Lee, J. E., & Adnan, H. (2018). FACTORS AFFECTING HOUSING PRICES IN MALAYSIA: ANALYSIS OF THE SUPPLY SIDE. *PLANNING MALAYSIA*, 16(6). https://doi.org/10.21837/pm.v16i6.477

Pedhazur, E. J. , & Schmelkin, L. P. (1991). Measurement, design, and analysis: An integrated approach. Hillsdale, NJ: Lawrence Erlbaum.

Poudyal, N. C., Hodges, D. G., & Merrett, C. D. (2008). A Hedonic Analysis of the Demand for and Benefits of Urban Recreation Parks. *Land Use Policy*. 26(4), 975-983

Putra, E. (2019). The Influence of Promotion and Brand Image Toward Purchase Decision of Honda Vario. *e-Jurnal Apresiasi Ekonomi*, 7(1), 121-127.

Rachmawati, D., Shukri, S., Azam, S. F., & Khatibi, A. (2019). Factors Influencing Customers' Purchase Decision of Residential Property in Selangor, Malaysia. *Management Science Letter*, 9, 1341-1348.

Rahman, M. M. (2008). The Australian Housing Market – Understanding the Causes and Effects of Rising Prices. *Policy Studies*, 31(5), 577-590.

Rahmiati, F., Tahir, M., & Mubarak, Z. (2017). Corporate Image Influencing Customers' Purchase Decision in Minimarket in Bekasi. *Advanced Science Letters*. 23(8), 7838-7840.

Spetic, W., Kozak, R., & Cohen, D. (2005). Willingness to Pay and Preferences for Healty Homes Attributes in Canada. *Forest Product Journal*, 55 (10), 19-24.

Streimikiene, D. (2015). Quality of Life and Housing. *International Journal of Information and Education Technology*, 5(2), 140-145.

Tan, T. H., & Saw, L. S. (2014). Factors Affecting the Purchase Decisions of Investors in the Residential Property. *Journal of Surveying Construction and Property*. 5(2). 1-13.

Tjiptono, F. (2018). *Pemasaran strategik*. 4th ed. Yogyakarta: Andi publisher.

Xio, Q., & Tan, R. (2006). Signal Extraction With Kalman Filter: A Study of the Hong Kong Property Price Bubbles. *Urban Studies*. https://www.researchgate.net/publication/5182614_Signal_Extraction_with_Kalman_Filter_A_Study_of_the_Hong_Kong_Property_Price_Bubbles

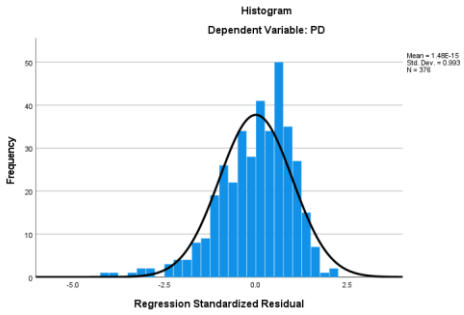
Yap, J.B.H. and Ng, X.H. (2018), Housing affordability in Malaysia: perception, price range, influencing factors and policies, *International Journal of Housing Markets and Analysis*, 11(3), 476-497. https://doi.org/10.1108/IJHMA-08-2017-0069

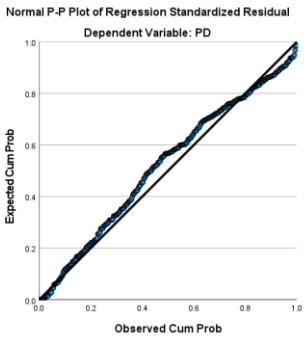
Yip, C.Y., Senadjki, A., Au Yong, H.N. and Abdul Adzis, A. (2021), Mitigating housing glut: an application to the Malaysian housing market*, International Journal of Housing Markets and Analysis*, 14 (3), 498-522. https://doi.org/10.1108/IJHMA-04-2020-0037

Received: 28th Feb 2023. Accepted: 31st March 2023

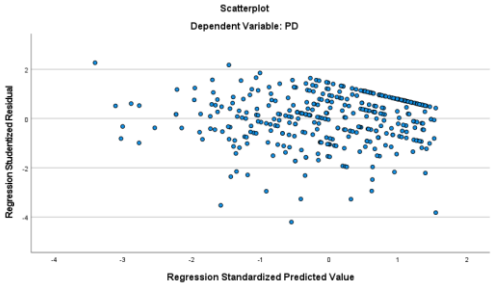
APPENDIX

a) Normality of Error Terms

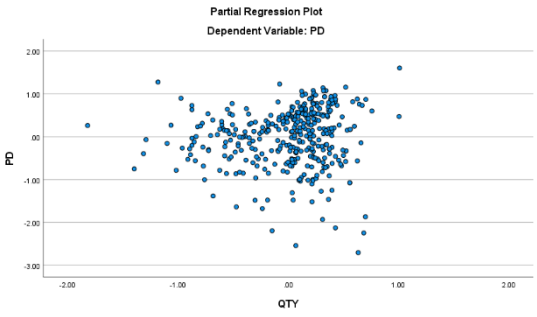


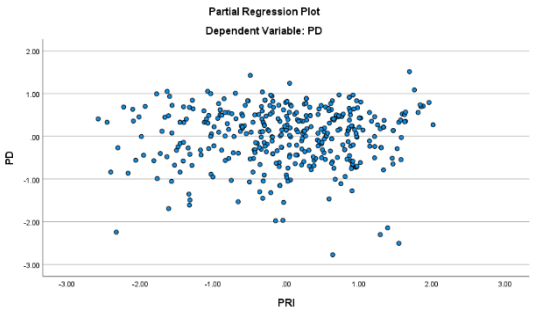


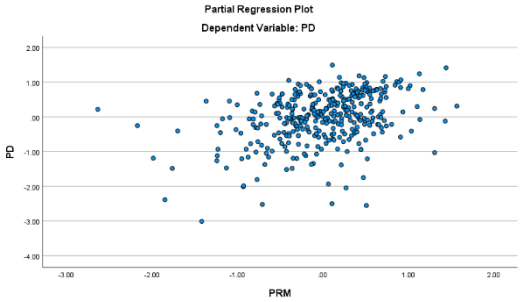
b) Constant variance

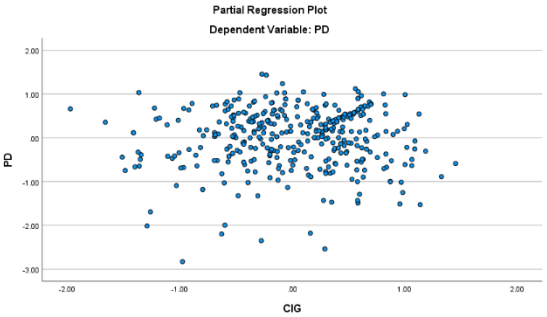


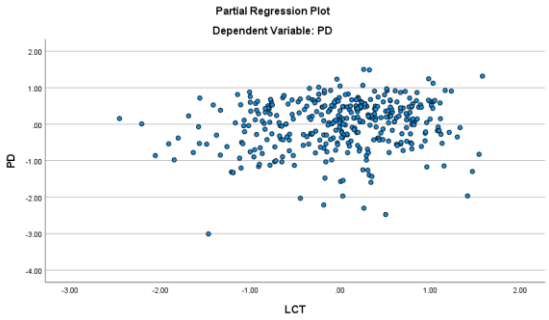
c)Linearity






Partial Regression Plot
Dependent Variable: PD
PD
PRM


Partial Regression Plot
Dependent Variable: PD
PD
CIG


Partial Regression Plot
Dependent Variable: PD
PD
LCT

PLANNING MALAYSIA:
Journal of the Malaysian Institute of Planners
VOLUME 21 ISSUE 1 (2023), Page 516 – 531

PLACE MAKING OF PUBLIC SPACES WITHIN TRANSIT-ORIENTED DEVELOPMENT (TOD): A REVIEW

Nurul Syala Abdul Latip[1], Nur Zalilah Zulnaidi[2], Nabilah Redzuan[3], Mariana Mohamed Osman[4], Nor Zalina Harun[5]

[1,2,3]*Faculty of Engineering and Built Environment,*
UNIVERSITI SAINS ISLAM MALAYSIA
[4]*Kulliyyah of Architecture and Environmental Design,*
UNIVERSITI ISLAM ANTARABANGSA MALAYSIA
[5]*Institute of the Malay World and Civilization,*
UNIVERSITI KEBANGSAAN MALAYSIA

Abstract

Transit-oriented development (TOD) offers as a method to provide sustainable living and introducing place making as the essential needs of producing good public spaces. TOD may also help to achieve a greater positive outcome that satisfies the community's demand. This study synthesized literature reviews from 1993 to 2021 on the 'sense of place' in creating a quality place making in public spaces. Views taken includes from the concern of methodological and components used to comprehend the association of sense of place within place making in public spaces accompanied by the individual's perception of the place meaning. In conclusion, place making is essential in forming quality public spaces especially in TOD. It enables us to understand the place attachment as in the connection between a person and a place physically and spiritually thus, help to contribute to an effective place making.

***Keyword**:* Place Making, Public Spaces, Transit-Oriented Development, Sense of Place

[1] Lecturer email: nurulsyala@usim.edu.my

INTRODUCTION

TOD is a form of design improvement which is proposed primarily to boost the usage of public transport and accommodation of mixed land-use to construct a diverse and pedestrian-friendly surroundings and in an either urban and sub-urban environment area (Gomez et al., 2019; Jacobson & Forsyth, 2008; van Lierop et al., 2017). Nonetheless, the idea of TOD is already familiarized in Malaysia through the regional and local plans along with the state structure plans (Gomez et al., 2019). One of the approaches made by Malaysia in implementing Transit Oriented Development (TOD) to establish a sustainable living. Transit Oriented Development (TOD) is an evolution that have been applied in a few countries outside of Malaysia such as in Singapore, United States, China, Australia and even India (Rahmat et al., 2016).

Architect and planner Peter Calthorpe disclose the definition of TOD as a mixed-use society within an average of approximately 600-metres walking distance of a transit station and commercial centres (Jacobson & Forsyth, 2008). A mixed-use development that consists of residential, office, retail, public uses and open spaces in the range of walkable distance gives opportunities to both resident and employees to travel conveniently either using transit, foot, bicycle or car (Jacobson & Forsyth, 2008). Improving an environment that is fixated around transit development is crucial for establishing a promising success in any TOD in a habitable compact urban form (Lang et al., 2020). A compact livable neighbourhood is a place where mixed-use transit stops are able to aid the clustering of activities that allows users to do what they need and want to (Lang et al., 2020). TOD is referred to as the effort of place making as it provides entertainment and leisure accommodation, apart from becoming a focal points of the community meeting place (Lang et al., 2020).

This paper aims to reviews potential of place making in public spaces within the TOD-based environment. In order to make full use of the TOD strategy in a country, one must approach the souls of the subjects that will mostly affect the outcome of this means to ensure great benefits to both parties- country and society. Therefore, it is important to understand the priority of place making while creating a public space and its effects on the country's economy and the community sustainable living. The main question discussed in this paper is why place making is essential when designing public spaces in TOD? The last two questions can be verified by being sensible from the societies' perspectives on public spaces and the way a place can affect them physically and spiritually.

- The aim of the paper is to produce the theoretical framework of a placemaking for public spaces in TOD

LITERATURE REVIEW

Public space is one of the most prioritized aspects in Transit Oriented Development (TOD) as it is defined as the connection between buildings and transit stops, hence in a mixed-use development (Mehta, 2014). By helping to connect the uses of the buildings and transit stops around, it encourages an exceptional cooperation of mixed-use TOD because some occupants could have choices to live nearer for a short-distance from either home, school, or other destinations without any use of private cars (Metropolitan Rapid Transit Atlanta Authority, 2010). A space that have clear visuals among the community as they are occupying themselves with social affairs and interactions between each other is also considered as public space (Mensch, 2007).

Public space generally is accessible to many public and it is not restrained by any private parties or individual (Mehta, 2014). The term 'accessible' is a highly significant aspect in public space that is needed to create the word 'public' itself. Whether streets, parks, squares, walkways and even specific places in the city that is openly accessible with no restrictions are considered as public spaces (Polat & Dostoglu, 2017; Toolis, 2017). Public spaces serve as a shared ground for the community from various cultures to converge with each other, which improves the psychological well-being (Toolis, 2017). Thus, to create an effective public space, the government need to understand what makes a public space approachable and practical for the public use. Therefore, this paper will review more on the definition of place making that depicts a successful space for the public usage in a city especially in TOD areas.

Definition of Place Making

Place making holds various significant meanings and definitions according to different authors (Ellery et al., 2021; Fincher et al., 2016), but are still considered under the same scope where they defined place making as a process of whether places are shaping the people or the people are shaping the places (Ali et al., 2020; Schneekloth & Shibley, 1993; Toolis, 2017; Wyckoff & A, 2014). The concept of place making has face variations from considering the physical aspect of a place in forming place making to ease the satisfactions of the community beyond the planning professions (Strydom et al., 2018). Place making is a measure in enhancing the quality of different places in a community as well as the country where the places are based in (Wyckoff & A, 2014). Place making is also considered as a participation and collaboration of the community in reconstructing an adequate environment for the city (Toolis, 2017).

Policy makers and researchers that studies on sustainability further depicts that place making is recognized as an effective mean in accomplishing sustainability goals (Ghavampour & Vale, 2019). Place making is also viewed as the objectives in spatial planning to reshape the identities of the places through controlling the activities, meanings and feelings that are integrated in place

identity (Shamsuddin & Ujang, 2008; Strydom et al., 2018). Place making is broadly refers to the action of transforming a "space" into "place", by providing a function that can create meanings to the place for the use of the community (Dupre, 2019). It is frequently associated with repetitive keywords such as; a) meaning of places, b) place creation, c) sense of place, d) place images, e) place identity, f) community and e) neighbourhood (Dupre, 2019; Krause, 2014). Based on the theory of placemaking, sustaining a place involves gradually enabling practices that concerns the full cooperation of the residents, employers and employees, community organizations, institutional leadership and even tourists whom are affected by the place (Schneekloth & Shibley, 1993).

There are four different types of place making, which are standard, creative, tactical and strategic placemaking (Wyckoff & A, 2014). Standard place making is practiced for various functions as it is used as an additional means to improve the quality of a place in a long span of time with small projects or activities (Wyckoff & A, 2014). While creative place making covers most parts based on arts installation and streetscape for visual attractiveness, tactical place making is known as the lighter, quicker and cheaper method in place making where it is focused more on the result action of the users in a place and how little changers can affect them spiritually (Wyckoff & A, 2014). Strategic place making however, is a targeted process where it is planned meticulously, involving activities or projects in specified locations for intentional purposes (Wyckoff, 2014). Place making in fact protects the spiritual meaning behind the social construction and the urban quality of a city (Krause, 2014).

Although places would experience changes occasionally, the patterns of the daily routine will still remain and eventually will drive to the feeling of place attachment (Friedmann, 2007). The rhythms and patterns of the habitants' daily routine that involves the journey of going from one place to another to fulfil their responsibilities as students, employees, and workers would create a place identity (Friedmann, 2007). It is defined as a place that notifies the identity of the individual or the community that are involved in it along with the distinctive features of the place (Shamsuddin & Ujang, 2008). Place identity in place making is sometimes referred on the historical features and locales to maintain the identity of a place. But this can be simply achieved with the collaboration of the locales that have better knowledge and concerns more on the place itself (Kolodziejski, 2014). Participation of the people is essential in conserving the local identity, facing the challenges and struggles in place making and delivering trendy methods for creating place making (Dupre, 2019).

In ensuring a successful place making, identity of a place takes a lot of means and methods to create, whether it is accidentally or purposely created, by any means, it will still take a large amount of time for the people to acknowledge (Othman et al., 2013). To establish a deep-rooted place attachment towards a place, place identity become one of the factors in piquing the interest of locals to

remain in their neighbourhood. The studies of TOD in Vancouver, Canada stressed the need to avoid changing the area's historical and cultural context where new TODs are built (van Lierop et al., 2017). The history and cultural context of an area or region are vital in maintaining the place identity. Integrating local cultural identity in a modern urban development have a higher chance for further innovation in achieving place making. Singapore is one of the examples of a country that have succeed in creating a place making by reflecting the local cultures, traditions and histories into the Singapore River waterfront (Dupre, 2019).

Sense of Place and Memory Association

Place making is connected with having a good sense of place in such manner that the occupants are encouraged to settle in a specific place (Abdul Latip & Shamsuddin, 2012). The concept of sense of place interpret a connection between a place and a user, which linked the terms of place attachment and place meaning (Hashemnezhad et al., 2013; Raymond et al., 2017). Beside place attachment and place meaning, place dependence are also one the terms that are recognized to establish the sense of place (Kolodziejski, 2014; Nelson et al., 2020). The community even relate their sense of place over the mix of sentimental attachment, place identification, functional satisfaction alternately these are which persuaded by the surrounding factors (Jorgensen & Stedman, 2006; McCunn & Gifford, 2018).

Sense of place can be measured through a scale of one to four from lacking sense of place to sacrificing for a place (Hashemnezhad et al., 2013), where it increases gradually depending on the individuals' perception towards a place which is influenced by the feeling of place attachment and place meaning. Place meaning can be constructed by the ambient environment of a place and given that the place attachment is affected by the surrounding as well, these two are surely fundamental with each other (Zakariya et al., 2015). Sense of place exist when an individual has physical or emotional attachment to a place that could also represent the feeling of familiarity in a space namely as the second scale in sense of place (Hashemnezhad et al., 2013). Considering, place attachment have many levels through the scale of sense of place, it suggests that there could be different meanings of place (Rajala et al., 2020). The consequences of constructing a positive sense of place so that it could indulge into the perception of 'insideness', it can also evolve into a negative impact whereas it creates the feeling of 'outsideness' as mentioned above. 'Outsideness' exist when a user's identity feels conflicted with a place (Erfani, 2020). And having loss of that sense of place could lead to the result of weakening the meaning of a place which leads to the feeling of 'placelessness'(Othman et al., 2013).

Specific behaviours and sensory experience is also used to characterize the terms 'sense of place' itself, putting the senses; smell, taste, feel, sight and

even spiritual dimensions as the components that stimulate the sense of place (Hashemnezhad et al., 2013; Raymond et al., 2017). All of these senses is stimulated by the physical parameters that affect the sense of place such as odour, noise, texture, temperature, size and scale, the components and the diversity of the place, decoration and colours (Hashemnezhad et al., 2013). By connecting a place with an individual through spatial behaviour and everyday activities can also strengthen the sense of place (Hashemnezhad et al., 2013).

A place without the existence of people but only structures is defined merely as geographical location and it would have no meaning value in it without the presence of the humans (Hashemnezhad et al., 2013). "Topophilia" is a concept that signifies a strong network between a person and the surrounding in the matters of emotions, cognitive and mental (Hashemnezhad et al., 2013; Kolodziejski, 2014). When a person believe that the place is essential for them, from then on place attachment is created gradually as the relationship between them and the place increases (Hashemnezhad et al., 2013). Place attachment is defined as the rate of emotional bonds between individuals and a geographic locale, while place meaning leans more on the symbolic meaning that users attribute to a place (Raymond et al., 2017). Place attachment can be connected to an understanding where a place have the abilities to contribute to the experience of the users through the social setting and physical planning (Shamsuddin & Ujang, 2008). Rootedness is a metaphor used by a researcher in demonstrating the similarities of a root with a person towards their habitats or a place that they have an attachment to, though the connection between the people and the place could either weak or strong (Kolodziejski, 2014).

According to the sense of place scholarship, both approach of place making which are place attachment and place meaning to create a sense of place are slow to develop (Raymond et al., 2017), since it depends on the individuals' time length of residency in those places and the meanings that are triggered in the hearts of the individuals respectively. Although both of these approaches would show outcomes after a long term, there is research on engaging sense of place in a faster pace, which is called as the "affordance theory". This theory fully depends on the real-time result based on the individuals' perception towards a specific setting, where actions can be initiated without involving the mental process, though it still can influence the attitude of the individuals (Raymond et al., 2017). This is usually assisted by the help of fast-process sensory, such as hear, taste, smell and especially the sight because it is mostly affective using the visual approach as it can be sense from afar.

The synergy between people and place is divided into three dimensions which are cognitive, behavioural, and emotional (Hashemnezhad et al., 2013). Cognitive features the synergy between a person and the structural approach, where they make use of their settings to manoeuvre around the place. While behavioural, features the synergy between the person and the activities happening

around them in that place which commonly they are included in too. Lastly, is the emotional aspect which lead to the satisfaction of the place that will eventually result into place attachment.

Cultural, memories and experiences, physical, social communication, place satisfaction, time, interaction and activities are the elements that affect the place attachment (Hashemnezhad et al., 2013). This proves that sense of place is considered as a multidimensional concept whereas all the elements that affect place attachment further influence the sense of place (Beidler & Morrison, 2016). Possessing a feeling of attachment to a place mentally, defines the term memory, where it happens to everybody when their brains are processing in recalling experiences (Othman et al., 2013). Hence, when it comes to sense of place, memory is noted as a great factor for the users to be attach to a place mentally. As a result, that particular person has spontaneously reaches the third scale of sense of place as in attachment to a place (Hashemnezhad et al., 2013). A strong sense of place is usually catalysed by social interaction physically and sensually, and creates an emotional response between the individuals and their surroundings which includes the settings or events that occurs there, alongside with the occupants in that particular space (Othman et al., 2013).

Creating Quality Place Making in TOD

Transit oriented development generally developed in an already well-established metropolitan region and given that TOD are impelled by the society, it is fair that the evolution of the city requires the value of sense of place (Dorsey & Mulder, 2013). Places that have a strong sense of place is considered as quality places, where society and businesses would want to be in (Wyckoff & A, 2014). To completely utilize the place as a sense of place given that there are various terms associated with it, one must study in what way do people identify about a place, the cause of the people relying on the place and the meaning inflected to a person on a symbolic degree (Nelson et al., 2020).

There are two form of physical planning that affect the development of image quality place making which are first, through built environment that determines the physical aspect, which target on the public spaces and commercial spaces (Madureira, 2015). Secondly, is through the functionality aspect which target on the function of the community depending on how the physical aspect can provide the quality satisfaction to the targeted community (Madureira, 2015). Good urban design is the solution in designing public spaces for great outcomes on place making (Jacobson & Forsyth, 2008; Madureira, 2015) and also to prevent sprawl happening in a city. Sprawl is described as poor planning on land-use development and often resulted as scattered development (Ewing, 2008), where building spots and transits stations are located somewhat inefficient for the use of the public, thus leaving large empty lands as a gap to reach between destinations. The consequence of sprawl supports more on why good urban

design is crucial in spatial planning especially in developing a sustainable city. Sprawl will affect the accessibility of users from travelling back-to-back from their destinations since it will consume additional time and energy (Ewing, 2008). This will lead to energy inefficiency and air pollution because of the used of private cars will increase since reaching transit station would be far (Ewing, 2008). There would also be lack of functional space as scattered development is considered as a low-density development, whereas there will be either a yard that is too big for private land or a land too small for community gatherings (Ewing, 2008).

Spaces that fulfil the characteristics of quality places such as- the buildings are located in walkable or cyclable distance, build to human scale, and is situated in a dense area where it provide the ability of mixed-use development including transit stations are acknowledged as quality places in terms of good form and can bring the result of comfort and welcoming, allowing authentic experiences in social interactions (Wyckoff & A, 2014). Public transit have been progressively linked to institutional discussion on sustainable movement, sustainable capital, and social equity in which each projects ideas helps to create attractive city centres and high quality places to settle in (Ferbrache & Knowles, 2017). A study shows that place making became a topmost constraint in Washington, DC, Chicago and San Francisco to the first generation of TOD projects in towns with older transit systems (Ratner & Goetz, 2013).

Usually these places must be attractive in terms of visuality, they are located in a unique locations often associated with the genius loci that refers to the soul that preserve the identity of that particular place (Kolodziejski, 2014), and must be pedestrian-friendly which includes the term of comfortability, safety and accessible (Wyckoff, 2014). Quality place making can be fulfilled by implementing a mixed uses area in a city such as residential zone with a variety housing types that have unique characters, facilities and services, leisure spaces, and entertainment activities (Ali et al., 2020). Small retail, convenience store or movie theatres can be persuasive methods for place making, especially if they are a part of a multi-use or multi-level building rather than secluded structures (Metropolitan Rapid Transit Atlanta Authority, 2010). The essence of place making is that it should be intriguing, prosperous places that are not deserted at 6.00 p.m. especially in the range of the transit stations (Metropolitan Rapid Transit Atlanta Authority, 2010).

However not all activities are needed in the transit area, still, the lively mixes of uses strengthen the link between transit and development, as station areas become “24/7” places, where the society are able to use transit at night and on weekends (Metropolitan Rapid Transit Atlanta Authority, 2010). Unique landscape commonly dominates the visual aspect thereby would benefit in developing a meaning in a place (Kolodziejski, 2014). The use of green initiatives can help to transform a public space into a sustainable and meaningful place,

besides improving the quality of the neighbourhood and increasing the land values (Dupre, 2019). When the community declare the need of retaining natural areas such as green spaces and water bodies as one within the urban environment in the terms of sense of place, this is circumscribed as biophilia (Kolodziejski, 2014). Therefore, the involvement of the community in sharing their opinions for a greater experience is vital in creating a sense of place (Kolodziejski, 2014).

RESEARCH METHODOLOGY

The literature review was selected from different areas that includes architecture, urban design, environmental geographies, psychology, and sociology. The Google Scholar is a computerized search system that is used as a medium to inquire scholars' research paper and other academic information for references. Besides this, ResearchGate, Academia and Sci-Hub have also been used with the assistance of several keywords such as: Transit Oriented Development (TOD), place making, sense of place, public space, sustainable, memory, identity, attachment and meaning.

This study has been limited to the papers published from 1993 to 2021 to slim down the research where reviews, case studies and theoretical are all included. Literature was gathered to demonstrate the importance of understanding on place making and the effectiveness of it as a strategy to improve TOD.

RESULTS AND DISCUSSION

According to different researchers, there are numerous concept and definitions on place making that varies depending on the urban context. Nevertheless, they are all deduced as the process of creating a sense of place whereas both concepts lean on each other to accomplish a successful result. Place making can be comprehended as the act of moulding a space by using the spatial form (cognitive) that can hold mixed-function activities (behavioural) thereby would impulsively deliver a meaning (emotional) to the community that are engaged within the targeted area. It is specified that there four types of places making which are standard, creative, tactical, and strategic place making.

Since the process of placemaking have four different types, there are a way in determining which type is the most efficient way. The most productive type of place making to use is depending on what the users want to achieve as their outcome. Since this paper circulates around TOD, strategic place making is the most suitable type of place-making that can be incorporated since it only concentrates in specific places that are able to occupy a mixed-use development in order to attract talented workers (Wyckoff & A, 2014)- in this case is the TOD-based area. The involvement of the community within the planning of creating place making is extremely vital considering that place making is made for the satisfaction of the users and how they themselves would interpret the meaning

behind the settings of the place. Thereupon, place making is affiliated to place attachment that will then produce a positive sense of place.

As we further discuss on the sense of place, it is clear that we can define the sense of place dwells along the terms of place identity, place dependence, place meaning, home place, rootedness, genius loci and biophilia. Place identity basically refers to a multidimensional concept where; a) the genius loci and biophilia is related in informing the identity of a place and, b) the social interaction and daily activities which include the history and culture of the community help to build an identity of a place.

Commonly, the duration of creating place identity would consume a long amount of time either it is made accidentally or purposely. Place identity usually relies on the locales or resident themselves as they are already settled down in that place, hence would strengthen more on the reason why the collaboration of the people is important seeing that their opinions on their experiences would boost the process of place making. Apart from place identity, place dependence also relies on the community that deem the importance of the place in prior to the location of their home, work, and school.

Sense of place scholarship and affordance scholarship are two of the approaches in creating a sense of place. Both approaches are influenced by three aspects of human interaction with the place, which are cognitive, behavioural, and emotional. The only characteristic that differentiates these two approaches are the timespan required to reach the outcome whereas sense of place scholarship consumed a longer period given that the main purpose of this approach is to construct place attachment and place meaning socially.

Meanwhile affordance scholarship immediately perceived the meaning the place, normally through the aid of visual aspect. There are physical parameters that can affect the sense of place which trigger the sensory experience, thus allowing the person to determine the meaning of the place to them. The first scope of physical parameters that affect the vision sensory are the size and scale of the space and its contents, components, diversity which depicts on the activities and routines happening in the place, decoration and colour that leans more on the landscape and how the building is designed. The other parameters are odour that kindles with the smell sensory, noise that provoke the hearing, texture that allows the person to touch and temperature that enables the taste sensory. Nonetheless, these approaches mentioned earlier still pursue the aim of creating place attachment and place meaning.

The scale of sense of place that depicts the individual perceptions of space as a place have four levels, labelling from the negative to positive state of perception, whereas the first level being the lack sense of place, then moving on to the second level that is belonging to a place. On the third level is the attachment to a place as in the feeling of place attachment is gradually increasing until it reached the last level which in turn would result in sacrificing for a place.

Through all these levels, it is reviewed that different levels of place attachment brings different meanings to a place. Sense of place is associated with memory since it is usually triggered by the remembrance of the senses when a user is in a place. Generally, a person would remember a place depending on the memories that are already embedded in the back of their minds, whether they are the positive or negative ones. Although both of these kinds of memories can lead to remembering a place, surely most would want the former to be the catalyst for the person to head back towards that particular place once again. Positive memories of a place that creates an attachment emotionally and physically is another definition for 'insideness'.

According to the entire overall approaches in place making in order to form a sense of place, it is found that the keywords of place attachment and place meaning is fundamental in creating quality place making through good urban design and planning to avoid sprawl development. This could give the result place satisfaction seeing the place provide safe and security, comfort, accessible and sociable which allows authentic experiences to be made if all the terms that are associated with the sense of place is fulfilled. The thorough discussion on place making stated above are based on the theoretical framework shown in Figure 1 below:

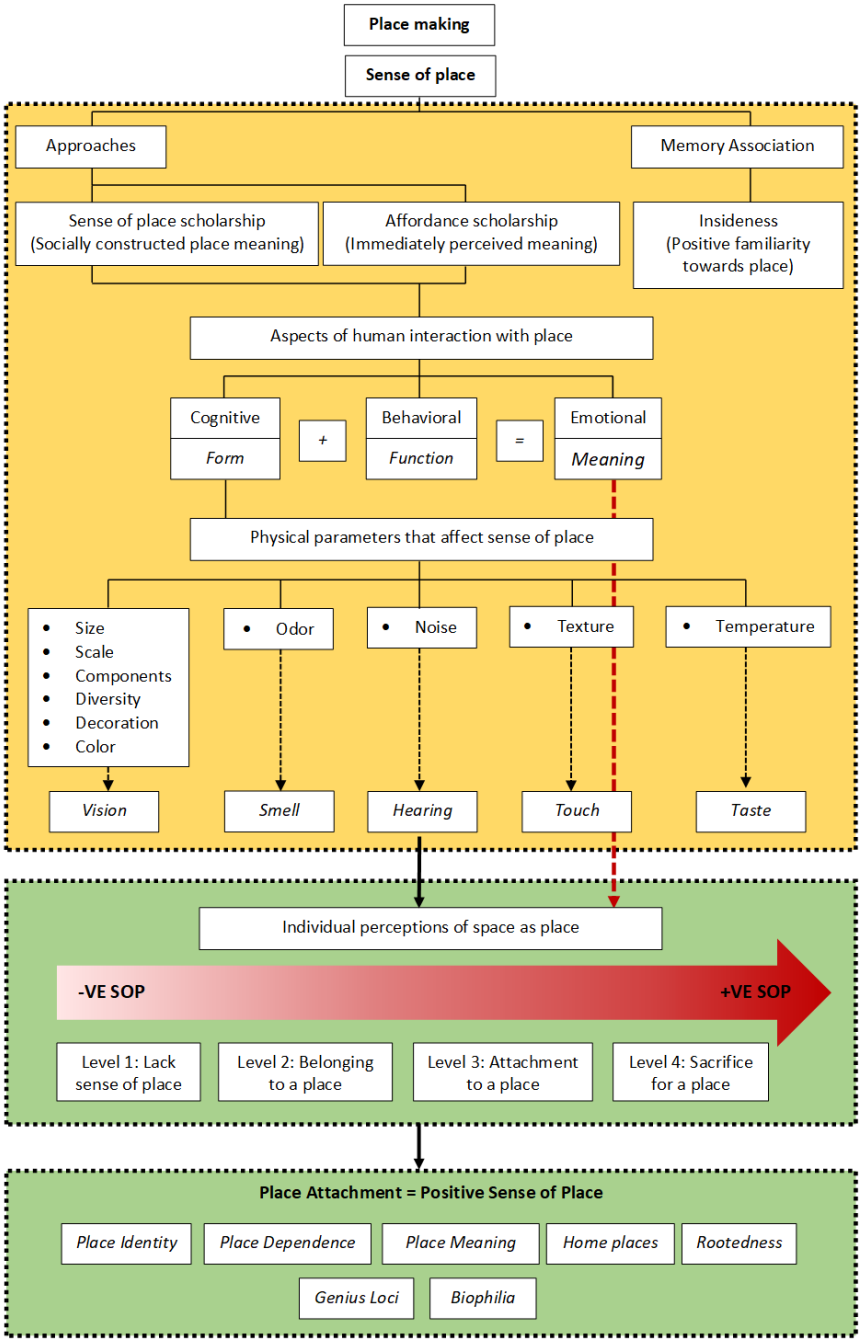


Figure 1: Theoretical framework of place making

CONCLUSION

Why place making is crucial when designing public spaces especially in Transit Oriented Development (TOD)? The result of the findings shows how place making can influence the behavioural of the people through creating a sense of place leading to place attachment and place meaning. Place attachment is acknowledged when people kept returning to that place as it perceives a meaning that portrays the emotional connection between the person and the place, hence, responding to our first main question mentioned previously.

However, the outcome of place making will not be effective unless, it succeeds in achieving a sense of place by implementing the factors that are coherent within the community's satisfaction. Place identity that preserves the locale's physical characters and the neighbourhood's histories and cultures can contribute as an attraction or as the main cause for both community and newcomers to maintain their everyday activities and build new ones respectively. Whilst place dependence pressurizes more on the residents' relation with the place as it offers them home, security, source of income, and institutions. These elements help to establish a connection between a person and a place based on the scale of the individual perceptions of space as a place, which will gradually discern by the people according to the degree of the place meaning to them.

Memories association with a good sense of place may as well assist in making positive place attachment considering they would impact more on the place meaning. Balancing between the needs and satisfaction of the community with good urban design that provides quality place making in terms of cognitive, behavioural and emotional may help in TOD to create a better sustainable living for both parties-society and authorities. It is concluded that this study has described thoroughly on how sense of place can affect the community physically and spiritually and therefore leads to the importance of place making in TOD.

ACKNOWLEDGEMENT

This research is supported and funded by MOHE – Ministry of Higher Education under FRGS (FRGS/1/2020/WAB09/USIM/02/1), CRIGS (USIM/MG/UIAM/FKAB/SEPADAN-K/702020) and USIM (Universiti Sains Islam Malaysia).

REFERENCES

Abdul Latip, N. S., & Shamsuddin, S. (2012). International Transaction Journal of Engineering , Management , & Applied Sciences & Technologies Kuala Lumpur Waterfront : A Public Place for All ? 1 Public ' s accessibility at the waterfront. *International Transaction Journal of Engineering, Management & Applied Sciences & Technologies*, *3*(3), 311–331. http://tuengr.com/V03/311-331.pdf

Ali, S. M., Mohamed, A. N., & Sohafi, N. El. (2020). Towards A Sustainable Waterfront Development "Case Study of Port Said City" NOURHAN EL SOHAFI. *International Journal of Environmental Science*, *5*, 104–115.

http://scuegypt.academia.edu/ShimaaAlihttp://www.iaras.org/iaras/journals/ijes

Beidler, K. J., & Morrison, J. M. (2016). Sense of place: Inquiry and application. *Journal of Urbanism: International Research on Placemaking and Urban Sustainability*, *9*(3), 205–215. https://doi.org/10.1080/17549175.2015.1056210

Dorsey, B., & Mulder, A. (2013). Planning, place-making and building consensus for transit-oriented development: Ogden, Utah case study. *Journal of Transport Geography*, *32*, 65–76. https://doi.org/10.1016/j.jtrangeo.2013.08.010

Dupre, K. (2019). Trends and gaps in place-making in the context of urban development and tourism: 25 years of literature review. *Journal of Place Management and Development*, *12*(1), 102–120. https://doi.org/10.1108/JPMD-07-2017-0072

Ellery, P. J., Ellery, J., & Borkowsky, M. (2021). Toward a Theoretical Understanding of Placemaking. *International Journal of Community Well-Being*, *4*(1), 55–76. https://doi.org/10.1007/s42413-020-00078-3

Erfani, G. (2020). Sense of place as an investigative method for the evaluation of participatory urban redevelopment. *Cities*, *99*(November 2018), 102648. https://doi.org/10.1016/j.cities.2020.102648

Ewing, R. H. (2008). Characteristics, causes, and effects of sprawl: A literature review. *Urban Ecology: An International Perspective on the Interaction Between Humans and Nature*, *21*(2), 519–535. https://doi.org/10.1007/978-0-387-73412-5_34

Ferbrache, F., & Knowles, R. D. (2017). City boosterism and place-making with light rail transit: A critical review of light rail impacts on city image and quality. *Geoforum*, *80*, 103–113. https://doi.org/10.1016/j.geoforum.2017.01.013

Fincher, R., Pardy, M., & Shaw, K. (2016). Place-making or place-masking? The everyday political economy of "making place." *Planning Theory and Practice*, *17*(4), 516–536. https://doi.org/10.1080/14649357.2016.1217344

Friedmann, J. (2007). Reflections on place and place-making in the cities of China. *International Journal of Urban and Regional Research*, *31*(2), 257–279. https://doi.org/10.1111/j.1468-2427.2007.00726.x

Ghavampour, E., & Vale, B. (2019). Revisiting the "model of place": A comparative study of placemaking and sustainability. *Urban Planning*, *4*(2 Public Space in the New Urban Agenda: Research into Implementation), 196–206. https://doi.org/10.17645/up.v4i2.2015

Gomez, C. P., Omar, M., & Nallusamy, R. (2019). A Study on the Benefits of Transit Oriented Development in Malaysia And Incoporation of Those Benefits in Planning. *MATEC Web of Conferences*, *266*, 06016. https://doi.org/10.1051/matecconf/201926606016

Hashemnezhad, H., Heidari, A. A., & Hoseini, P. M. (2013). "Sense of place" and "Place Attachment." *International Journal of Architecture and Urban Development*, *3*(1), 5–12.

Jacobson, J., & Forsyth, A. (2008). Seven American TODs: Good Practices for Urban Design in Transit-Oriented Development Projects. *Journal of Transport and Land Use*, *1*(2), 51–88. https://doi.org/10.5198/jtlu.v1i2.67

Jorgensen, B. S., & Stedman, R. C. (2006). A comparative analysis of predictors of sense of place dimensions: Attachment to, dependence on, and identification with lakeshore properties. *Journal of Environmental Management*, *79*(3), 316–327. https://doi.org/10.1016/j.jenvman.2005.08.003

Kolodziejski, A. L. (2014). Connecting People and Place: Sense of Place and Local Action School of Environment, Education and Development: Planning and Environmental Management. *School of Environment, Education and Development:Planning and Environmental Management*, 1–23. http://documents.manchester.ac.uk/DocuInfo.aspx?

Krause, R. (2014). *Placemaking in the RhineMain Regionalpark*. *September*, 1–88. https://www.diva-portal.org/smash/record.jsf?pid=diva2%3A832027&dswid=-1637

Lang, W., Hui, E. C. M., Chen, T., & Li, X. (2020). Understanding livable dense urban form for social activities in transit-oriented development through human-scale measurements. *Habitat International*, *104*(July 2019), 102238. https://doi.org/10.1016/j.habitatint.2020.102238

Madureira, A. M. (2015). Physical planning in place-making through design and image building. *Journal of Housing and the Built Environment*, *30*(1), 157–172. https://doi.org/10.1007/s10901-013-9381-2

McCunn, L. J., & Gifford, R. (2018). Spatial navigation and place imageability in sense of place. *Cities*, *74*(June), 208–218. https://doi.org/10.1016/j.cities.2017.12.006

Mehta, V. (2014). Evaluating Public Space. *Journal of Urban Design*, *19*(1), 53–88. https://doi.org/10.1080/13574809.2013.854698

Mensch, J. (2007). Public space. *Continental Philosophy Review*, *40*(1), 31–47. https://doi.org/10.1007/s11007-006-9038-x

Metropolitan Rapid Transit Atlanta Authority. (2010). Metropolitan Atlanta Rapid Transit Authority. *Transit-Oriented Development Guidelines*, 1–109. https://www.itsmarta.com/uploadedFiles/More/Transit_Oriented_Development/TOD Guidelines 2010-11.pdf

Nelson, J., Ahn, J. J., & Corley, E. A. (2020). Sense of place: trends from the literature. *Journal of Urbanism*, *13*(2), 236–261. https://doi.org/10.1080/17549175.2020.1726799

Othman, S., Nishimura, Y., & Kubota, A. (2013). Memory Association in Place Making: A review. *Procedia - Social and Behavioral Sciences*, *85*, 554–563. https://doi.org/10.1016/j.sbspro.2013.08.384

Polat, S., & Dostoglu, N. (2017). Measuring place identity in public open spaces. *Proceedings of the Institution of Civil Engineers: Urban Design and Planning*, *170*(5), 217–230. https://doi.org/10.1680/jurdp.15.00031

Rahmat, A., Endot, I. R., Ahmad, Z., Ishak, Z., & Ibrahim, C. K. I. (2016). Development of Transit Oriented Development (TOD) Model for Malaysia. *Journal of Built Environment, Technology and Engineering*, *1*(August 2018), 36–47.

Rajala, K., Sorice, M. G., & Thomas, V. A. (2020). The meaning(s) of place: Identifying the structure of sense of place across a social–ecological landscape. *People and Nature*, *2*(3), 718–733. https://doi.org/10.1002/pan3.10112

Ratner, K. A., & Goetz, A. R. (2013). The reshaping of land use and urban form in Denver through transit-oriented development. *Cities*, *30*(1), 31–46. https://doi.org/10.1016/j.cities.2012.08.007

Raymond, C. M., Kyttä, M., & Stedman, R. (2017). Sense of place, fast and slow: The potential contributions of affordance theory to sense of place. *Frontiers in Psychology*, *8*(SEP). https://doi.org/10.3389/fpsyg.2017.01674

Schneekloth, L. H., & Shibley, R. G. (1993). The Practice of Placemaking. *Arch. 8 Comport. 1 Arch. 8 Behav*, *9*(I), 993.

Shamsuddin, S., & Ujang, N. (2008). Making places: The role of attachment in creating the sense of place for traditional streets in Malaysia. *Habitat International*, *32*(3), 399–409. https://doi.org/10.1016/j.habitatint.2008.01.004

Strydom, W., Puren, K., & Drewes, E. (2018). Exploring theoretical trends in placemaking: towards new perspectives in spatial planning. *Journal of Place Management and Development*, *11*(2), 165–180. https://doi.org/10.1108/JPMD-11-2017-0113

Toolis, E. E. (2017). Theorizing Critical Placemaking as a Tool for Reclaiming Public Space. *American Journal of Community Psychology*, *59*(1–2), 184–199. https://doi.org/10.1002/ajcp.12118

van Lierop, D., Maat, K., & El-Geneidy, A. (2017). Talking TOD: learning about transit-oriented development in the United States, Canada, and the Netherlands. *Journal of Urbanism*, *10*(1), 49–62. https://doi.org/10.1080/17549175.2016.1192558

Wyckoff, & A, M. (2014). Definition of Placemaking: Four Different Types. *Planning & Zoning News*, *1*. www.miplace.org

Zakariya, K., Harun, N. Z., & Mansor, M. (2015). Place Meaning of the Historic Square as Tourism Attraction and Community Leisure Space. *Procedia - Social and Behavioral Sciences*, *202*(December 2014), 477–486. https://doi.org/10.1016/j.sbspro.2015.08.196

Received: 28th Feb 2023. Accepted: 31st March 2023

NOTES TO CONTRIBUTORS AND GUIDELINES FOR MANUSCRIPT SUBMISSION

INTRODUCTION

The Journal of the Malaysian Institute of Planners or PLANNING MALAYSIA is a multidisciplinary journal related to theory, experiments, research, development, applications of ICT, and practice of planning and development in Malaysia and elsewhere.

The objective of the journal is to promote the activity of town planning through dialogue and exchange of views concerning professional town planning practice. PLANNING MALAYSIA will welcome any news, feature articles, or peer reviewed (including book reviews, software review, etc.) articles for publication. All articles should be original work by the authors. **Articles, views and features will not be taken to be the official view of the Malaysian Institute of Planners (MIP) unless it carries the name of MIP as the author.** This is to encourage open discussion on diverse issues and opinion for the advancement of town planning practice. Articles and contributions will be accepted from MIP members and non-members worldwide.

In year 2010, PLANNING MALAYSIA Journal has been indexed in SCOPUS. Previous issues of PLANNING MALAYSIA Journal can be viewed on the MIP website.

SUBMISSION OF MANUSCRIPTS

Manuscript should be emailed to pmjournal@gmail.com. Manuscript should ideally be in the range of 8-10 pages long. Each manuscript should have a title page and an abstract of about 150 words. The title page should contain the title, full name(s), designation(s), organizational affiliation(s), a contact address, and an email address. All manuscripts are received on the understanding that they are not under concurrent consideration at another journal. One copy of the current Journal will be provided for each article. Additional reprints of article can be ordered, at cost, by the author(s). PDF format of the article (if available) can be obtained from the Publisher.

LAYOUT

Manuscript should be typed in single spacing (including footnotes, endnotes and references) on one side of the paper only (preferably A4) with the following margins: right and left - 4.25 cm, top - 5.5 cm and bottom - 5.2 cm (including header – 4.5 cm and footer – 4.3 cm) in 11 point Times New Roman font. Footnotes should be numbered consecutively and placed at the end of the manuscript. Footnotes should be kept to a minimum. Tables and diagrams should be provided in the text. References should follow the APA (6th Edition) referencing format. All foreign words must be typed and transliterated. The Editorial Board reserves the right to change the transliteration of all historical names, titles and non-English terminology to bring them into conformity with its own style.

USE OF FORMULA, FIGURES AND TABLES

Formula (mathematical formula) should be used only when necessary and the CONCLUSION derived must be explained and made intelligible to a non-mathematical reader. Wherever possible, authors are encouraged to place the mathematical parts of the article in an appendix. In cases of empirical articles, authors are expected to make readily available a complete set of data and any specialized computer programs to interested readers.

All illustrations, figures and/or tables in the manuscript must be captioned, in clear black and white (grayscale) and ready for reproduction.

REFEREEING PROCEDURE

Manuscripts will be acknowledged upon receipt. Only selected (preferred) manuscripts will be **reviewed by two (or three) referees** in addition to the editors. Editorial decision will normally be made within **two to six months**, but circumstances beyond control occasionally dictate a longer cycle. If authors are invited to prepare a revision for further consideration, the major issues to be resolved will be outlined and will be forwarded to them as quickly as possible.

ACCEPTED ARTICLES

Authors of accepted articles will be requested to provide a digital copy of the manuscript, preferably in Microsoft Word to the MIP (the Publisher) via email at pmjournal@gmail.com. MIP will not be responsible for the loss or damage of the digital copy.

COPYRIGHT

Contact:

Editor-in-Chief
PLANNING MALAYSIA
Journal of the Malaysian Institute of Planners
B-01-02, Jalan SS7/13B, Aman Seri, Kelana Jaya,
47301, Petaling Jaya, Selangor Darul Ehsan, MALAYSIA
Tel: +603 78770637 Fax: +603 78779636
Email: pmjournal@gmail.com
Homepage: www.planningmalaysia.org

ETHIC STATEMENT

The Journal of the Malaysia Institute of Planners or **PLANNING MALAYSIA** is a peer-reviewed journal. This statement spells out ethical behaviour of all parties involved in the act of publishing an article for this journal, i.e. the author, the peer-reviewer, the chief editor and editors, and the publisher. This statement is based on COPE's Best Practice Guidelines for Journal Editors. URL: http://publicationethics.org/files/u2 /Best_Practice.pdf

DUTIES OF AUTHORS

Reporting Standards

Authors of original research should present an accurate account of the work done as well as an objective discussion of its significance. Data of the research should be represented accurately in the article. An article should contain sufficient detail and references to permit others to replicate the work. Fraudulent or knowingly inaccurate statements constitute unethical behaviour and are unacceptable.

Data Access and Retention

Authors may be asked to provide the raw data in connection with an article submitted for editorial review, and should be prepared to provide public access to such, if practicable, and should in any event be prepared to retain such data for a reasonable time after publication.

Originality and Plagiarism

Authors should ensure that they have written entirely original works, and if the authors have used the work and/or words of others this must be appropriately cited or quoted. Such quotations and citations must be listed in the Reference at the end of the article.

Multiple Publication

An author should not in general publish manuscripts describing essentially the same research in more than one journal or primary publication. Submitting the same manuscript to more than one journal concurrently constitutes unethical publishing behaviour and is unacceptable.

Acknowledgment of Sources

Proper acknowledgment of the work of others must always be given. Authors should cite publications that have been influential in determining the nature of the reported work.

Authorship of the Paper

Authorship should be limited to those who have made a significant contribution to the conception, design, execution, or interpretation of the study, and should be listed as co-authors. Others who have participated in certain substantive aspects of the research project, they should be acknowledged or listed as contributors.

Corresponding Author
Corresponding author is the author responsible for communicating with the journal for publication. The corresponding author should ensure that all appropriate co-authors and no inappropriate co-authors are included on the paper. All co-authors have seen and approved the final version of the paper and have agreed to its submission for publication.

Acknowledgment of Funding Sources
Sources of funding for the research reported in the article should be duly acknowledged at the end of the article.

Disclosure and Conflicts of Interest
All authors should disclose in their manuscript any financial or other substantive conflict of interest that might be construed to influence the results or interpretation of their manuscript.

Fundamental Errors in Published Works
When an author discovers a significant error or inaccuracy in his/her own published work, it is the author's obligation to promptly notify the journal editor or publisher and cooperate with the editor to retract or correct the paper.

DUTIES OF REVIEWERS

Contribution of Peer Review
Peer review assists the chief editor and the editorial board in making editorial decisions while editorial communications with the author may also assist the author in improving the paper.

Unqualified to Review or Promptness
Any reviewer who feels unqualified to review the assigned manuscript or unable to provide a prompt review should notify the editor and excuse himself/herself from the review process.

Confidentiality
Manuscripts received for review must be treated as confidential documents. They must not be shown to, or discussed with, others except as authorized by the chief editor. Privileged information or ideas obtained through peer review must be kept confidential and not used for personal advantage.

Standards of Objectivity
Reviews should be conducted objectively. There shall be no personal criticism of the author. Reviewers should express their views clearly with supporting arguments.

Acknowledgment of Sources
Reviewers should identify relevant published work that has not been cited by the authors. Any statement that had been previously reported elsewhere should be accompanied by the relevant citation. A reviewer should also call to the chief editor's attention any

substantial similarity or overlap between the manuscript under consideration and any other published paper of which they have personal knowledge.

Conflict of Interest
Reviewers should decline to review manuscripts in which they have conflicts of interest resulting from competitive, collaborative, or other relationships or connections with any of the authors.

DUTIES OF EDITORS

Decision on the Publication of Articles
The chief editor of the PLANNING MALAYSIA is responsible for deciding which of the articles submitted to the journal should be published. The chief editor may be guided by the policies of the journal's editorial board subjected to such legal requirements regarding libel, copyright infringement and plagiarism. The chief editor may confer with other editors or reviewers in making this decision.

Fair play
Manuscripts shall be evaluated solely on their intellectual merit.

Confidentiality
The chief editor/editors and any editorial staff must not disclose any information about a submitted manuscript to anyone other than the corresponding author, reviewers, potential reviewers, other editorial advisers, and the publisher.

Disclosure and Conflicts of Interest
Unpublished materials disclosed in a submitted manuscript must not be used by anyone who has a view of the manuscript while handling it in his or her own research without the express written consent of the author

PLANNING MALAYSIA
JOURNAL OF THE MALAYSIAN INSTITUTE OF PLANNERS

B-01-02, Jalan SS7/13B, Aman Seri, Kelana Jaya,
47301, Petaling Jaya, Selangor Darul Ehsan, MALAYSIA
Tel: +603 78770637 Fax: +603 78779636
Email: pmjournal@gmail.com or mip@mip.org.my
Website: www.planningmalaysia.org

ISSN 16756215
9 771675 621005