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PREFACE

This issue of *Planning Malaysia Journal* includes a mixture of articles addressing various issues in contemporary urban planning. Article 1 raises the question of whether green initiatives in educational institutions, especially universities, were successful in producing green graduates. A survey among green and non-green universities students showed that there is no significant difference in the level of perception, attitude and responsible environmental behaviour between green and non-green universities graduates. Thus, it suggests that students' involvement in universities' green initiatives should be increased.

Article 2 discusses the impacts of street urban design on the perceived safety by women respondents. As women's role in the cities becoming more pronounced, the authors suggest that streets and urban design should consider the safety of women so that street can become a safe and highly utilised public space. Article 3 looks at the factors affecting house prices in Malaysia in order to determine the alternative benchmark for Islamic home financing scheme. It shows that house price index are influenced by economic growth, demand for housing loan and construction materials. Article 4, in the meantime, compares the Islamic home financing schemes on offer in Malaysia nowadays, and suggest that there is a need for banks to move on from the *Al-Bay Bithaman Ajil* to *Musharakah Mutanaqisah* Partnership housing financing scheme.

Article 5 looks how innovative management of natural resources leads to increased participation of the local community and improved revenue for rural businesses. These, in turn, motivates local stakeholders to continue preserving the resources. Article 6 examines the practices regarding food waste management in hotels in Langkawi. It found that there was a lack of emphasis from the hotels on their policy related to wastage of food and unsustainable food consumption pattern by their guests. This reflects on the lack of practices towards sustainable food waste management by the hotel sector.

Article 7 identifies changes and threats to Malay landscape preservation in traditional Malays houses in Melaka and Kelantan. It concludes that threats to such preservation include inappropriate use of garden space, problems regarding house ownership, inadequate fund for maintenance, and current development trend that leads to traditional Malay garden setting being replaced by modern setting.

Article 8 discusses the use of agroforestry approach to improve sustainability of oil palm smallholdings. Rapid development and expansion of natural forest into oil palm land has decreased the agricultural sustainability of Malaysian oil palm production. However, the article shows that sustainability of oil palm smallholdings can be improved through agroforestry, which at the same time was found to also improve income of the smallholders.

Article 9 develops a framework on how public art could be used in a placemaking project. It suggests that public art placemaking is a collaborative and multi-disciplinary process. Thus, for the project to succeed, it is important that there is a good collaboration among the team working on the project. Local community should also be involved in the project. The article concludes that the proposed framework has potential to be adopted by local authorities in Malaysia, and it can enable a more collaborative process of placemaking between the local government, consultants, artists and the public.

Article 10 evaluates public perception and awareness on sources of traffic pollution in Kuala Lumpur, its effects on health and strategies to mitigate the pollution. It was found that respondents were aware on the sources of traffic pollution in the study area, and were aware of its effects on major illnesses such as pneumonia and asthma. Respondents were also favourable to government policies and strategies to mitigate traffic pollution, especially on increasing public transport and green vehicles usage.

Article 11 reviews and compares regulations of various countries with regards to tree preservation. It also traces the history of the Malaysian Tree Preservation Order, and examines its implementation over the years since its introduction. It concludes that the Malaysian Tree Preservation Order requires constant reviews, as well as an implementation guideline to assist related parties to implement the Order effectively.

Article 12 investigates the performance of local authority through the perspective of role theory. The results show that the local authority has performed well in its role with regard to controlling development in its area. However, its performance were only moderate in the service, collect and publish roles. The final article, Article 13, reviews the application of socio-economic indicators in urban climate impact studies. It concludes that indicator selection for such studies must reflect the spatial scale of the urban area. Thus, it proposes a conceptual model for social-economic indicators for urban scale climate studies.

It is the aim of Planning Malaysia Journal to encourage sharing of knowledge on various aspects of urban planning. This is reflected in the inclusion of articles in this issue that touch on design, economy, environment and governance aspects of planning. It is hoped that with the inclusion of such articles, it would further encourage researchers and practitioners to continue sharing their knowledge and findings on urban planning studies and experiences.

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Guest Editors



ARE GREEN UNIVERSITIES PRODUCING GREENER FUTURE LEADERS?

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Abstract

In recent years, studies on campus sustainability have been conducted to measure the impact that universities have on the environment and several mechanisms to measure and rank universities globally on how they perform in sustainability have been proposed. The UI Greenmetrics ranks universities based on sustainable performance ratings and focused more on the initiatives and opportunities provided to achieve sustainability but did not address the issue of environmental literacy among the university students. This study aims to understand how sustainable practices and policies adopted by Green Universities as well as demographic factors relate to the level of environmental attitude and responsible environmental behaviour of Malaysian student leaders. A census survey was carried out on student leaders of Malaysian public universities to assess their level of perception, attitude, personal responsible environmental behaviour (REB) and REB with regards to UI Greenmetrics Criteria. The Mann-Whitney U test conducted revealed that there was no significant difference in the level of the assessed components across all demographic factors between green and non-green universities. Spearman rank order correlation showed that there was a significant positive correlation between perception and personal REB ($r_s(322) = .385, p \leq .05$) as well student council REB ($r_s(322) = .542, p \leq .05$). Attitude was found to have a significant negative correlation with student council REB ($r_s(322) = -.114, p \leq .05$) while a high level of personal REB was significantly correlated with student council behaviour ($r_s(322) = .579, p \leq .05$).

Keyword: Green University; UI Greenmetrics; environmental attitude; environmental behaviour; student leaders

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INTRODUCTION

UI Greenmetrics as a measure of campus sustainability

Universities in Malaysia have been working towards implementing Green Initiatives as outlined in the United Nations Environmental Programme (UNEP) Greening Universities Toolkit in 2013 to become sustainable Green Campuses. Universities are thought of as mini cities in the way they function and causes direct and indirect impact on the environment (Mat et al., 2011). In recent years, studies on campus sustainability have been conducted to measure the impact that universities have on the environment and several mechanisms to measure and rank universities globally on how they perform in sustainability have been proposed. In 2010, the University of Indonesia proposed for a global ranking list of universities' sustainable performance ratings. The UI Greenmetrics is designed as a practical, entry-level tool for assessing campus sustainability efforts in both developed and developing countries and thought to be a simpler approach than other ranking systems such as GREENSHIP, STARS and the College Sustainability Report Card (Lauder et al., 2015). Results of the 2015 ranking saw 8 Malaysian tertiary institution listed as green campuses from a total of 407 universities that took part in the ranking worldwide. For Malaysia, Universiti Putra Malaysia came in first and ranked at number 17, followed by Universiti Utara Malaysia, 44, Universiti Malaya, 65, Universiti Tun Abdul Razak, 106, Universiti Kebangsaan Malaysia, 110, Universiti Teknologi Malaysia, 118, Universiti Malaysia Sabah, 173 and International Islamic University of Malaysia came in at number 361 (Universitas Indonesia, 2015).

Participation in the ranking by universities is voluntary and some universities may prefer to opt out of the ranking Universities that participate in the ranking may benefit by further fortifying their commitment to achieve campus sustainability while gaining a mark of assurance of their greenness through this recognition. Husin & Kunjuraman (2015) believe that campus sustainability has an important role to ensure the quality of educational services provided by local universities in order to compete with higher institutions abroad. A study conducted in Thailand comparing green and non-green universities in terms of perceived quality of life suggested that universities should adopt the criteria set in the UI Greenmetric World University Ranking to achieve better sustainability in their campuses and improve the quality of life of their stakeholders (Tiyarattanachai & Hollmann, 2015).

The UI Greenmetric measures the sustainability of tertiary education institutions by quantifying their performance across six categories, namely, setting and infrastructure, energy and climate change, waste, water, transportation and education. The UI Greenmetrics initially started off to assess the infrastructures and green initiatives carried out by universities to achieve green campus status and it was not until 2014 that education was included as one of the

indicators (Universitas Indonesia, 2015). In the education category, indicators include the number of courses related to environment and sustainability offered as well as the availability of funds to carry out research. The study focused more on the initiatives and opportunities provided to achieve sustainability but did not address the issue of environmental literacy with components such as environmental attitude and activism among the university students. At status quo, the metrics still lacks the measure of environmental literacy in its indicators. Therefore, a comprehensive study on the level of environmental literacy should be conducted to determine whether the level of environmental attitude and responsible environmental behaviour (REB) among the students reflects the ranking of the green universities.

The importance of measuring environmental literacy

There is a need to assess the environmental literacy of the university students in order to predict the future of decision-making on issues concerning natural resource use and environment as environmental literacy holds enormous potential for radically changing the way environmental issues are conceived (Clair, 2003). The UI Greenmetrics does not take into account environmental literacy in its assessment. For environmental protection to take place, it is not sufficient to assume that providing avenue for discourse on environmental knowledge will automatically result in the university producing more green citizens. As observed by Burchett (2015), although today's generation is more knowledgeable about environmental issues and sustainability, the knowledge is not translated into a deep concern for ecological issues or major alterations of human behaviour. Therefore, in addition to creating environmentally informed students, universities must also be able to instil the willingness to act for the environment for graduates to truly become green.

This study attempts to address the issue of lack of indicator on environmental literacy of university students in the UI Greenmetrics. A study on the environmental literacy of student leaders in Malaysian higher public institutions will provide a preliminary perspective on whether the policies and strategies implemented to make greener campuses has affected the students' outlook towards the environment. As student leaders graduated and become functioning members of the society, a look at the level of environmental literacy among the student representatives might give a glimpse of how environmental issues will be dealt with in the future. Assessing the environmental literacy of student representatives will serve as an indicator of the status of environmental literacy among university students. The representatives are elected through council elections and candidates worthy of support by the student community are chosen based on their advocacy of issues and their ability to speak for the regular masses. Students who are deemed worthy of such position are expected to exhibit a mature level of environmental literacy which should translate into activism. The

result from the assessment of their environmental attitude and behaviour will provide an insight on how responsive the student representatives are to address environmental issues on campus.

Measures of environmental literacy of student leaders between green and non-green universities

The research aims to understand how the sustainable practices and policies adopted by Green Universities relates to the level of environmental literacy of Malaysian student leaders. For the purpose of this study, the term “green university” refers to Malaysian public universities listed in the 2015 UI Greenmetrics ranking while “non-green university” are those that have not participated in the ranking. There are three specific objectives of the research. The first is to assess the environmental literacy of student leaders in Malaysian universities in relation to UI Greenmetric indicators. This will provide information on the level of environmental attitude and behaviour of student leaders with regards to the UI Greenmetrics indicator. Secondly, the study aims to compare and contrast between environmental literacy levels among student leaders of green and non-green universities. This will show if there is a significant difference between environmental attitude and behaviour of student leaders between green and non-green universities across demographic factors. The second objective will also indicate whether or not the perceived green initiatives in universities promote positive environmental attitude and behaviour in the student representatives. The third objective is to assess the level of participation and support of student leaders towards the implementation of sustainable practices in universities in line with the requirements of UI Greenmetrics. This will indicate the student leaders’ support in the implementation of the universities’ green initiatives with regards to the UI Greenmetrics through their personal and organizational environmental behaviour.

METHOD OF STUDY

Data collection and instrument

The study is a descriptive research where a census survey was carried out on 605 student leaders in public tertiary institutions across the country to assess their level of environmental attitude and behaviour. The student leaders were invited by email to participate in the survey that was administered through the web-based survey tool (SurveyMonkey®). Reminders were sent 3 days after the initial email and 3 days before the end of the 2-week data collection period. Reminders were also sent to the respondents through the messaging application Whatsapp Messenger® with the hyperlink to the survey attached in the message sent as an alternative channel.

The instrument used in this study was a questionnaire adapted from the Environmental Attitude Inventory by Milfont and Duckitt (2010) and constructed in accordance with the UI Greenmetrics indicators. The draft questionnaire was vetted by the content expert to verify content validity. Pre-testing was carried out by distributing the questionnaire to 120 undergraduate students in Universiti Putra Malaysia. Exploratory factor analysis was conducted to establish construct validity for four components which were Perception (8 items), Attitude (9 items), Personal REB (6 items) and Student Council REB (7 items). The internal reliability of each component was Cronbach Alpha 0.57 (Perception), Cronbach Alpha 0.05 (Attitude), Cronbach Alpha 0.68 (Personal REB) and Cronbach Alpha 0.80 (Student Council REB). The tested questions were reviewed and eventually reduced to 27 questions after 3 questions were deleted from the attitude component to produce a higher measure of reliability. For each component, the items were assessed on a 5 point Likert-type (1= strongly disagree, 2= moderately disagree, 3=unsure, 4=moderately agree, 5=strongly agree) with responses for negative questions re-coded in order to enable calculation of average scores.

Statistical analysis

Data from each university were grouped into green and non-green universities based on respondent characteristics and explained using descriptive statistics. Non-parametric statistical tests were conducted to analyse the data. Mann-Whitney U test was carried out to test the mean scores of perspective, attitude, personal REB and student council REB between green and non-green universities based on field of study, student accommodation and gender. Correlation analysis using Spearman's rho value was conducted to identify correlations between constructs based on the UI Greenmetrics criteria. Statistical tests were run at 95% confidence level.

FINDING AND DISCUSSION

Demographic characteristics of respondents

The demographic characteristics of respondents are presented in Table 1. The study received 325 responses, giving a response rate of 53.72%. 322 responses received were more than 85% completed giving the completion rate of 53.22%. Of the 322 completed responses, 212 (65.8%) were from non-green universities, 188 (58.4%) were pursuing their studies in natural sciences, technology and engineering, 277 (86%) had on campus accommodation, 185 (57.5%) were male students and 282 (87.6%) were aged between 19 to 23 years old.

Table 1 Demographic composition of respondents

| Demographic Information | Number (<i>n</i>) | Percentage (%) |
|--|---------------------|----------------|
| UI Greenmetric status | | |
| Green | 110 | 34.2 |
| Non green | 212 | 65.8 |
| Field of study | | |
| Natural sciences, technology and engineering (STE) | 188 | 58.4 |
| Social science and humanities (SSH) | 134 | 41.6 |
| Student accommodation | | |
| On campus | 277 | 86.0 |
| Off campus | 43 | 13.4 |
| No response | 2 | 0.6 |
| Gender | | |
| Male | 185 | 57.5 |
| Female | 137 | 42.5 |
| Age group (years) | | |
| 19-23 | 282 | 87.6 |
| 24-28 | 38 | 11.8 |
| No response | 2 | 0.6 |

Descriptive statistics

The highest perceived green initiative recorded was for setting and infrastructure for both green universities ($M=4.02$, $SD=1.09$), and non-green universities ($M=3.85$, $SD=0.98$). The lowest recorded was for water in green universities ($M=3.3$, $SD=1.04$) and education in non-green universities ($M=3.27$, $SD=1.45$). For environmental attitude, both green and non-green universities scored the highest in waste (green: $M=4.55$, $SD=0.76$; non-green: $M=4.53$, $SD=0.78$) and the lowest was for transport (green: $M=2.33$, $SD=1.27$; non-green: $M=2.63$, $SD=1.33$). In terms of personal REB, the highest score was observed for education in both university groups (green: $M=3.90$, $SD=1.27$; non-green: $M=3.88$, $SD=1.33$) while the lowest score was recorded for waste (green: $M=2.33$, $SD=1.26$; non-green: $M=2.63$, $SD=1.28$). The highest score for student council REB was observed in settings and infrastructure for both green and non-green universities (green: $M=3.70$, $SD=1.16$; non-green: $M=3.87$, $SD=1.09$) and the lowest was in water conservation (green: $M=2.86$, $SD=1.13$; non-green: $M=3.13$, $SD=1.11$).

Non-parametric tests

The Mann-Whitney U test indicated that there was no significant difference observed between the perception, attitude, personal REB and student council REB of student leaders between green and non-green universities (Table 2)

Table 2 Results of the Mann Whitney U test to compare construct scores between Green and Non Green Universities

| Construct | UI Greenmetrics status | N | Mean rank | Sum of ranks | U | Z | P |
|--------------|------------------------|-----|-----------|--------------|----------|--------|------|
| Perception | Green | 110 | 164.58 | 18104.00 | 11321.00 | -.429 | .668 |
| | Non Green | 212 | 159.90 | 33899.00 | | | |
| Attitude | Green | 110 | 162.17 | 17839.00 | 11586.00 | -.094 | .925 |
| | Non Green | 212 | 161.15 | 34164.00 | | | |
| Personal REB | Green | 110 | 163.25 | 17957.50 | 11467.50 | -.244 | .807 |
| | Non Green | 212 | 160.59 | 34045.50 | | | |
| Council REB | Green | 110 | 148.48 | 16332.50 | 10227.50 | -1.811 | .070 |
| | Non Green | 212 | 168.26 | 35670.50 | | | |

The Mann-Whitney U test was also conducted to compare construct scores across different demographic factor of field of studies between green and non-green universities (Table 3). There was no significant difference observed between construct scores across different field of studies in both green and non-green universities. In this research, respondents were grouped in either the field of science, technology and engineering or social science and humanity. Having more specific levels of study field may be more complex but it might yield a better understanding on how different academic fields affect environmental attitude and behaviour. This was evident in the study conducted by Kaplowitz and Levine (2005) which found that students in academic fields related to biology and nature tend to score higher in their environmental attitude as compared to their peers in the field of economy and technology. The Mann-Whitney U test performed to compare levels of construct based on mode of student accommodation also did not exhibit significant difference between students living on campus or off campus.

Table 3 Results of the Mann Whitney U test to compare construct scores of different fields of studies between Green and Non Green Universities

| Construct | Field of study | Green Universities | | | | | Non Green Universities | | | | | | |
|--------------|----------------|--------------------|-----------|--------------|---------|--------|------------------------|-----|-----------|--------------|---------|--------|------|
| | | N | Mean rank | Sum of ranks | U | Z | P | N | Mean rank | Sum of ranks | U | Z | P |
| Perception | STE | 65 | 49.48 | 3216.50 | 1071.50 | -2.382 | .017 | 123 | 105.87 | 13021.50 | 5395.50 | -1.177 | .859 |
| | SSH | 45 | 64.19 | 2888.50 | | | | 89 | 107.38 | 9556.50 | | | |
| Attitude | STE | 65 | 56.44 | 3668.50 | 1401.50 | -.373 | .709 | 123 | 113.14 | 13916.50 | 4656.50 | -1.862 | .063 |
| | SSH | 45 | 54.14 | 2436.50 | | | | 89 | 97.32 | 8661.50 | | | |
| Personal REB | STE | 65 | 51.03 | 3317.00 | 1172.00 | -1.772 | .076 | 123 | 103.50 | 12730.50 | 5104.50 | -.840 | .401 |
| | SSH | 45 | 61.96 | 2788.00 | | | | 89 | 110.65 | 9847.50 | | | |
| Council REB | STE | 65 | 50.50 | 3282.50 | 1137.50 | -1.979 | .048 | 123 | 99.87 | 12284.50 | 4658.50 | -1.853 | .064 |
| | SSH | 45 | 62.72 | 2822.50 | | | | 89 | 115.66 | 10293.50 | | | |

A series of Spearman rank-order correlation was run to determine the relationship between the four constructs in this study (Table 4). There was a strong, positive correlation between perception and personal REB, which was statistically significant ($r_s(322) = .385, p \leq .05$). Perception was also found to be significantly positively correlated with student council REB ($r_s(322) = .542, p \leq .05$). The level of attitude was observed to be unrelated to perception ($r_s(322) = -.057, p > .05$) and personal REB ($r_s(322) = .003, p > .05$). However, attitude was found to have a significant negative correlation with student council REB ($r_s(322) = -.114, p \leq .05$). A high level of personal REB was significantly correlated with student council behaviour ($r_s(322) = .579, p \leq .05$)

Table 4 Spearman’s correlations based on construct

| | 1 | 2 | 3 | 4 |
|-----------------|--------|--------|--------|---|
| 1. Perception | 1 | | | |
| 2. Attitude | -.057 | 1 | | |
| 3. Personal REB | .385** | .003 | 1 | |
| 4. Council REB | .542** | -.114* | .579** | 1 |

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

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

A closer examination of Spearman rank-order correlation between constructs according to the categories in the UI Greenmetrics (Table 5) gives a better picture on how the results in Table 4 were achieved. Lim et al (2014) observed in a study of environmental behaviour among undergraduates in Malaysia that there was a positive association between high knowledge and attitudes with pro-environmental behaviours. The results in this study was found to be inconsistent with this finding as attitude is observed to be negatively correlated with perspective and personal REB with regards to Settings and Infrastructure, Water and Transportation. For the Water criteria, attitude was found to have a significant negative correlation with perception ($r_s(322) = -.231, p \leq .05$), personal REB ($r_s(322) = -.200, p \leq .05$) and student council REB ($r_s(322) = -.303, p \leq .05$). It is interesting to note that while the students have a positive attitude towards water conservation through the implementation of rainwater harvesting, they have not observed much water conservation activities on campus which in turn results in low water conservation behaviour on a personal and organizational scale.

Table 5 Spearman’s correlations according to UI Greenmetrics Criteria

| Settings and Infrastructure (SI) | 1 | 2 | 3 | 4 |
|----------------------------------|--------|-------|--------|---|
| 1. SI Perception | 1 | | | |
| 2. SI Attitude | -.014 | 1 | | |
| 3. SI Personal REB | .163** | -.054 | 1 | |
| 4. SI Council REB | .191** | -.057 | .271** | 1 |

| Waste (WS) | | | | |
|--------------------------------|---------|---------|--------|---|
| 1. WS Perception | 1 | | | |
| 2. WS Attitude | .250** | 1 | | |
| 3. WS Personal REB | .152** | .055 | 1 | |
| 4. WS Council REB | .382** | .120* | .283** | 1 |
| Transportation (TR) | | | | |
| 1. TR Perception | 1 | | | |
| 2. TR Attitude | -.105 | 1 | | |
| 3. TR Personal REB | .139* | -.038 | 1 | |
| 4. TR Council REB | .276** | -.088 | .174** | 1 |
| Energy and Climate Change (EC) | | | | |
| 1. EC Perception | 1 | | | |
| 2. EC Attitude | .078 | 1 | | |
| 3. EC Personal REB | .091 | .283** | 1 | |
| 4. EC Council REB | .394** | .169** | .210** | 1 |
| Water (WR) | | | | |
| 1. WR Perception | 1 | | | |
| 2. WR Attitude | -.231** | 1 | | |
| 3. WR Personal REB | .355** | -.200** | 1 | |
| 4. WR Council REB | .431** | -.303** | .556** | 1 |
| Education (ED) | | | | |
| 1. ED Perception | 1 | | | |
| 2. ED Attitude | .278** | 1 | | |
| 3. ED Personal REB | .496** | .407** | 1 | |
| 4. ED Council REB | .194** | .013 | .204** | 1 |

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

CONCLUSION

The study revealed that there was no significant difference in the level of the perception, attitude, personal REB and student council REB across demographic factor studied between green and non-green universities. Spearman rank order correlation showed that there was a significant positive correlation between perception and personal REB ($r_s(322) = .385, p \leq .05$) as well as student council REB ($r_s(322) = .542, p \leq .05$). Attitude was found to have a significant negative correlation with student council REB ($r_s(322) = -.114, p \leq .05$) while a high level of personal REB was significantly correlated with student council behaviour ($r_s(322) = .579, p \leq .05$). High mean scores for perceived green initiatives on campus and student council REB in the settings and infrastructure criteria shows that more sustainability effort on campus were centred on greening the campus area. The low mean scores of perception and student council REB on water conservation shows that this is one area in the UI Greenmetrics criteria that was less emphasized and less focused on, and more activities should be tailored to tackle the low effort to promote water conservation. The university management

should reassess their targets on achieving green campus status to include the environmental literacy of graduates as the desired outcome of tertiary education. Working towards this, university administrators should consider increasing the student involvement in the planning and implementation of sustainable practices in the campus.

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REFERENCES

- Burchett, J. H. (2015). Environmental literacy and its implications for effective public policy formation. *Baker Scholar Projects*. Retrieved from: http://trace.tennessee.edu/utk_bakerschol/27
- Clair, R. S. (2003). Words for the world: Creating critical environmental literacy for adults. *New Directions for Adult and Continuing Education*, 2003(99), 69–78.
- Hussin, R., & Kunjuraman, V. (2015). Exploring strategies for sustainable ‘ecocampus’: The experience of Universiti Malaysia Sabah. *Geografia online@ Malaysian Journal of Society and Space*, 11, 84-96.
- Lauder A., Sari, R. F., Suwartha, N., & Tjahjono, G. (2015). Critical review of a global campus sustainability ranking: GreenMetric. *Journal of Cleaner Production*. doi: 10.1016/j.jclepro.2015.02.080.
- Kaplowitz, M. D., & Levine, R. (2005). How environmental knowledge measures up at a big ten university. *Environmental Education Research*, 11(2), 143-160.
- Lim, K. H., Harun, R., Ching, F. G., & Yeo, L. Y. (2014). Environmental awareness, attitude and behaviour among under graduates in Malaysia. In *Proceedings of the International Conference on Environmental Forensics 2013: From Sources to Solution* (pp. 427-432). Singapore: Springer.
- Mat, S. O. H. I. F., Sopian, K., Mokhtar, M., Ali, B., Hashim, H. S., Rashid, A. K. A., & Zain, M. F. M. (2011). Managing Sustainability in Universiti Kebangsaan Malaysia. *Environmental Problems and Development*, 33-38.
- Milfont, T. L., & Duckitt, J. (2010). The environmental attitudes inventory: A valid and reliable measure to assess the structure of environmental attitudes. *Journal of Environmental Psychology*, 30(1), 80-94.
- Tiyarattanachai, R., & Hollmann, N. M. (2016). Green Campus initiative and its

Raihana Mohd Ghaus, Rosta Harun, Lim Kuang Hock, & Zakiah Ponrahono
Are Green Universities Producing Greener Future Leaders?

impacts on quality of life of stakeholders in Green and Non-Green Campus universities. SpringerPlus (2016)5:84 DOI 10.1186/s40064-016-1697-4
Universitas Indonesia (2015). *UI GreenMetric World University Ranking*. Retrieved from <http://greenmetric.ui.ac.id/>. Accessed 4/ April 2016



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STREET DESIGN AND WOMEN'S SAFETY PERCEPTION

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Abstract

Urbanization is a process that creates many opportunities as well as threats. It is a process that will keep on continuing as population rate, migration, economic and social pattern are changing. Along with urbanization, demand for sustainable development and public space is crucial. Streets are important public space in a city. It is a network for many kind of activities. Design of streets affects the way people use it as well as their perception on safety. As a public space, safety is an important factor to consider. A safe public space will create a liveable environment. Feeling safe is important for human being due to the fact the built environment does affect our perception. Gender plays a role in safety perception where women perceive their environment differently. This study focuses on the importance of street as public space in contributing towards safety perception. In order to evaluate the phenomenon, a mixed method approach was adopted. Four streets in the city centre which are important public space with trading activities, connected to educational institution, offices and other economic activities were chosen. 120 questionnaire were distributed and direct observation were conducted in order to evaluate the phenomenon. Findings revealed that physical elements in the street do affect safety perception.

Keyword: Public space, sustainable urban design, street design, safety perception

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INTRODUCTION

Urbanization rate are increasing at global level and in Malaysia alone it is increasing (World Bank, 2015; Masron et al, 2012) especially in major cities like Kuala Lumpur, Georgetown and Johor Bahru (World Bank, 2015). During urbanization process, built environment, including public space, will definitely be changing according to the demand and needs of the population, and the economic and political scenarios. The way we design our built environment are affecting social aspect, especially the design of public space where the current trend has led to private ownership, and affecting usage and sense of place. Public space can encourage socially acceptable or unacceptable behavioural responses, therefore it should be designed to become the physical sign of cultural expectations (Thomas, 2002). A sense of feeling safe in a public space has a great influence on perception. Stanley et al. (2012) found that the form and function of public space vary based on particular cultural arrangements, but still having similar features. It needs to be inviting, lively, attractive and comfortable. According to Soholt (2004), there are three main criteria for public space; protection, comfort and enjoyment.

Public space is an important element of urban design, which comprises street and square. However, in Malaysian context, streets are more dominant in terms of usage due to several factors, especially due to our hot and humid weather. For centuries, street acts as public space. During the medieval period it was a social and political space as well as marketplace. Street also formed the cities through its grid iron layout. However, over the years, street design has changed due to advancement in technology as well as our increasing dependency on motorised vehicles. The grid iron layout which was dominant previously has given way to long and wide street sandwiched by tall buildings. This has made street became less pedestrian-friendly and resulting in diminishing the role of street as a public realm. Rudlin et al. (2009) found that the traditional street are more robust and attract more people to urban area.

Street has been considered as a 'symbol' of public space and has always been the centre of attention. According to Mehta (2008), street has been recognised as public space by modern urban societies rather than the town square or the piazza. Design of the street is important as this is where public life happen, where people mingle and do their everyday activities from trading to leisure. In order to maintain sense of place and public life, it needs to be safe and comfortable for all. It should be free from crime and people should feel free to use it with no fear of their safety (Carmona et al., 2003). Safety is major issues in the cities not only in developing country like Malaysia but also in developed country (UN Habitat, 2007).

Research shows that fear is more dominant among women where they feel more vulnerable compared to men especially when being in the street at night. However, with the changing and advancement in many aspects of life,

women are changing the demographic in the city. Cities are occupied not only by men but also women for many purposes. Making public space safer for women is a major step ahead towards enhancing women's access to these spaces. Due to this, UN Women, UNICEF and UN Habitat have jointly launched the 'Safe and Sustainable Cities for All' programme, involving many countries. UN Women Safe Cities Global Initiative has also taken steps to overcome safety issue especially for women in public spaces. Street in the city is an important public space which women use especially the shopping street even though the design varies according to locality and culture.

According to survey by United Nations in 2012, it was found that women in developed country feel unsafe in their environment. In London, a 2012 poll found that 43% of young women had experienced street harassment in the past year. However, the number of women that appear in the public realm, during the day and especially at night, is an indicator of the health of a society and the safety and liveability of a city (Bloomingrock, n.d.). Thus, the design of the built environment, especially public space, must consider the safety of women so that more of them will feel safe, welcomed and comfortable using public space.

RESEARCH BACKGROUND

The importance of safer street as public space is for all, not just specifically for women. However, since women are more vulnerable and perceive the environment differently, more attention should be given for them. In Malaysia, sustainable development is a continuing process along with rapid development. According to Saadatian et al. (2011), even though there are various initiatives have been taken, there are still weaknesses in the realm of sustainable development.

Perception of safety is influenced by many factors such as social, economic, cultural, environment and demographic (Boulangue, 2011) and women were constantly reported as registering more fear of crime than men. Gender has been found consistently and strongly as an important factor associated with fear of crime. Women in general feel fearful (UN Women, 2015) compared to men (Grabosky, 1995). Rapoport (1977) highlighted that perception is the key process to connect people within the surrounding environment related to man and environment.

METHODOLOGY

This study adopted questionnaire survey as the technique to obtain primary data. 120 questionnaires were distributed to respondents who were chosen through convenient sampling in the study area. Additionally, site observation was also conducted by the researchers to corroborate the findings from the questionnaire survey.

The case study area was four significant streets located in Kuala Lumpur. These were Jalan Benteng, Jalan Melaka, Jalan Tun Perak and Jalan Melayu. These four streets are connected to Masjid Jamek LRT station and are the focal points for various types of activities, including historical landmarks such as the Masjid Jamek, that attract crowd to the area.

FINDINGS

Physical Elements That Affect Safety Perception

Findings from the questionnaire survey showed that majority of respondent (70%) agreed that physical elements in the area affect safety perception among women. These elements were visibility, land use mix, lighting, accessibility, orientation, signage and presence of vibrant activities.

On-site observation revealed that some of the elements that affect safety perception in the area were in less than sufficient state. However, the condition varies between streets. For instance, Jalan Melayu has a very good mixture of land use, accessibility, orientation and activities, but lacking in terms of visibility, lighting, signage and CCTV. Similarly, other streets in the area have different state of condition of the elements that affect safety perception. The current condition of the elements are as stated in Table 1 below.

Table 1 Physical elements that affect safety perception

| Elements | Street | | | |
|----------------------------|------------------|----------------------|-------------------|----------------------|
| | Jalan Melayu | Jalan Melaka | Jalan Tun Perak | Jalan Benteng |
| Visibility | Obstructed | Fully visible | Fully visible | Obstructed |
| Mixture of land use | Variety of uses | Less variety of uses | Variety of uses | Less variety of uses |
| Lighting | Lack of lighting | Enough lighting | Enough lighting | Lack of lighting |
| Accessibility | Accessible | Accessible | Accessible | Accessible |
| Orientation | Fair | Facing the street | Facing the street | Poor |
| Signage | Lack of signage | Lack of signage | Lack of signage | Lack of signage |
| Vibrant activities | Vibrant | Less vibrant | Vibrant | Less vibrant |
| Provision of CCTV | Lacking | Moderate | Lacking | Lacking |

Source: Fieldwork, 2016

Majority of respondents agreed that visibility is important in perceived safety, but through observation survey it was found that two streets, Jalan Benteng and Jalan Melayu, have poor level of visibility.

To be safe, places must also be well used. For this to happen, good urban design should address connectivity not in isolation, but alongside other qualities such as the mixture of activities and land uses.

The validity of findings from questionnaire survey was also corroborated when it was observed that women change their route when the environment was less safe to their perception. This has been observed at Medan Pasar where most of the five-foot walkway were crowded by foreign men. One snatch crime was also witnessed and this indicates that the area is not safe for women even during daytime.

Majority of the respondents also agreed that lighting is important and through observation, it was found that perception data is consistent. Some area do have lighting but poor visibility due to lighting quality and shadow due to lighting being blocked by tree canopy.



Figure 1 Streets which are not visible for pedestrian –Jalan Benteng and Jalan Melayu
Source: Fieldwork, 2015

Visibility was also affected by building design. Jalan Benteng and Jalan Melayu were poor in terms of visibility due to the design of the building as well as the activities along these streets. This has affected perception of safety especially at night. Jalan Melayu for example is a traditional street, but due to changes in economic and activities, new structures were added without considering safety factor. Jalan Benteng which is connected to Jalan Tun Perak is visible but poor in terms of surveillance since the street is fronted by the rear of the buildings and a river. Being lacking in terms of surveillance has attracted social incivilities such as beggars and homeless persons to the area.

Table 2 Comparison between questionnaire survey and on-site observation results

| Elements | Questionnaire (N=120) | Observation |
|------------------------|-----------------------|--------------|
| Hidden walkway | 95 % | Relevant |
| Underground passageway | 86 % | Not relevant |
| Single land use | 78 % | Relevant |
| Unkempt landscape | 85 % | Not relevant |
| Lack of lighting | 90 % | Relevant |
| Graffiti | 85 % | Not relevant |
| Litter | 92 % | Not relevant |
| Poor maintenance | 90 % | Not relevant |

Source: fieldwork, 2016

Results from questionnaire survey indicated that women feel unsafe when presented with negative elements in their environment such as litter and graffiti with over 80% of respondents were in agreement. However, from observation, it was found that these two variables were insignificant towards perceived safety. Women were seen unfettered by litter and graffiti in the area.



Figure 2: Physical incivilities

Source: Fieldwork, 2015

SOCIAL ELEMENTS

Social elements like crowding, street beggars and homeless people have been found to be among the factors that affect safety perception. The study area is attracting social incivilities due to the urban design and condition of the area where some parts were not properly maintained. The presence of homeless people and street beggars add to the social incivilities of the area and create an environment which is perceived as safe for other users, especially by women and at night.



Figure 4: Social incivilities
Source: Fieldwork, 2015

CONCLUSION

Findings from this study showed that both physical elements and social elements affect safety perception among female users of public space such as the streets. From this study, it shows that physical elements of the street are affecting perception of users in different ways according to location and time. Streets as public space are populated area; therefore, they should be designed with safety aspect in mind. Besides the physical elements, social elements also need to be addressed in order to increase safety perception and to encourage the use of street as public space. As the country moving towards developed nation, a liveable aspect of life which include safety should be the priority. Future study should explore more on the relationship of physical elements and perception according to local criteria and demographic background.

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REFERENCES

- Bloomingrock (n.d.). *Designing safe cities for women*, Retrieved from <https://www.smartcitiesdive.com>
- Boulange, C. (2011). *The effect of urban crime and perceived safety on urban levels of physical activity: a review*. World Health Organisation Kobe Centre for Health Development. Retrieved from www.who.int
- Carmona, M., Heath, T., Oc, T. & Tiesdell, S. (2003). *Public places-urban spaces: The dimensions of urban design*. UK: Architectural Press.
- Grabosky, P. N. (1995). Fear of crime and fear reduction strategies. *Trends & Issues in Crime and Criminal Justice*, 44, 41-60.
- Masron, T., Yaakob, U., Ayob, N.M., & Mokhtar, A.S. (2012). Population and spatial distribution of urbanisation in Peninsular Malaysia 1957-2000. *Geografia: Malaysian Journal of Society and Space*, 8(2), 20-29.
- Mehta, V. (2008). Walkable streets: Pedestrian behaviour, perceptions and attitudes. *Journal of Urbanism: International Research on Placemaking and Urban Sustainability*, 1(3). <http://dx.doi.org/10.1080/17549170802529480>

- Rapoport, A. (1977). *Human aspects of urban form: Towards a man-environment approach to urban form and design*. New York: Pergamon Press.
- Rudlin, D., & Falk, N. (2009). *Sustainable urban neighbourhood, building the 21st century home*. London: Architectural Press.
- Saadatian, O., Lim, C. H., Sohif, M., & Salleh, E. (2011). Sustainable development in Malaysia - planning and initiatives. *Recent Researches in Chemistry, Biology, Environment and Culture*. Retrieved from https://www.researchgate.net/publication/228532721_Sustainable_Development_in_Malaysia-Planning_and_Initiatives.
- Stanley, B.W., Barbara L.S., Katrina, L.J. & Michael E.S. (2012). Urban open spaces in historical perspective: A transdisciplinary typology and analysis. *Urban Geography*, 33(8), 1089–1117.
- Soholt, H. (2004, June). Life, spaces and buildings – turning the traditional planning process upside down. *5th International Conference on Walking in the 21st Century*, June 9-11 2004, Copenhagen, Denmark.
- Thomas, D. (2002). *Architecture and the urban environment: A vision for new age*, London: Architectural Press.
- UN Habitat (2007). *Enhancing urban safety and security: Global report on human settlements 2007*. London: Earthscan.
- UN Women (2015). *Safe cities and safe public spaces*. Retrieved from <http://www2.unwomen.org/-/media/field%20office%20eseasia/docs/publications/2016/10/3un%20women-safecities-brief-test.pdf?la=en&vs=919>.
- World Bank (2015). *Malaysia economic monitor, December 2015 - immigrant labor*. Retrieved from <http://www.worldbank.org>



WHAT DRIVES HOUSE PRICE IN MALAYSIA? IN SEARCH OF AN ALTERNATIVE PRICING BENCHMARK FOR ISLAMIC HOME FINANCING

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Abstract

The current practise of the Islamic banks to rely on market interest rate as pricing benchmark for their home financing products has been a subject of intense debate among many parties. Muslim scholars have warned that it is highly discouraged as it could lead to a possible convergence between the practices of the Islamic and conventional banks. This paper intends to address the financing issues in the discussion of human settlement or housing policy by presenting the determinants for house price index as well as looking into the possibility of adopting the House Price Index (HPI) to replace the market interest rate as a pricing benchmark for the Islamic home financing. The study applies Auto-Regressive Distributed Lag (ARDL) method on a model comprising HPI as the dependent variable and a set of independent variables consisting of economic, housing demand and housing supply factors. The findings lead to the formulation of recommendations as a way forward for the Islamic banking industry in particular, and the economy in general. This will require a paradigm shift from basic financing products to a more holistic approach which integrates supply of housing factors, as well as urban planning and urban finance, with human rights and recognizes the need to place and shelter people.

Keywords: home financing; House Price Index, Islamic banking; benchmarking; interest rates

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INTRODUCTION

In Malaysia, home financing has been the major contributor to the financing portfolio of Islamic banking industry since the establishment of the first Islamic bank in 1984. The importance of home financing to the Islamic banks is well-reflected by the domination of home financing to total financing of the Islamic banks. In 2015, for example, home financing contributes nearly 24 percent to Islamic banking's total financing (Bank Negara Malaysia, 2015). Recently, there are increasing interests among the Islamic banks in Malaysia to adopt the *Musharakah Mutanaqisah* (MM) contract in replace of the *Bai-Bithaman Ajil* (BBA) for the home financing product. The MM home financing is essentially a share-equity type of financing where customer and bank take up a joint-ownership of the house with the bank's share of ownership of the house being gradually bought by the customer. The joint contract will come to an end when all of the bank's share of the property is bought by the customer (at the end of the financing period), and the ownership of the house will be fully transferred to the customer. Since conceptually the MM adopts the contracts of *Musharakah* (joint venture) and *Ijarah* (leasing), this product is considered to be innovative as it moves the Islamic banks away from the commonly adopted debt-based contract of BBA.

Despite the increasing interests on the MM product, a major issue remains. Many have suggested using the rental rate as the benchmark for Islamic home financing as it is indicative of the real value of the property being occupied. In essence, the rental price indicates the values of usufruct or usage of the property in monthly payment. In this regard, the movement of market rental pricing is deemed as a suitable alternative to the conventional rate. Consequently, Abdul Razak and Meera (2009), and Amin, Abdul Rahman and Abdul Razak (2013) urge that interest rate should be replaced by rental rate as the benchmark in determining the price of equity home financing. Several other studies have also proposed that house prices as reflected by the House Price Index (HPI) to be a true measure of the value of houses, thus is a possible candidate to price the Islamic home financing product. Exploring the relationship between the macroeconomic factors and movements of housing prices, these studies found that the HPI has significant relationship with major macroeconomic indicators (see, for example, Li & Chand, 2013; Glindro et al., 2011).

This study examines the dynamic interactions of the HPI with macroeconomic factors with the aim of determining its suitability as a pricing benchmark for the Islamic home financing. By providing robust empirical evidence, we aim to further enrich the limited studies on the use of HPI as a pricing benchmark for Islamic home financing product.

HOUSE PRICE INDEX: CONCEPT, COMPONENTS AND APPLICABILITY IN BENCHMARKING HOME FINANCING

Definition and Concept of House Price Index

The House Price Index (HPI) represents the general movement of house prices, thus serves as a broad indicator for the performance of the housing market. In Malaysia, the Malaysian House Price Index (MHPI) report is published on a quarterly basis by the National Property Information Centre (NAPIC) under the Valuation and Property Services Department of the Ministry of Finance, Malaysia. The MHPI covers the housing market in the 13 states and 2 federal territories of the country. Apart from the overall or all-price index, disaggregated data based on the type of houses, namely terrace, high-rise, detached and semi-detached are also provided. Different weights are given for different property type in the calculation of the MHPI. The data is available for three base-years, namely 1990, 2000 and 2010 (starting from 2016:Q1). According to NAPIC, the changes in the base year are intended to reflect changes in house price due to buyers' preference and the emergence of new trends in the marketplace.

The HPI is computed based on the hedonic regression model with the underlying hypothesis that the price of a particular good (in this case is the house) can capture significant determinants by taking into account both the spatial and structural attributes of the good (Rosen, 1974). As a result, the construction of the HPI includes specific locational and physical attributes of the house such as land area, floor area, building age, distance from the nearest town centre, floor level (for high-rise only), house type, building quality, tenure type and neighbourhood classification.

Specifically, the following formula is adopted in estimating the current period house price of the "average" house, depending on the base year. For example, for the base year 2000:

$$L_t = \frac{\exp \left(\sum_{j=1}^n B_j(t) Q_j(2000) \right)}{\exp \left(\sum_{j=1}^n B_j(2000) Q_j(2000) \right)} \times 100$$

Where,

"exp" symbolises 'exponent'

$B_j(t)$ = hedonic model regression coefficient of current period

$B_j(2000)$ = hedonic model regression coefficient of the base year 2000

$Q_j(2000)$ = characteristic averages for houses sold in 2000

As shown in Table 1 below, the factors used in the Principal Component Approach of the hedonic price model include physical and environment factors (24 items), social factors (3 items), and economic factors (3 items).

Table 1. Factor Components in the Malaysian House Price Index

| Factor | Principal Component |
|-------------------------------|--|
| A. Physical and Environmental | 1. Scheme age |
| | 2. Local authority area |
| | 3. Location (core, inner, middle, outer or fringe of a city/town) |
| | 4. Proximity to town/city |
| | 5. Proximity to school |
| | 6. Proximity to community retail centre |
| | 7. Proximity to regional shopping centre |
| | 8. Playground/open space |
| | 9. Drainage (frequency of flood occurrence in a particular scheme/neighbourhood) |
| | 10. Availability of electricity, water and modern sanitary sewer |
| | 11. Quality of entrance and exit roads |
| | 12. Availability and type of public transport |
| | 13. Quality of landscaping |
| | 14. Pattern of land use by category |
| | 15. Number of housing units |
| | 16. Number of terraced units |
| | 17. Number of semi-detached units |
| | 18. Number of detached units |
| | 19. Number of high-rise units |
| | 20. Low-cost unit proportion |
| | 21. Type of building construction |
| | 22. Quality of principal structure |
| | 23. Average number of bedrooms per unit |
| | 24. Average number of bathrooms per unit |
| B. Social | 1. Ethnic structure |
| | 2. Quality of neighbourhood in the surrounding |
| | 3. Type of land uses in the surrounding |
| C. Economic | 1. Household income |
| | 2. Level of occupancy |
| | 3. Frequency of property turnover/transaction |

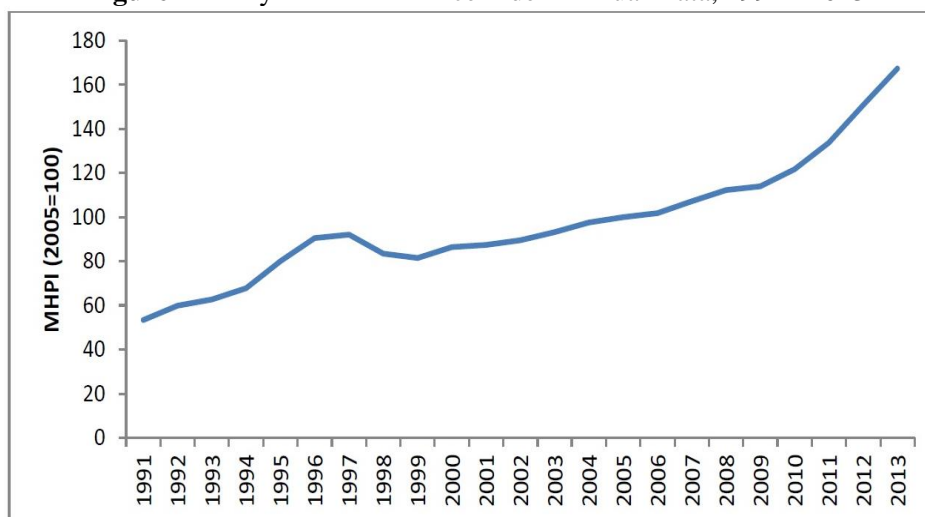
Source: Valuation and Property Services Department, Malaysia. (2016). *Malaysian House Price Index, Q2*.

The following variables are included as independent variables in the regression models and Figure 1 provides the corresponding plot of the change in the MHPI based on annual data.

1. Land area (for landed property such as terraced, detached and high-rise unit);
2. Floor area;
3. Age of building;

4. Distance from the nearest town centre;
5. Floor level for subject property (for high-rise unit only);
6. House type;
7. Building quality;
8. Tenure type (freehold or leasehold); and
9. Neighbourhood classification.

Figure 1 Malaysia's House Price Index-Annual Data, 1991 - 2013



Source: Valuation and Property Services Department (2015) *The Malaysian House Price Index*.

On a quarterly basis since 2001, the movement of house price in Malaysia suggests that the overall performance of Malaysia's house price is increasing over the years, indicating a continuous increase in the house prices in general. The increase of house prices over the years can be attributed to the strong demand for houses amid the expansion of the economy, resulting in a higher purchasing power of the Malaysians. Meanwhile, the change in the index showed an even stronger correlation with the economic performance. The highest rate of increase of the MHPI was in 1991 at 25.5 percent, indicating the economic boom experienced by the country, along with the high inflow of foreign funds into the various economic sectors, including the construction and real estate sector. However, the HPI declined substantially to its lowest in 1998, reflecting the worst economic contraction in the Malaysian history and the resulting declined in the construction sector and real asset prices in the aftermath of the Asian financial crisis in 1997. Relatively smaller declines are recorded in 2006 and 2009 in view of several policy implementations by the central bank in efforts to avert asset price inflation due to speculative activities by, among others limiting the availability of credit for purchase of non-owner occupants' houses.

Determinants of House Price Index

Physical and locational attributes

Various studies have examined the components of house price. These studies examined the impact of physical and locational factors on housing purchasing. A study included the housing attributes and buyer's demographic in investigating the impact of house price for Malaysia housing market (Majid, Said, & Daud, 2012) using Chi-square Test. The result showed that elements of the demography especially employment, marital status and gender affected property purchase criteria. These attributes become the important aspects that have always been considered by the buyer prior to purchasing a housing unit.

Previous studies have also employed analyses using multiple regression to estimate the hedonic housing prices. Most included the location-specific attributes of the physical criteria and micro-neighbourhood elements in valuing the house price. The study by Li and Brown (1980) has empirically shown that that housing value has an impact to the housing age, which generally declines as the house gets older. There was a significant interaction effect between lot size, the number of rooms and location (near to neighbourhood area) that contributed to the implications for house price. Other similar studies also considered physical and locational attributes in their studies (Pashardes & Savva, 2009; Fletcher, Gallimore, & Mangan, 2000).

Jim and Chen (2007) assessed the environmental externalities factors to the house price impact in China by the hedonic pricing method. The result showed that living quarters and floor area, security and good outdoor environment carried significant hedonic values. Ting (2008) studied the interaction approach between housing attributes, absolute location and household characteristics for China housing market. The result showed that these attributes give significant impact to house price. Another study carried by Tse (2002) examined the physical housing attributes and neighbourhood effects in Hong Kong house prices.

A study by Forrest, Glen and Ward (1996) examined the relationship between the availability of public transport of commuter rail services and the pattern of house prices in the Northern city of England. The study has shown the important locational attributes to the housing price. Theriault, Des Rosiers, Villeneuve, & Kestens (2003) studied the impact of type, age, educational attainment, income and the previous tenure status of the buyers to house price for Canada market. The result showed the significant effect of income on the location rent, as well as the premium paid by highly-educated households, gave greater effect to house price.

Macroeconomics attributes

Scholars have also studied the relationship of rate of return by using the mortgage interest rate to real GDP, interest rate (three-month TBR), consumer price index

(CPI), and real effective exchange rate (REER). Goodhart and Hofmann (2008) assess the links between money, credit, house prices and economic activity in 17 industrialized countries, spanning the period 1970 Q1–2006 Q4. The study shows the evidence of a significant multidirectional link between house prices, monetary variables, and the macroeconomic. Oikarinen (2009) identifies long run relation that ties real house price to real income, loan-to-deposit-ratio and real interest rate. Gimeno and Martinez-Carrascal (2010) examine the relationship between house purchase loans, house prices, labour income and nominal interest rate. The findings of these studies show that a unique long run relation that ties real house prices to real income, loan-to-deposit-ratio and real interest rate.

Many researchers have also conducted studies on the housing market based on the hedonic model. Linz and Behermann (2004) found that it seems feasible to compile a hedonic price index for owner-occupied housing in Germany, at least on quarterly basis by using Hedonic Pricing for the German House Price Index. Day (2003) applied the hedonic housing price model for Glasgow by including the structural (physical), accessibility, neighbourhood and environmental characteristics of the properties. In the case of Cyprus' real estate market, Pashardes and Savva (2009) examined the impact of macro and micro variables on house prices from 1988 to 2008. About 4,872 observations were included on various housing types like detached and semi-detached, a number of bedrooms, size of the building, geographical location and distance from the nearest city centre. The study found that house prices are sensitive to population, cost of construction materials and labour, GDP growth, and the sterling-euro exchange rate. However, the number of foreign workers tends to restrain house price increase and the stock market was negative.

METHODOLOGY

This paper employs multivariate time series analysis based on Auto-Regressive Distributed Lag (ARDL). In analysing the relationship between the variables, the ARDL essentially includes the current and also the lagged (past) values of the explanatory variables (the X's) which called a 'distributed-lagged model'. The model also includes one or more lagged values of the dependent variable among its explanatory variables which called an 'autoregressive model'. The ARDL approach can be applied regardless of the stationary properties, whether $I(0)$ or $I(1)$ of the variables in the samples and allows for inferences on long-run estimates which is not possible under the alternative cointegration procedures (Pesaran & Smith, 1998).

The model selects using the model selection criteria, such as the adjusted R^2 , Schwartz-Bayesian criteria (SBC) which known as the parsimonious model (selecting the smallest lag length). Finally, the ARDL approach provides robust results for a smaller sample size of the cointegration analysis. The ARDL models used in this study can be written as the following general models:

$$HPI_t = \alpha_0 + \beta_1 V_t + \beta_2 W_t + \beta_3 X_t + \beta_4 Y_t + \beta_5 Z_t + \epsilon_t \quad (1)$$

where:

- HPI = House Price Index
- V = Housing loan
- W = Production of other articles of concrete, cement and plaster
- X = Production of basic iron and steel products
- Y = Production of construction-related products
- Z = Real Gross Domestic Products

In establishing the presence of this long-run relationship between house price and its determinants, the study employs the ARDL-based bounds testing procedure suggested by Pesaran, Shin and Smith. (2001). The ARDL model expressed in an unrestricted error correction form is stated below:

$$\begin{aligned} \Delta HPI_t = & \theta_0 + \theta_1 HPI_{t-1} + \theta_2 V_{t-1} + \theta_3 W_{t-1} + \theta_4 X_{t-1} + \theta_5 Y_{t-1} + \theta_6 Z_{t-1} + \sum_{i=1}^k \phi_{1t} \\ & HPI_{t-1} \quad (2) \\ & + \sum_{i=0}^k \phi_{2t} V_{t-1} + \sum_{i=0}^k \phi_{3t} W_{t-1} + \sum_{i=0}^k \phi_{4t} X_{t-1} + \sum_{i=1}^k \phi_{5t} Y_{t-1} + \sum_{i=1}^k \phi_{5t} Z_{t-1} + \mu_t \end{aligned}$$

where Δ is the first difference operator, k is the optimal lag length, and all variables are as defined above. The bounds testing procedure has several advantages. It requires no knowledge of the variables' unit root property thus, evades the problem of pre-test bias inherent in cointegration tests as the residual-based test of Engle and Granger (1987) and the VAR-based test of Johansen (1988) and Johansen and Juselius (1990). In addition, the preliminary standard unit root tests are noted to lack power and have poor size property especially in small samples. The bounds testing is applicable irrespective of whether the variables are $I(0)$, $I(1)$ or mutually co-integrated. The variables are said to be $I(d)$ if it requires differencing d times to achieve stationary. In normal cases, the long-run relationship is restricted to the case of a set of non-stationary variables. The ARDL cointegration test extends the analysis to a set of variables that have mixed integration properties. Besides that, the Engle-Granger suffers from considerable small sample bias and the Johansen-Juselius test is not appropriate for small size samples, while the bounds test has better small sample properties. These advantages of the test seem to fit this study.

In the bounds testing procedure, the null hypothesis states that there is no cointegration or long-run relationship between house price and its determinants, which is based on the joint significance of the lagged level variables in Equation 1 (i.e. $H_0: \theta_1 = \theta_2 = \theta_3 = \theta_4 = \theta_5 = 0$). The test statistics are then compared to two critical value bounds with the lower value when the regressors are $I(0)$ and upper value when there are $I(1)$. The null hypothesis is rejected in favour of cointegration among the variables if the test statistics exceeds the upper critical value bound. Meanwhile, if the test statistics is below the lower critical

value bound, no long-run relationship between the variables exists. Finally, the test is conclusive when the test statistics are within the bounds. In this study, the unit root property is tested among all the variables. Note that, a single equation-based test, the bounds testing result may be sensitive to which variable is specified as a dependent variable. In the empirical literature, common practice to specify alternatively different variables in the model as the dependent variables. Thus, this paper follows the practice. Once the long-run relationship between the variables is established, the study may uncover the long-run house price to supply and demand coefficients. The short-run dynamics of house price behaviour can then be modelled using a restricted error correction model.

RESULTS

Descriptive Analysis

Table 2 below provides descriptive statistics of quarterly changes in HPI and the possible explanatory variables stated above. In particular, it gives the descriptive statistics of the benchmark variable, namely the HPI, and the possible explanatory variables, namely (i) GDP, (ii) housing loan, (iii) basic iron and steel products, (iv) production of construction-related products, (v) imports of construction materials & mineral products, and (vi) other articles of concrete, cement and plaster.

Table 2 Descriptive Statistics of Variables

| | HPI | GDP | Housing Loan | Concrete | Construction material | Iron and steel |
|--------------------|-------|-------|--------------|----------|-----------------------|----------------|
| Mean | 1.86 | 2.32 | 2.62 | 2.92 | 3.39 | 3.68 |
| Minimum | -0.36 | -1.05 | 2.23 | -3.11 | -0.41 | -0.68 |
| Maximum | 2.50 | 2.81 | 3.06 | 4.80 | 4.05 | 4.5 |
| Standard Deviation | 0.62 | 0.65 | 0.15 | 1.45 | 0.74 | 0.93 |

The results of the simple correlation analysis are provided in Table 3. The main benchmark indicator, the HPI has a significant relationship with most of the indicators, namely the macroeconomic indicator (GDP), demand indicator (housing loan), and supply indicators (construction material, and iron and steel). It is, however, rather puzzling to see that the HPI has a negative relationship with housing loan. In general, the results of the correlation analysis are as anticipated with the variables affecting the housing market to be significantly correlated with each other.

Table 3 Descriptive Statistics of Variables

| | HPI | GDP | Housing Loan | Concrete | Construction material | Iron and steel |
|-----------------------|-----|--------|--------------|----------|-----------------------|----------------|
| HPI | 1 | 0.72** | -0.27* | 0.08 | 0.69** | 0.70** |
| GDP | | 1 | -0.10* | -0.10 | 0.98** | 0.94** |
| Housing Loan | | | 1 | 0.10* | -0.11* | -0.18* |
| Concrete | | | | 1 | -0.11 | -0.08 |
| Construction material | | | | | 1 | 0.93** |
| Iron and steel | | | | | | 1 |

Note: * and ** denote significance at the 5% and 1% levels, respectively.

Estimation Results

The short-run relationships between the HPI and GDP, housing loan, concrete, construction material, and iron and steel were examined using the ARDL bounds testing procedure. Following the optimal lag length selection, the next step was to apply the bounds F-test to establish a long-run relationship between the variables under study.

As shown in Table 4, the results of the bounds tests suggest that, except for housing loan (which was a proxy for the demand factor), all other explanatory variables showed significant co-integration with the HPI. In particular, the HPI had a significant relationship with the economic indicator, namely GDP, suggesting that as the economic situation improves, it gives significant impact on the housing market. The HPI was also significantly related to the supply-side factor as reflected by its significant relationship with factors such as indices of concrete, construction-related materials, and iron and steel. However, it is interesting to note that the HPI had no significant relationship with the demand side factor, namely the housing loan extended by the banking institution as shown by the insignificant F-statistic for the variable.

Table 4 Results of the Bounds Tests

| Dependent Variables | Computed F-statistic |
|----------------------|----------------------|
| HPI | 14.8186** |
| GDP | 9.8043 *** |
| Housing loan | 1.7617 |
| Concrete | 13.1231*** |
| Construction-related | 17.1219*** |
| Iron steel | 5.6136*** |
| Critical value | Lower bound |
| 1% | 2.08 |
| 5% | 2.39 |
| 10% | 3.06 |
| Upper bound | |
| 1% | 3 |
| 5% | 3.38 |
| 10% | 4.15 |

*Notes: *, ** and *** indicate significance at 10%, 5% and 1% levels, respectively.*

^a Critical value is obtained from Pesaran, Shin & Smith (2001)

Table 5 Long-run ARDL Model Estimates

| | House Price Index | t-statistics |
|------------------------|-------------------|--------------|
| C | -8.3155 | -3.6756 |
| GDP | -3.649 | -3.2397*** |
| Housing Loan | 2.9567 | 3.5693*** |
| Concrete | -0.1305 | -1.4407 |
| Construction-materials | -0.7654 | -1.2634 |
| Iron and steel | 3.8483 | 5.1451*** |

The results from the long-run ARDL estimation are shown in Table 5. The results show that there are significant long-run relationships between HPI with the economic performance indicator (GDP growth), demand indicator (housing loan), and one of the supply indicators (iron and steel production index). The long run relationship between HPI and GDP was found to be negative and significant, which is rather puzzling. Meanwhile, the relationship between HPI and demand indicator – housing loan was a positive and significant one, suggesting that an increase in demand for housing manifested by an increase in the amount of housing loan results in an increase in HPI. While this relationship is rather obvious, it has a significant implication. This result highlights that the housing market was significantly influenced by bank loans to the house price which could possibly fuel speculative activities resulting in the danger of a housing inflation or housing bubbles.

CONCLUSIONS

With the objective of assessing the suitability of the HPI as an alternative to interest rate to benchmark the Islamic home financing products, this study

conducted a series of empirical testing to determine the relationship between HPI and selected macroeconomic and housing indicators. While the simple correlation results suggest significant relationships between the HPI and most of the indicators, it was shown to have a significant and negative relationship with housing loan. Similarly, the results of the short run ARDL bounds test suggest that the HPI was strongly related to the macroeconomic indicator and supply-side indicators, but not with the demand side indicator, namely housing loan. However, the results of the long run ARDL bounds test seem to indicate otherwise. The HPI showed positive and significant long run relationship with housing loan, while the long run relationship with GDP was significantly negative.

Due to the puzzling relationship between the HPI and the selected indicators, it is suggested that the HPI by itself is not a reliable indicator to price the Islamic home financing. However, since it was shown to have the expected significant relationship with the macro-economy and housing market indicators, especially in the short run, it is fair to include the HPI in other possible alternative to the benchmark index. In particular, since many scholars have suggested the adoption of the rental index to price the MM home financing, both the rental rate and HPI are included in arriving at the rental index (Abdul Razak & Meera, 2009). Thus, this study lends support to the use of rental index as the alternative to interest rate in benchmarking Islamic home financing.

Another important finding of this study is the ability of the HPI to be an indicator to predict the possibility of housing bubbles. Specifically, positive and significant relationship between HPI and housing loan (as the housing demand indicator) suggests that the increase in demand for housing is supported by the increase in housing loan, resulting in an increase in HPI. This study highlights that the housing market is significantly influenced by bank loans, thus an expansion of the housing market fuelled by availability of credit would result in speculative activities resulting in the danger of a housing inflation or housing bubbles. Realizing this, policymakers need to take pre-emptive steps and institute appropriate policy to reduce speculation activities in the housing market that are detrimental to the overall economy.

Despite the positive developments such as HPI, the financing challenge of today includes the continued urbanisation by upgrading the environments of housing and facilities. This study contends that resolution requires not only financial improvement but also good governance and political vow. This study contributes towards providing further support to the adoption of non-interest rate benchmark for Islamic home financing. Currently, the interest rate is being used as the benchmark in pricing the financial product is arbitrarily set based on the availability of credit in the economic system, with no clear link to the value of the property. The use of non-interest benchmark will result in a more stable price movements based upon the real value of property. For financing activities, the

benchmarks may vary according to the real sectors and products concern. The benchmark that is derived from a real sector of economy prevents disputes and arguments among the parties involved in the pricing of financial products. It also brings the honesty in the banking business with the transparency of benchmark used in determining the price. Thus, it boosts the level of trust and confidence of the society to the Islamic financial system.

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REFERENCES

- Amin, H., Abdul Rahman, A. R., & Abdul Razak, D. (2013). An integrative approach for understanding Islamic home financing adoption in Malaysia. *International Journal of Bank Marketing*, 31(7), 544–573.
- Bank Negara Malaysia (2015). Financial Stability and Payment Systems Report. Kuala Lumpur.
- Abdul Razak, D., & Meera, A. K. M. (2009). Home financing through the *musharakah mutanaqisah* contracts: Some practical issues, *J. KAU: Islamic Economics*, 22(1), 3-27.
- Day, B. (2003). Submarket identification in property markets: A hedonic housing price model for Glasgow, *Working Paper - Centre for Social and Economic Research on the Global Environment*, (1), 1-50.
- Engle, R. F., & Granger, C. W. J. (1987). Co-integration and error correction: representation, estimation, and testing. *Econometrica*, 55, 251-276.
- Fletcher, M., Gallimore, P., & Mangan, J. (2000). Heteroscedasticity in hedonic house price models. *Journal of Property Research*, 17(2), 93-108.
- Forrest, D., Glen, G. & Ward, R. (1996). The impact of a light rail system on the structure of house prices: A hedonic longitudinal study. *Journal of Transport Economics and Policy*, 30(1), 15-29.
- Gimeno, R., & Martinez-Carrascal, C. (2010). The relationship between house prices and house purchase loans: The Spanish case. *Journal of Banking and Finance*, 34(8), 1849-1855.
- Glindro, E. T., Subhanij, T., Szeto, J., & Zhu, H. (2011). Determinants of house prices in nine Asia-Pacific economies. *International Journal of Central Banking*, 7(3), 163–204.
- Goodhart, C., & Hofmann, B. (2008). House prices, money, credit, and the macroeconomy. *Oxford Review of Economic Policy*, 24(1), 180-205.
- Jim, C. Y., & Chen, W. (2007). Consumption preferences and environmental externalities: A hedonic analysis of the housing market in Guangzhou, *Geoforum*, 38, 414-431.

- Johansen, S. (1988). Statistical analysis of cointegration vectors. *Journal of Economic Dynamics and Control*, 12, 231-254.
- Johansen, S., & Juselius, K. (1990). Maximum likelihood estimation and inference on cointegration with applications to the demand for money. *Oxford Bulletin of Economics and Statistics*, 52, 169-210.
- Li, M. & Brown, J. H. (1980). Micro-neighbourhood externalities and hedonic housing prices. *Land Economics*, 56, 125-140.
- Li, Q., & Chand, S. (2013). House prices and market fundamentals in urban China. *Habitat International*, 40, 148–153.
- Linz, S., & Behermann, T. (2004). Using hedonic pricing for the German house price index. *Federal Statistical Office of Germany, VA Price*, 1-10. Retrieved from <http://193.166.173.45/og2004/linza.pdf>
- Majid, R. A., Said, R. & Daud, M. N. (2012). The Assessment of young couples' behaviour on expenditure towards homeownership. *International Surveying Research Journal*, 4(2), 35-52.
- Oikarinen, E. (2009). Interaction between housing prices and household borrowing: The Finnish case. *Journal of Banking and Finance*, 33(4), 747-756.
- Pashardes, P., & Savva, C. S. (2009). Factors affecting house prices in Cyprus: 1988-2008. *Cyprus Economic Policy Review*, 3(1), 3-25.
- Pesaran, H., & Smith, R. J. (1998). Structural analysis of cointegration VARs. *Journal of Economic Surveys*, 12(5), 471-505.
- Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of Applied Econometrics*, 16, 289-326.
- Rosen, S. (1974). Hedonic prices and implicit markets: product differentiation in pure competition. *Journal of Political Economy*, 82(1): 34-55.
- Ting, X. (2008). Heterogeneity in housing attribute prices: A study of the interaction behaviour between property specifics, location coordinates and buyers' characteristics. *International Journal of Housing Markets and Analysis*, 1(2):166-181.
- Thériault, M., Des Rosiers, F., Villeneuve, P., & Kestens, Y. (2003). Modelling interactions of location with specific value of housing attributes, *Property Management*, 21(1), 25-62.
- Tse, R.Y.C. (2002). Estimating neighbourhood effects in house prices: Towards a new approach of hedonic model. *Urban Studies*, 39(7), 1165-1180.
- Valuation and Property Services Department (2015). *The Malaysian House Price Index*.
- Valuation and Property Services Department (2016). *Malaysian House Price Index, Q2*.



**PERCEIVED FAIRNESS IN ISLAMIC HOME FINANCING:
COMPARISON BETWEEN AL-BAY' BITHAMAN AJIL AND
MUSHARAKAH MUTANAQISAH PARTNERSHIP CONTRACTS**

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Abstract

While many see housing sector as a commodity, there are still many people in Malaysia who fail to own homes and many are forced to rent or stay away from urban areas. This paper aims to provide information and disclosure of available loan opportunities for house purchases in Malaysia. Apart from the importance among buyers, it is also seen as important from the perspective of property valuers and professionals involved in housing industry. This study compares the perceived fairness between three types of home financing that are available in Malaysia, namely conventional home loan, *al-bay' bithaman ajil*, and *musharakah mutanaqisah* partnership (MMP) contracts among the customers in Malaysia. The study conducts a survey among 100 respondents to examine the relationship between customer intentions to use Islamic home financing based on MMP. The study concludes that the MMP has several advantages and is cheaper over the BBA for the customer. Apart from being unanimous *Shari'ah*-compliant, it can be made to keep away from interest completely by means of practicing rental or house price index at the same time as reducing the cost of homes and the duration of financing. This paper concludes by suggesting recommendations for the appropriate actions to address the issues and challenges facing the MMP home finance products and deregulate BBA in Malaysia.

Keywords: Islamic Home Financing, Bay' Bithaman Ajil, Musharakah Mutanaqisah Partnership

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INTRODUCTION

The availability of home to people is imperative as failure to have access to home or shelter would also inevitably deny people to other basic rights such as safety, health and education. In view of this importance, Islamic banks have provided various schemes for home ownership particularly to the Muslims who seek for halal alternative or Shari'ah compliant mortgage. Among the most popular home financing products in Islamic banking are the *al-Bay' Bithaman Ajil* (BBA) and *Musyarakah Mutanaqisah Partnership* (MMP). BBA home financing facility has been widely used in providing home financing to customers especially in Malaysia, Indonesia and Brunei, while the variants of MMP are widely practiced in other parts of the world such as Australia and the US. Islamic finance system is being faced with a number of paradoxes and it is consistently being criticized for the overuse of contracts which has been declared to be Islamically permissible. The BBA structure is highly controversial because of the different interpretations by Malaysian and Middle East scholars on the issue of *bay' al'inah*.

This study investigates the practice of Islamic banks in Malaysia in home financing. It makes comparison with the interest-based conventional home financing which is prohibited in Islam. The over reliance on debt based financing which is considered parallel to its conventional counterpart and the advantages of equity based financing over debt based financing advocated by previous Islamic economic scholars has further encouraged the Central Bank of Malaysia to encourage the Islamic banks to introduce equity based financing, particularly MMP as a mode of Islamic home financing. MMP home financing derived from *musharakah* contract is superior over any debt based financing as the element of profit and loss sharing as well as demising ownership is considered to be closer to justice and the spirit of *Shari'ah*. Therefore, it is deemed to be a better alternative to BBA home financing.

On the back of these issues, this study aims to achieve the following objectives: (i) to compare between BBA home financing and MMP home financing and (ii) to examine factors affecting people's intention to use Islamic home financing based on MMP.

LITERATURE REVIEW

The al-Bay Bithaman Ajil (BBA) Contract

The concept of BBA agreement simply is a sale contract that gives the buyer the advantage of paying late to the seller, whereby the amount of the goods is paid in instalment but the commodity exchanges transferred to the client directly. As a result, BBA is an extension of *Murabahah* (cost plus) agreement whereby BBA uses over long period but *Murabahah* contract generally being for short time. It

is a mode of Islamic financing used for property, vehicle, as well as financing of other consumer goods (The Council of Islamic Ideology Pakistan, 1977).

BBA house financing is basically a trading transaction. In order for a trading transaction to be valid from an Islamic perspective, the contract must contain offer and acceptance (*sighah*), the contracting parties (*'aqidain*) and the subject matter (*ma'qud 'alayh*). Home financing with the conventional system is based on interest which is completely forbidden in Islam. However, the current BBA home financing does not change much from the conventional loans. Instead of charging the customer interest, financiers charge a profit derived through a buy-and-sell contract which is allowed in Islam, but regrettably, the profit rate is dependent on the market interest rate due to arbitrage activities. Therefore, it is similar to the conventional mode in term of computational formulas whereby the profit rate tracks the market interest rate.

BBA is commonly used in Malaysia, Brunei, previously in Indonesia and some other countries. However, the contract has been subjected to debates among scholars. While some agree to its permissibility in Islam, others disagree because they see BBA agreement is similar to the conventional loans.

Musharakah Mutanaqisah Concept

The MMP concept was introduced to overcome the main criticisms of BBA. The MMP model is based on the highly successful Islamic cooperative housing corporation in Toronto, Canada, established in 1981 out of necessity to avoid the Muslim community from engaging in *riba*. It is based on an equity model different from the traditional debt-based mortgage. MMP focus on joint purchase of property between customers and banks. There are three portions to the contract. First, the customer enters into a partnership under the concept of *Shirkat-al-Milk* (joint ownership) agreement with the bank. Second, the bank leases its share in the house ownership to the customer under the contract of *ijarah*. Thirdly, the customer redeems the financier's portion through the purchase of share until the house is fully owned by the customer. The bank takes ownership and assumes responsibility of the property until the financing amount is fully settled and the customer takes possession of the property. The MMP concept is *Shari'ah* compliant as it promotes the true spirit of Islamic banking by promoting the welfare of the people and takes care of the well-being of society (Ahmad, 2000, Siddiqui, 2001, Rosly & Bakar, 2003).

MMP is a new concept designed to overcome previous weaknesses inherent in BBA. It is of interest to see if the concept is well received by customers, particularly in a multi-ethnic country with growing interest and conscious on Islamic financial products. The theory of reasoned action (TRA) (Ramayah & Norazah, 2005), as pioneered by Fishbein and Ajzen (1975) is used to explain the intention to use MMP in home financing. Fishbein and Ajzen (1975) introduced the TRA in an attempt to establish a relationship among belief,

attitudes, intentions, and behaviour. It is a widely studied model from social psychology, which is concerned with the determinants of consciously intended behaviors (Fishbein & Ajzen, 1975; Ajzen & Fishbein, 1980). Therefore, this is when the customer pays a percentage of the asset cost for example 10% as down payment to become part of the asset ownership while the bank offers for the balance which is 90% of the cost of house. Then, the customer gradually buys the bank's percentage of share at an agreed portion periodically until the asset is eventually fully owned by the client.

The amounts of rental during the period of the contract will be jointly shared between the bank and client according to the portion shareholding at the times of signing the contract, which keeps altering as the client purchases the share of the financier. As a result, after each rental payment the share portion of the customer would increase due to the periodic redemption until eventually fully owned by the client. According to one report, MMP was implemented for the first time in Egypt by the Islamic banking division of a commercial bank in partnership with a tourism company (Contemporary Financial Transactions of Islamic Banks). Today, MMP has been applied in several countries worldwide. In Pakistan, for example, MMP is used in home financing schemes offered by Meezan Bank of Pakistan (Usmani, 2002).

Comparison between the BBA and the MMP Contracts

Under the MMP, the value of the home are determined by the market value and always reflects the market price, on the other hand, the selling price of the home under BBA does not reflect the market value because the payment on deferment which is quite substantial. The bank, under MMP would not be tied with a fixed profit rate via the financing period because the rental rate can be reread periodically to reflect current market situations, while under the BBA the return is based on a fixed selling price. In addition, under BBA the managing of liquidity risks is not possible because BBA has fixed rate profit for the whole period of financing, whereas under MMP the bank can manage the liquidity risks because rental payment can be adjusted after the end of each period of the contract.

Furthermore, BBA is more complicated, and buyer only can own the house right after the full payment of the full tenure has been made. MMP is more flexible, and the client can own the home earlier by redeeming early the principle sum of the bank without the need to compute the rebates. Also, under BBA the client will always ends up paying almost four times the original cost. This may be a burden to the lower-income group in particular. Whereas under MMP, there is no interest charge or advanced profit involved as it is based on the concept of rental payments and redeeming the bank's shares in the house. Lastly, the MMP is accepted internationally as *Shari'ah* compliant whereas the BBA is recognized predominantly in the east, i.e. in Malaysia, previously in Indonesia, and Brunei.

METHODOLOGY

Conceptual Framework

In order to build a conceptual framework, various factors have been taken into consideration as potential variables. However, only three variables were identified as possible main factors that affect intention to undertaking Islamic home financing based on MMP, which are subject norms, attitude and religious belief (Figure 1).

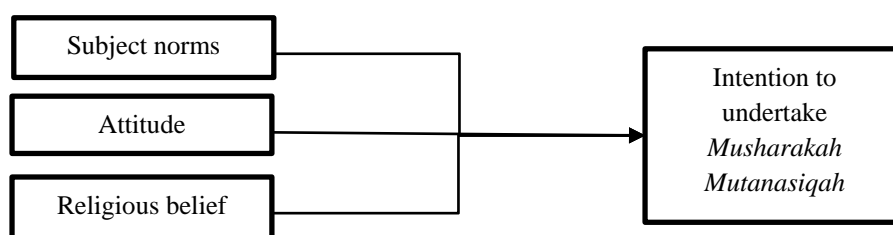


Figure 1 Research Model

Hypothesis

- H_1 : Subject norm has significant positive relationship towards to intention to undertake MMP.
- H_2 : Attitude has significant positive relationship towards to intention to undertake MMP.
- H_3 : Religious belief has significant positive relationship towards to undertake MMP.

Data Collection and analysis

Questionnaire survey was conducted in the area around the International Islamic University Malaysia Gombak campus. A total of 100 questionnaires were distributed randomly. The target respondents were those who were able to communicate in English. The questionnaires were issued to the respondents by face to face method.

Demographic questions were computed using a five-point Likert scale was used with 1 (strongly disagree), 2 (disagree), 3 (neutral), 4 (agree), 5 (strongly agree). Data was analysed using SPSS version 20. Frequency, correlation and multiple regression analysis were conducted to deal with relationships among variables.

RESULTS AND ANALYSIS

Frequency Analysis of Respondents Profile

Table 1 shows the profile of the respondents involved in the survey, namely race, gender, age and occupation. In terms of race, the majority of the respondents were Malays 43%, others 43%, Chinese 9%, and Indian 5%. Of the total respondents, males were 56% and females were 44%. In terms of age, the majority (42%) of the respondents were between the age 21 to 25. This is followed by those between 26 to 30 (30%) and below 20 (13%). Only 3% of the respondents were above 40 years old. In terms of occupation, the majority of respondents were (84%) university students. Their responses in this survey was therefore helpful in order to gauge future house buyers' intention in undertaking MMP home financing.

Table 1 Profile of Respondents

| | Frequency | Percent (%) |
|--------------------|------------|-------------|
| Race | | |
| Malay | 43 | 43 |
| Chinese | 9 | 9 |
| India | 5 | 5 |
| Others | 43 | 43 |
| Total | 100 | 100 |
| Gender | | |
| Male | 56 | 56 |
| Female | 44 | 44 |
| Total | 100 | 100 |
| Age | | |
| Below 20 | 13 | 13 |
| 21-25 | 42 | 42 |
| 26-30 | 30 | 30 |
| 31-35 | 8 | 8 |
| 36-40 | 4 | 4 |
| Above 40 | 3 | 3 |
| Total | 100 | 100 |
| Occupation | | |
| Executive | 8 | 8 |
| Office worker | 5 | 5 |
| University student | 84 | 84 |
| Business person | 1 | 1 |
| Others | 2 | 2 |
| Total | 100 | 100 |

Reliability analysis

Reliability analysis was done to confirm the internal consistency of all measured items in the questionnaire. In other words, it is to see whether the items that make up a scale are all measuring the same underlying construct. Table 2 below shows the results of the reliability test. For all variables, the Cronbach’s alpha is above 0.7, indicating high reliability.

Table 2 Reliability Test Results

| Variable | Number of items | Cronbach’s alpha |
|------------------|------------------------|-------------------------|
| Subject Norms | 4 | 0.857 |
| Attitude | 5 | 0.901 |
| Religious belief | 5 | 0.886 |
| Intention | 4 | 0.959 |

Descriptive analysis

The descriptive analysis of the independent and dependent variables was conducted to get mean values and standard deviations. In this study, for each variable Likert type measure was used to enable respondents to answer the questions stated in the questionnaire survey form.

Table 3 Descriptive Statistics

| Variable | Mean | Standard Deviation |
|------------------|-------------|---------------------------|
| Subject norms | 3.3400 | .79972 |
| Attitude | 3.8320 | .72235 |
| Religious belief | 3.8160 | .80135 |
| Intention | 4.3940 | .59862 |

Bivariate analysis

Bivariate analysis is the analysis between two variables. Correlation analysis is able to describe the strength and direction of the liner relationship between two variables. The relationship may be positive correlation (as one variable increase, other variable also increase) or negative correlation (as one variable increase, the other variable decrease). Correlation coefficient can only take values from -1 to +1.

Table 4 Correlation between variables

| | | Intention | Subject norms | Attitude | Religious belief |
|----------------------------|------------------|-----------|---------------|----------|------------------|
| Pearson Correlat ion | Intention | 1.000 | .571*** | .653*** | .336*** |
| | Subject norms | .571*** | 1.000 | .520*** | .079 |
| | Attitude | .653*** | .520*** | 1.000 | .197** |
| | Religious belief | .336*** | .079 | .197** | 1.000 |

Notes: *** and ** denote significance at 1% and 5% levels, respectively.

The results of correlation analysis in Table 4 reveal that the relationships between independent variables and dependent variable were between the accepted range of 0.3 to 0.8.

Multivariate Analysis

The multivariate analysis is done using standard multiple regression to explore the relationship between one dependent's variable and a number of independents' variables or predictors, it is able to show how well a set of variables are able to predict a particular outcome and which variable in a set of variable is the best predictor of an outcome. In this study, multiple regressions are used to test on the three independent variables (subject norms, attitude, and religious belief) in relation with dependent variable "Intention to undertake MMP". It is expected that the multiple regressions will provide information about the model as a whole and the relative contribution of each variables that make up the model.

Table 5 Multivariate Regression Results

| Model | Sum of Squares | df | Mean Square | F | Sig. |
|-------------------|----------------|----|-------------|--------|-------------------|
| Regression | 34.859 | 3 | 11.620 | 38.845 | .000 ^b |
| Residual | 28.716 | 96 | .299 | | |
| Total | 63.574 | 99 | | | |
| R | .740 | | | | |
| R-square | .548 | | | | |
| Adjusted R-square | .534 | | | | |
| Durbin-Watson | 1.812 | | | | |

Notes: a Dependent Variable: Intention; b. Predictors: (Constant), Religious belief, Subject norms, Attitude

According to Table 5, the ANOVA data analysis $F=38.845$, $Sig=0.000^b$, the significant is below 0.05, therefore the research model is accepted. From model summary R square =0.548, that means 54.8% variation "intention to undertake Islamic home financing based on MMP can be explained by "subject norms, attitude, and religious belief. 45.2% cannot be explained by these variables. The Durbin-Watson value was between the general range of 1.5-2.5, at 1.812.

Table 6 Hypothesis testing

| Variable | T | Sig | Test | Decision |
|------------------|-------|--------|------|------------------------|
| Subject norms | 4.040 | 0.000< | 0.05 | Reject H0 Accept H1 |
| Attitude | 5.387 | 0.000< | 0.05 | Reject H0 accept H2 |
| Religious belief | 3.201 | 0.002< | 0.05 | Reject H0 Accept H3 |

Table 6 above shows the results of the hypothesis testing. All variables are accepted, hence, these three variables have significant relationship towards consumers' intention to undertake Islamic home financing based on MMP. Among coefficient presented there were two variables that have significant relationship towards "intention to undertake MMP".

CONCLUSION

This study represents an effort to examine the relationship between customer intentions to use Islamic home financing based of MMP. More precisely, the objective of this research was to examine whether Subject norms, Attitudes and Religious belief of customer's have impact on choosing MMP despite availability of other Islamic financing products and non-Islamic home loan products. According the findings, it was observed that there were significant relationships when respondents choosing MMP were influenced through subject norms and their attitudes. Furthermore religious belief also influenced their intention, albeit with weaker relationship. These outcomes are consistent with previous studies. Most recent one was by Amin, Abdul-Rahman and Abdul Razak (2014), which suggests that attitude, subjective norm and perceived behavioural control are significantly influencing the intention to become partner in MMP. Findings by Abdul-Razak and Taib (2011) also support the results of this study.

It is the opinion of the researchers that the ongoing practice of the BBA in Malaysia is contrary to the *Shari'ah* principles, and thus, it should be Islamized and restructured until it is fully able to protect the rights of the partners, especially purchasers in all situations such as loss making occasions when the housing projects or units are abandoned, to avoid any possibility of uncertainty (*gharar al-fahish*). Otherwise, other modes of Islamic house financing should be chosen in place of the current BBA.

As a way to achieve human justice and religious purpose, many Islamic instruments are offered to the customers as a way to avoid activities which is prohibited by the *Shari'ah*. According to *Shari'ah*, one of the principles that are allowed for Islamic transactions is that the price must be fixed. In contract to BBA, the bank sells the house to the customer at a mark-up price. All the jurists including the Malikis, Hanafis, and Hanbalis are in the opinion that this kind of act (contract) is forbidden, except Al Shafies. The scholars agreed that the absence of *khiyr-al'Ayb* in BBA financing has a risk of involving *riba* in the profit gain from this contract. Furthermore, the BBA practices consists of a few elements of *gharar* which is prohibited in Islam (Al Baqarah: 188) and Islamic law is clear on contracts involving non-existing subject matter (in this case house under construction).

Due to the issues of BBA, there is opportunity for the MMP to grow and replace BBA since the implementation of BBA contract has been surrounded by many controversial issues and still being debatable among scholars. A truly

Islamic financing should avoid interest rates totally, and let the values and payments solely be determined by the real economy. It also must be free of uncertainty in contract to prevent fraud/injustice.

MMP is not free from issues and limitations. Therefore, valuable inputs from various parties, academics and religious scholars are very important in improving MMP based contract to make it more *Shari'ah* compliant and accessible to all income groups, but yet not forgoing its commercial objectives.

The conclusions from this study suggest that the understanding and perception of the community on the types of housing finance plays an important role in making decisions before they decide and buy a home. Housing ownership and housing development have a very close association and these two aspects play an important role as a catalyst for the economy of a city. These imply that managing finance and house purchase can be included as one of the aspects in urban management and housing development.

REFERENCES

- Abdul Razak, D., & Taib, F. M. (2011). Consumers' perception on Islamic home financing: empirical evidences on al-Bay Bithaman Ajil (BBA) and diminishing partnership (DP) modes of financing in Malaysia. *Journal of Islamic Marketing*, 2(2), 165-176.
- Ahmad, K. (2000). Islamic finance and banking: The challenge and prospects. *Review of Islamic Economics*, 9, 57-82.
- Amin, H., Abdul-Rahman, A. R., & Abdul Razak, D. (2014). Theory of Islamic consumer behaviour: an empirical study of consumer behaviour of Islamic mortgage in Malaysia. *Journal of Islamic Marketing*, 5(2), 273-301.
- Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behaviour*. Englewood Cliffs, NJ: Prentice-Hall.
- Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention and behavior: an introduction to theory and research*. Reading, MA: Addison-Wesley.
- International Fiqh Academy of the Organization of Islamic Conference (2004). 15th Session, Resolutions of Musharakah Mutanaqisah and its Shariah Principles.
- Ramayah, T., & Norazah, M. S. (2005). Intention to shop online amongst MBA students: comparing theory of reasoned action (TRA) and the technology acceptance model (TAM). In *Proceedings of International Conference on E-Commerce 2005*. Retrieved from <http://repo.uum.edu.my/14345/1/ICoEC-1c1.pdf>
- Rosly, S. A., & Bakar, M. A. A. (2003). Performance of Islamic and mainstream banks in Malaysia. *International Journal of Social Economics*, 30(12), 1249-65
- Siddiqui, S. H. (2001). Islamic banking: True modes of financing. *New Horizon*, May-June: 109.
- The Council of Islamic Ideology Pakistan (1977). *Elimination of interest from the economy*. Islamabad: Government of Pakistan.
- Usmani, M. T. (2002). *An Introduction to Islamic Finance* (Vol. 20). Brill.



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INNOVATIVE MANAGEMENT OF NATURAL RESOURCES: CASE STUDY OF MANGROVE AREA IN KUALA GULA, PERAK

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Abstract

This paper attempts to identify and explicate sustainability approach through innovative management of natural resources that is able to create balance between conservation and utilization of natural resources. Innovative management of natural resources is related to the act of bringing changes or an introduction to a novelty idea for achieving organisational goal which involves organising people, finances and resources, training, controlling, monitoring, and sanctioning. The study focuses on the mangrove ecosystem, one of the most sensitive natural resources in the country, which has been successfully managed by the government through top down approach. Data was gathered through content analysis and interviews with several key persons from the study area. This paper firstly compares the different management approaches in Matang Mangrove Forest Reserve and Kuala Gula Mangrove, before finally elaborating on the innovative management of the latter.

Keyword: Innovative Management, Sustainability, Mangroves, Community

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INTRODUCTION

Sustainability dominates the current discussion worldwide for the betterment of mankind. It is a policy concept which was endorsed in the Brundtland Report of 1987. According to Kuhlman and Farrington (2010), the report addresses the conflict between human needs and the limit of what nature can offer. At present, sustainability can be described as maintaining the well-being of human for a long period of time, taking into account the three dimensions, which are social, economic and environment.

Balance in accommodating the needs of people and the ability to absorb its impacts towards the environment has been an issue of illogicality since the beginning. Therefore, there is always controversy involving development and conservation as conservation refers to the protection of resources while development is about the exploitation of the resources (Paxton, 1993).

In order to understand and address this issues better, the definition of the natural resources must be clearly defined before a new methodology to conserve it is developed. Natural resources are earth materials occurring in nature that can be extracted for economic purposes either in their raw state or after undergone various stages of processing (World Trade Organization, 2010) by using current technology and under economic and legal conditions.

Malaysia, a country that prospers through utilization of natural resources, underlines the importance of environmental protection and conservation in the Eleventh Malaysia Plan 2016-2020 (Economic Planning Unit, 2015), which indicates the effort of the federal government in the conservation of natural resources. This attempt includes two strategies to be undertaken, namely: i) ensuring natural resources security by conserving terrestrial and marine areas as well as endangered plant and wildlife species, managing natural resources and strengthening biosafety; and ii) enhancing alternative livelihood for indigenous and local communities by involving them in biodiversity conservation and empowering them for alternative economic opportunities.

One of the natural resources that needs to be conserved for the present and future generation is the forest, particularly productive forest. Among the most productive forests with various natural resources and economic benefits in the country is mangrove. People depend on the mangrove for the fuel wood, charcoal-making, timber, fishing tool, thatching material, fodder, food, tannin and other products (FAO, 1994; Kathiresan, 2012; Ong & Gong, 2013).

It is also important to highlight the significance of mangrove as environmental service provider for human wellbeing. Mangrove forest have been proven to be the best natural barrier for the tsunami (Kathiresan & Rajendran, 2005). It also plays vital function to prevent salt intrusion, reduction of pollution, production of organic materials for the marine biota, provision of spawning and nursery areas for marine fauna and as habitat for many species of wildlife. In

addition, it has a huge potential for tourism attraction and becoming eco-tourism sites to generate income in many countries (Sunil, 1997).

Globally, the world's mangroves are facing extinction as they have been overexploited for human needs. They are disappearing due to the construction of dam, diversion of waters and the development of agriculture or aquaculture in the intertidal zone such as rice fields, fish and shrimp ponds (Richards & Friess, 2016). There are long-stretches of the mangrove areas that have been converted for the industrial, land development and non-forest uses. Mangrove loss has huge biodiversity impacts; 16% of mangrove vegetation species are threatened with extinction globally, and several species are expected to become extinct by 2020 (Polidoro et al., 2010.)

Ecologically, mangrove is defined as a community of tropical trees and shrubs that inhabit the coastal intertidal areas. These plants have the special adaptations to survive in the variable flooding and salinity conditions imposed by the coastal environment. The significant and vital role of mangrove as the natural resources and environmental service provider to human kind, deserve a careful yet strong planning and management. Innovation in these areas would be able to sustain a fully functioning of mangroves forest or ecosystem.

Innovation needs new or creative ideas and the ability to transform that idea into actions to make a difference. "The outcome of the innovation is often specific and tangible as changes in the products, services or business processes provided by an organisation. We defined "innovation as the successful implementation of creative ideas within an organisation. In this view, creativity by individuals and teams is a starting point for innovation" (Amabile, Conti, Coon, Lazenby & Herron as cited in Downey, 2007, p. 3). Meanwhile, Dwan's study (as cited in Abbah, 2014, p. 6) refers to management as planning goals of an agency with the specific purpose which involves the organizing of people, finances, resources and activities such as staffing, training, and socializing employees, leading the organization and the staff; controlling, monitoring, and sanctioning when needed.

Hence, management innovation involves the introduction of novelty in an established organization. Innovation in management is relevant to any organisation and can be applied in a number of different ways. Among the most common are in i) Product or service innovation, ii) Process innovation, iii) Business model innovation, iv) Organisational innovation, v) Marketing innovation, vi) Supply chain innovation, vii) Financial innovation (Downey, 2007). This study reviews application of organisational innovation (iv) and financial innovation (vii) as they can be observed in the study area.

METHODOLOGY

This study adopts qualitative research analysis using a case study. In order to study the innovative management for sustainability in natural resources of

mangrove forest, the Kuala Gula mangrove area and Matang Mangrove Forest Reserves (MMFR) were selected. The focus of the study is to emphasise the role of the community in contributing towards sustainability of the environment and their livelihood. Thus, interview sessions were conducted with the targeted group of restaurant entrepreneur, the former and current president of the Friends of Mangrove (*Sahabat Hutan Bakau*), which is a non-governmental organisation (NGO) set up to protect the area, and residents in the village. Apart from interviews, primary data was also obtained through on-site observation. Secondary data was retrieved from scientific report, yearly reports, newspapers and internet sources.

MANGROVE FOREST CONSERVATION PROGRAMMES

Two types of mangrove forest conservation programme, top-down approach and bottom-up approach, were observed in the study area. Top-down approach is conservation is often lead by government agency, while bottom-up approach is often community-based. The former is applicable to MMFR, as is to most other forest reserves in the country. The latter, on the other hand, is implemented in the conservation of Kuala Gula mangroves, and is led by the local communities through Friends of Mangrove.

MMFR Conservation Management

Matang Mangrove Forest Reserve has a long history of mangrove management. Systematic management of the forest began in 1904 when the first plan was drawn up by A.E. Wells for the reserves (Roslan & Nik, 2013). MMFR covers an area of 40,466 hectares and stretches 51.5 km along the coastline from Kuala Gula in the north to Bagan Panchor in the south. The forest has been managed for more than a century primarily for the extraction of wood for the production of poles and charcoal. The forest has often been referred to as a fine example of sustainable forest management. It is based on a ten-year management plan prepared and implemented by the Perak Forestry Department (FRIM, 2013).

MMFR also plays an important role in providing other ecosystem services and socio-economic benefits. In addition to the harvesting of timber for MMFR also supports the fishing industry, aquaculture and created employment opportunity to the local residents (Roslan & Nik, 2013). It is also a habitat for migratory and resident birds (Ong & Gong, 2013), and provides recreational activities like fishing, prawning or crabbing and for those who appreciate the nature like bird watching and wildlife observation (Ahmad, 2009; FRIM, 2013). There are 34 permanent settlements located inside and adjacent to the boundaries of the forest. Of these settlements, 28 are fishing villages.

According to Ahmad (2009), ecotourism does not seem to be a major source of revenue for the MMFR. The ecotourism sites within the forest boundaries include; i) charcoal processing sites, ii) Kuala Gula Bird Sanctuary,

iii) the pre-historic site in Pulau Kelumpang, iv) fishing villages, v) floating fish cages along Sungai Sangga, vi) fishing sites along all the major rivers, vii) the boardwalk (nature trail), and viii) camping sites and chalets. Currently there are only two companies that operate in the area. The management of the MMFR involves; i) division of forest, ii) forest zoning, iii) rotation, iv) yield, v) charcoal production, vi) thinnings, vii) silviculture and viii) conservation (Wong, 2004).

Mangrove of Kuala Gula

A renowned bird watching paradise in Perak, Kuala Gula is situated at the northern part of Perak. It is a coastal mangrove area which consists of mangrove islands, mangrove coastal forests and the buffer areas of a river and its tributaries. The mudflats and the swampy areas provide all the needs for the stopover of various species of migratory and resident birds.

Fishing villages line up the outskirts of the mangroves area. There are about 7,200 people living in Kuala Gula and approximately about 35% (2,450) of the population are involved in the fishing industries that support their livelihood such as catching fish and prawn, and cockles rearing. In addition, they are also involved in downstream activities such as the processing and manufacturing of salted fish and shrimp, and shrimp paste (*belacan*).

Local community in Kuala Gula depends on mangroves area for their livelihood. Therefore, Friends of Mangrove, a non-governmental organisation (NGO), was established in 2007 as a pilot project to engage the local community and relevant stakeholders in the mangrove forest conservation program. Members of this organisation consist of local community. They are compensated for assisting the work of mangrove forest conservation of Kuala Gula. This encourages and motivates the people to conserve and care about the environment.

The program began with the mangrove planting programme by the local community and supported by the stakeholders such as Perak State Forestry Department and academicians. The boats that have been used in the program for transporting seedlings and participants to the field belong to the local fishermen. This helps to diversify their sources of income by undertaking part-time employment. The local people are also involved as service providers of accommodations and meals for the visitors. These have been contributing to the local community's economic development.

Table 1 below summarises the common forest management practices in MMFR as compared to the management innovation in Kuala Gula Mangrove.

Table 1 Ecosystem Services and Stakeholders of MMFR and Kuala Gula Mangrove

| Characteristic of Management | Common practice of mangrove management; MMFR | Innovative practice in mangrove management; Kuala Gula |
|---|--|---|
| Sponsor/ Financial resources | Government agency | Community/ outside sponsor (CIMB Foundation and Global Environmental Centre, GEC). |
| Objective/ Goal | Ecosystem management strategy is structured to maximize the production of one ecosystem service, which involves the extraction of timber and charcoal. | A pilot project to execute the programme of replanting mangrove species along national coastline through participatory of local community and students (rehabilitation of mangrove). |
| Coordinator | Perak State Forestry Department (PSFD), Perak Fishery Department (PFD), Department of Wildlife and National Park (DWNP). | Establishment of NGO as a pilot project – Friends of Mangrove (<i>Sahabat Hutan Bakau</i>) |
| Monitoring/ Controlling/ Programme of mangrove - Zoning - Planting/ Replanting/ - Weeding - Rehabilitation/ Rotation - Conservation - Harvest system - (Felling and thinning) - Economic generation | <ul style="list-style-type: none"> • By PSFD (an effective management tool in 1950) • By PSFD • By PSFD • By PSFD • By PSFD • The silviculture practices at the MMFR have been strictly focused on the continual regeneration of the more economically | <ul style="list-style-type: none"> • None • By local community trough engagement with school students and university students. • By local community trough engagement with school students and university students. • By local community trough engagement with school students and university students. • For local community uses. • The members of SHB who dedicate their time to assist the work of mangrove forest conservation of Kuala Gula will be compensated. |

| | | |
|--|---|---|
| | <p>valuable species of the Rhizophora.</p> <ul style="list-style-type: none"> • Collection of royalties, premiums, licensing fees and fines was approximately US\$ 597,323 per annum. | <ul style="list-style-type: none"> • Eco-tourism by local community. |
| <p>Resources and activities</p> <ul style="list-style-type: none"> - Fishing - Aquaculture - Tourism or eco-tourism - Regulating services - Raw materials | <ul style="list-style-type: none"> • Fishing (Net cage fish culture) – by PSFD and PFD • Aquaculture (Shrimp ponds, cockle culture) – privately owned, PSFD and PFD • Tourism/ eco-tourism (Nature Education Centre, Firefly watching, Bird watching, Charcoal processing site, River cruise) – by PSFD and DWNP • Erosion prevention, tsunami and storm protection, filter human and animal waste) – by PSFD • Timber for charcoal and poles, wood vinegar, briguettes, nypa products, nibong poles, vegetable support structure, firewood) – by PSFD | <ul style="list-style-type: none"> • Fishing, catching mullosc – by local community • Aquaculture (Shrimp ponds, cockle culture, soft crab) • Tourism/ eco-tourism (Bird watching, River cruise, Fishing, Education Centre) – by local community and DWNP • None • Non-timber forest product, food and beverage byproduct of mangrove plant, jeruju (<i>Acanthus ilicifolius</i>) and piai (<i>acrostichum aureum</i>), souvenir from cockles shell) – local community |
| <p>Labour/ Human resource</p> | <ul style="list-style-type: none"> • Staffs of government agencies | <ul style="list-style-type: none"> • Working together with partnership (local community, NGOs, government agency and private sector) |

DISCUSSION

It was observed that innovative management approach that contributes to sustainable development in the Kuala Gula Mangrove were the organising of the people, the proper channel for finances and resources, the continuous capacity

building and training, and the publication of guideline in controlling, monitoring and sanctioning the mangrove area.

Community Involvement

Community involvement in the management of this mangrove is either as a member of the Friends of Mangrove or as a volunteer. Their contribution ranges from the work of conserving, protecting, monitoring to sanctioning of mangrove. This numerous task is similar to Halim, Salleh and Omar (2011) description on the effectiveness of the involvement of local community in the management of natural resources, which is strenuous but a requisite to successful natural resources management. With the community assuming the management functions of the mangrove conservation, the government resources can be freed to focus on enforcement of laws relating to the mangrove area. Such arrangement not only minimise the costs to the government, but also builds trust between the community and the government.

Finances and resources

Another indicator of innovative management is the ability to channel the finances and resources accordingly among the local community and for the management of the area. This has benefitted the local community financially and has consequently improved their livelihood. It also becomes an incentive for the community to better manage their natural resources.

Community involvement in the management of the area were incentivised through several methods. For example, an arrangement was put in place in which local community gets the right to use natural resources on state owned land but is responsible to manage and protect the resources sustainably. Ecosystem services are also being paid - the local community is given incentive for conserving and managing the mangrove and its resources which is part of an integrated approach to coastal area management. Additionally, the community also gets involve in tourism activities in the area, such as by becoming guides and also by providing boat rental. This has increased their income and standard of living.

Continuous capacity building and training

During its early years of establishment, Friends of Mangrove operated under the umbrella of Global Environment Centre (GEC), which is also an NGO. Being under the umbrella of a larger and more established NGO, Friends of Mangrove has benefitted in terms of acquiring knowledge on management and conservation of the mangrove area. At the same time, PSFD had also provided management guidance to Friends of Mangrove. Additionally, PSFD had also provided monetary support to Friends of Mangrove to fund their activities related to the mangroves. At the same time, the NGO is also allowed to collect donations,

charge membership fees, and collect profits from investment and rentals in order to finance their its operation.

Most of the local youth who are under 18 years old, were automatically absorbed by the NGO as volunteers. The purposes of this initiative were i) to carry out activities related to training and environmental education to the local people in order to create a positive feeling and to foster respect for the environment, especially the mangroves, ii) to promote conservation and preservation activities for mangrove forest mainly in Kuala Gula (mangrove reforestation activities with the public), iii) to help improve the standard of living for the local people through entrepreneurial activities such as eco-tourism and the production of handicrafts, and iv) to promote the attractions of Kuala Gula to tourists.

Guidelines preparation

Guidelines were also prepared to reduce conflicts in the management of the area. Additionally, proposals to improve the area were also included in statutory development plan, the Kerian District Local Plan 2020. Among the proposals are:

- i. Upgrade research facilities in Kuala Gula, especially at the Kuala Gula Conservation Centre (*Pusat Konservasi* Kuala Gula);
- ii. Provide shuttle buses for tourists from the city centre (Parit Buntar and Bagan Serai) and Bukit Merah Laketown Resort to Kuala Gula; and
- iii. Upgrade the existing accommodation facilities to encourage tourists to spend the night in the Kuala Gula.

Proposals in the local plan were designed to promote influx of tourists into the area. This would further benefit the local community, in terms of revenue from ecotourism. Consequently, it will further incentivise local community to manage and conserve the natural resources in the area sustainably.

CONCLUSION

The management of natural resources in Kuala Gula by involving the local community and by establishing a Non-Governmental Organisation (NGO) led by the local people is an innovative way of maintaining and enhancing the protection of the mangrove forest while sustaining the livelihood for local community. The incentives given to the members of Friends of Mangrove which are also the villagers is one of the new initiatives that contribute to the sustainability of the mangrove management.

The setting up of a cooperation between all the stakeholders has indirectly helped the local community to become self-reliant and initiated the involvement of rural women in generating their own income. Local community has also increased their income from the natural resources and ecotourism

activities. This pilot project of Friends of Mangrove in Kuala Gula has resulted in sustainable use of natural resources and better collaboration between local people and the local authorities.

Previous research has shown that involving the local fishing community in the management of natural resources can lead to success, as in the case in Langkawi (Halim *et al.*, 2011). This resembles to what is happening in Kuala Gula as they get the local community to participate in the managing of natural resources. This is a new paradigm which is in line with the sustainable development goals (SDGs) that promote sustainably managed forests, combat desertification, halt and reverse land degradation, and halt biodiversity loss, and at the same time end poverty, protect the planet, and ensure prosperity of the people and the Earth (UN 2015).

The innovative approach in the management of Kuala Gula Mangrove can be applied to other places. However, proper monitoring must be undertaken by the stakeholders to ensure success of the programme. As Wever *et al.* (2012) point out, "Mismanagement may occur if subnational governments do not have equal expertise and capacity to perform effective management, and misappropriate and local profiteering can occur due a lack of federal oversight". Further research need to focus on how to strengthen this collaboration and bring more profit to the local community.

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REFERENCES

- Abbah, M. T. (2014). Employee motivation: The key to effective organizational management in Nigeria. *IOSR Journal of Business and Management Ver. I*, 16(4), 2319–7668.
- Ahmad, S. (2009). Recreational values of mangrove forest in Larut Matang, Perak. *Journal of Tropical Forest Science*, 21(2), 81–87.
- Economic Planning Unit (2015). Eleventh Malaysia Plan, 2016-2020. <https://doi.org/10.1017/CBO9781107415324.004>
- FAO (1994). Mangrove forest management guidelines. *FAO Forestry Paper No. 117*. Rome, 117(117), 319.
- Forest Research Institute Malaysia (FRIM) (2013). *Wetland forest mapping; a tool for socio-economic development and poverty reduction* (Technical Report).
- Halim, S. A., Salleh, H., & Omar, M. (2011). Engaging the local community in participatory resource management through learning: The experience from Langkawi Island, Malaysia. *Kajian Malaysia*, 29(SUPPL 1), 125–139.
- Downey, J. (2007). *Innovation management*. Retrieved from http://www.cimaglobal.com/Documents/ImportedDocuments/cid_tg_innovation_management_jul07.pdf.pdf
- Kathiresan, K. (2012). Importance of mangrove ecosystem. *International Journal of Marine Science*, 2(10). doi: 10.5376/ijms.2012.02.0010.
- Kathiresan, K., & Rajendran, N. (2005). Coastal mangrove forests mitigated tsunami. *Estuarine, Coastal and Shelf Science*, 65(3), 601–606.
- Kuhlman, T., & Farrington, J. (2010). What is sustainability? *Sustainability*, 2(11), 3436-3448.
- Ong, J. E. & Gong, W. K. (Eds.). (2013). *Structure, function and management of mangrove Ecosystems*. Okinawa, Japan: International Society for Mangrove Ecosystems.
- Paxton L. (1993). *Enviro Facts 3: Sustainable development*. Howick, South Africa: Environmental Education Association of Southern Africa.
- Polidoro, B. A., Carpenter, K. E., Collins, L., Duke, N. C., Ellison, A. M., Ellison, J. C., ... & Yong, J. W. H. (2010). The loss of species: Mangrove extinction risk and geographic areas of global concern. *PLoS ONE*. <https://doi.org/10.1371/journal.pone.0010095>
- Richards, D. R., & Friess, D. A. (2015). Rates and drivers of mangrove deforestation in Southeast Asia, 2000–2012. *Proceedings of the National Academy of Sciences*. <https://doi.org/10.1073/pnas.1510272113>
- Roslan, A., & Nik, M.S., (2013). *A working plan for the Matang Mangrove Forest Reserve, Perak: The first 10-year period (2010-2019) of the third rotation*. Malaysia: State Forestry Department of Perak Darul Ridzuan.
- Sunil, L. (1997). Pilot project: Participatory management of seguwanthive mangrove habitat in Puttlam District, Sri Lanka. In G. F. Claridge & B. O’Callaghan (Eds.), *Community involvement in wetland management: lesson from the field*. Kuala Lumpur: Wetlands International.

Salina Nor Azam, & Tanot Unjah
Innovative Management of Natural Resources: Case Study of Mangrove Area in Kuala Gula, Perak

- Wever, L., Glaser, M., Gorris, P., & Ferrol-Schulte, D. (2012). Decentralization and participation in integrated coastal management: Policy lessons from Brazil and Indonesia. *Ocean and Coastal Management*, 66, 63–72.
- Wong, S. L. (Ed.). (2004). *Matang mangroves: A century of sustainable management*. Kuala Lumpur: Sasyaz Holdings Sdn Bhd.
- World Trade Organization. (2010). *World trade report 2010: trade in natural resources*. Retrieved from https://www.wto.org/english/res_e/booksp_e/anrep_e/world_trade_report10_e.pdf



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SUSTAINABLE FOOD WASTE MANAGEMENT IN HOTELS: CASE STUDY LANGKAWI UNESCO GLOBAL GEOPARK

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Abstract

The hotel sector is one of the key players in developing tourism industry in the islands, and contributing towards islands economy, employment opportunities and the overall development. However, food waste generated by hotels has significantly impacted the environment, social well-being and tourism economy. Sustainable food waste management practices are vital among the business operations of the hotel sector to reduce food waste and operational costs through efficient use of food resources. The aim of this paper is to examine current practice of hotel operators towards sustainable food waste management from purchasing of food resources to food wastes disposal. The data was gathered using structured and self-administered questionnaires, which involved 42 hoteliers from the island of Langkawi UNESCO Global Geopark. From the main findings, it was found that there was a lack of emphasis from the hotels on their policy related to wastage of food and unsustainable food consumption pattern by their guests. This reflects on the lack of practices towards sustainable food waste management by the hotel sector. Therefore, planning for sustainable food waste management on island hotels is essential to ensure the protection of environmental resources and to reduce the problem regarding limited capacity landfills on the islands

Keyword: Food waste, geopark, hotel, island, practice, sustainable food waste management

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INTRODUCTION

The tourism sector is a booming industry in almost every country globally. Apart from the export of various commodities internationally, most of the countries are now prioritizing tourism as one of the main sources of income through foreign exchange (Kasimu, Zaiton & Hassan, 2012). The Statistics of Tourism Malaysia 2016 indicated that the tourism sector is the third largest revenue contributor at RM82.1 billion for Malaysia economy (Tourism Malaysia, 2017). Environmental resources and unique nature of islands have become attractive tourism products and have contributed largely to the development of the Malaysian tourism industry. A majority of the islands are blessed with environmental resources; such as warm climate, crystal beaches, geological features and clean air (Mensah & Blankson, 2014).

The hotel sector is one of the key players in developing the tourism industry in the islands that contributes to local economy as well as providing employment opportunities. However, the lack of proper management among the business operations of the hotel sector may lead to damages on the islands' environment, and then lose out on tourism and economic activities (Bohdanowicz, 2005; Mensah & Blankson, 2014).

Being one of the largest food consumers, hotels generate a large amount of food waste every day (Agamuthu Pariatamby & Nagendran Periaiah, 2007; Papargyropoulou et al., 2016; Sandaruwani & Gnanapala, 2016). WRAP (2011) found that almost 50% of food waste produced from total solid waste was generated by the hotel industry. This clearly shows that there is a serious sustainability issue regarding food waste from the hotel sector. Moreover, islands are highly vulnerable and sensitive towards any environmental changes and impacts, particularly from any unsustainable practices of food waste. Therefore, sustainable food waste management on island hotels is essential to ensure the protection of environmental resources and reduce the problem regarding limited capacity landfills on the islands. Additionally, hotel operators should also pursue practices of sustainable food waste management because resources for foodstuff also take a larger portion of the hotel's operation cost.

Previous studies have indicated that hoteliers are mainly focusing on sustainable practices for water, electricity, and recyclable solid waste, such as bottles, can, paper, and plastics (Kasim, 2009; Kasimu, Zaiton, & Hassan, 2012; Molina et al., 2009; Pirani & Arafat, 2015). Meanwhile, documentation on hoteliers' practices towards sustainable food waste management have not been specifically given great attention by previous researchers and hence, the need for this study, particularly for Langkawi Island.

The aim of this paper is to examine current practice of hotel operators in Langkawi Island towards sustainable food waste management from purchasing of food resources to food wastes disposal. The contribution of this study can provide a comprehensive description of the current practices of food waste

management for the hotel sector on islands and most of the wasteful processes could be identified. This can evidently guide the waste minimisation strategy by informing where the focus should be and which recommendations could have a greater impact in reducing food waste.

RESEARCH APPROACH

Study Area

Langkawi Island is situated at the Andaman Sea within 30 km off the mainland coast of the north-western corner of Peninsular. Langkawi is also one of the districts in the state of Kedah, Malaysia and is blessed with unique geological features, biodiversity, cultural heritage, and environmental resources. The declaration of Langkawi as a duty-free island in 1987 is considered a major evolution of economies from the agriculture and fisheries sector to the service sector and has become the turning point for rapid tourism development for this island (Sharina Abdul Halim et al., 2011). In 2007, Langkawi became the first UNESCO Global Geopark in the Southeast Asia and the 52nd member in the world (Ong et al., 2010). Langkawi took the centre stage to be one of international tourism destinations by hosting world class events such as Langkawi International Maritime and Aerospace Exhibition (LIMA), Royal Langkawi International Regatta, Ironmen Langkawi International Triathlon, and Le Tour De Langkawi (Azizan Marzuki et al., 2016). Thus, this leads Langkawi to become a popular destination for domestic and international tourists. Tourist arrivals in Langkawi has increased from 2.4 million in 2010 to 3.6 million in 2016 (LADA, 2017).

Several new hotels have emerged in order to cope with the developing tourism industry in Langkawi. However, Agamuthu Pariatamby & Nagendran Periaiah. (2007) found that Langkawi has one of the highest food waste generation among the tourist islands in Malaysia and in great need for a systematic effort to reduce waste generation. Furthermore, tourists in Langkawi generated waste per capita more than double as compared to the local residents (Shamshiry et al., 2011). Similarly, Wang et al. (2017) found that, generally, food waste per capita per meal for tourists is higher than local residents.

With a status of UNESCO Global Geopark, Langkawi needs to apply the practices of sustainable food waste management not only at the household level but also for the hotel sector. Therefore, hoteliers should apply the practices of sustainable food waste management to maintain balance between environmental conservation and tourism development.

Method

In this study, a quantitative data collection method was used to identify the practices that could lead towards sustainable food waste management in the hotel sector. The data was collected using questionnaires to obtain information on the

current hoteliers' practices and participation towards sustainable food waste management. The study focuses on selected hotels that provide accommodation together with food and beverage services. The list of hotels on the island of different categories, ranging from 1 star to 5 star hotels, was collected from various website resources such as the Malaysian Association of Hotels (MAH), Langkawi Municipal Council and travel agencies (Agoda and Trivago). All together 56 hotels were identified and all were selected as sample in this study.

A few completed copies of the questionnaire were collected through online surveys, while most of the other questionnaires were personally collected by the researchers. In total, 42 questionnaire forms were received from the total population of 56 hotels.

Normally, hotel food management operations and personnel vary between hotels, depending on the star category of the hotels. Hence, for this research, several different respondents holding different positions were chosen such as chef, steward, operation manager, general manager, and F&B manager. The questionnaire was a self-constructed close-ended questionnaire using the 5 Likert scale to measure current level of hotels' participation in food waste management. The statistical methods used in this study were mainly descriptive statistics of min and standard deviation. To assess the level of practices towards sustainable food waste management, the interpretation of mean score by Ahmad (2002) was adapted (Table 1).

Table 1 Interpretation of the trend level of mean score

| Score | Interpretation |
|-----------|----------------|
| 3.68-5.00 | High |
| 2.34-3.67 | Moderate |
| 1.00-2.33 | Low |

Source: Ahmad, 2002

RESULTS AND DISCUSSIONS

Table 2 shows the profiling of the hotels (type of ownership, type of hotel ranking, and number of guestrooms). The total number of respondents was 42 (28 males and 14 females). A majority of the hotels (61.9%) were independently owned, or self-managed. About 23.8% of hotels were chain-owned, and this is followed by 9.5% that were independently-owned, managed by a franchise agreement. Normally, type of hotel ownership influence the type of hotel operations regarding food waste management. This is because chain-owned hotels usually have their own specific guidelines for waste management compared to self-managed hotels. Based on the questionnaire, the majority were 3 star hotels (33.3%), followed by 4 star hotels (21.4%). Only 19% were 1 star hotels and 14.3% were 2 star hotels. Only 11.9% of the hotels were 5 stars.

Table 2 Profiling of the hotels

| | | Frequency (N=42) | Percent (%) |
|-----------------------|---|---------------------|----------------|
| Type of ownership | Independently owned, self-managed | 26 | 61.9 |
| | Independently owned, managed by a franchise agreement | 4 | 9.5 |
| | Independently owned, managed by a management contract | 2 | 4.8 |
| | Chain owned, managed by the chain | 10 | 23.8 |
| Type of hotel ranking | 1 star hotel | 8 | 19.0 |
| | 2 star hotel | 6 | 14.3 |
| | 3 star hotel | 14 | 33.3 |
| | 4 star hotel | 9 | 21.4 |
| | 5 star hotel | 5 | 11.9 |

Hotel Participation in Sustainable Food Waste Management

The main aim of this study is to examine the practices towards sustainable food waste management, beginning from the process of purchasing to disposal, which are most commonly adopted by hoteliers in Langkawi. The process of purchasing food ingredients is a preliminary process and it is the starting point for sustainable food waste management for the hotel sector. In Langkawi, most of the food ingredients arrive via cargo from mainland Kuala Perlis and Kuala Kedah. The food ingredients are delivered to the hoteliers via suppliers or purchased by own-self at nearby markets. Commonly, small hoteliers buy food ingredients on their own and do not require a particular supplier because they need to prepare meals for a small number of guests. Therefore, they have the opportunity to choose food ingredients that are fresh and of good quality. Meanwhile, the larger hoteliers buy their needed raw food ingredients via particular suppliers. These hoteliers will select their suppliers according to a few qualifications such as product quality, timely delivery, ability to support the required quantity, consistency of products, and price (Mourad, 2016; Tan, Lyman & Wisner, 2002). The hoteliers will send the products back to their suppliers if the products received were broken or in damaged condition as they must always ensure that the delivery of raw food ingredients are in good condition. Generally, the entire purchase process is controlled by the hoteliers making sure to prevent waste due to spoilage at an early stage. Therefore, the findings reveal that the interpretation of all the items for the process of purchasing practices is high, which is above mean 4.36 (Table 3).

Table 3 Practices towards sustainable food waste management

| Construct items | Min | SD | Interpretation |
|--|------|------|----------------|
| Purchasing | | | |
| 1. Only buy the food ingredient according to needs. | 4.55 | .091 | High |
| 2. Check the food ingredient when purchasing to ensure that food is not broken or packaging is not damaged. | 4.60 | .084 | High |
| 3. Check the food ingredient's expiry date when purchasing. | 4.60 | .084 | High |
| 4. Check what food ingredient is already in storage before purchasing. | 4.48 | .119 | High |
| 5. Reduce purchasing of food items that are much discarded. | 4.36 | .156 | High |
| Storage | | | |
| 6. Make sure those fresh food ingredients are stored at the appropriate temperatures. | 4.74 | .069 | High |
| 7. Store the food ingredient in order during purchase – “first-in, first-out”. | 4.40 | .137 | High |
| 8. Label food ingredients that show the products' expiry dates before being stored. | 4.40 | .132 | High |
| 9. Label food ingredients that show the storage instructions before storage. | 4.31 | .134 | High |
| 10. Ensure the food ingredient storage area is safe (avoid spills, broken and damaged products). | 4.60 | .091 | High |
| Food preparation | | | |
| 11. Make extra food in case it is needed only. | 4.36 | .136 | High |
| 12. Reduce using food ingredients that are easily damaged for preparing food. | 4.02 | .162 | High |
| 13. Consider guests' demands when preparing food. | 4.07 | .150 | High |
| 14. Use the leftover quality food for the preparation of other meals. | 2.88 | .184 | Moderate |
| 15. Prepare a variety of sizes of portion meals. | 3.95 | .144 | High |
| Serving food | | | |
| 16. Waiter will give a clear explanation about the cooking method to the guests while taking food orders. | 4.26 | .128 | High |
| 17. Waiter will give a clear explanation about the food ingredients used to the guests while taking food orders. | 4.21 | .125 | High |
| 18. Waiter will give a clear explanation about the size portion of food served to the guests while taking food orders. | 4.19 | .137 | High |
| 19. Provide training for waiters to perform clear communication about menu order to the chef. | 4.38 | .108 | High |

| | | | |
|---|------|------|----------|
| 20. Provide various portions to guests to choose the size of dish required. | 3.90 | .166 | High |
| Management of leftover food and guests' plat waste | | | |
| 21. Use the leftover foods as animal feed. | 3.02 | .197 | Moderate |
| 22. Donate leftover quality food to charity. | 2.67 | .173 | Moderate |
| 23. Let staff take home the leftover quality foods. | 2.98 | .194 | Moderate |
| 24. Extra charge to guests who leave food on their plates. | 2.38 | .187 | Moderate |
| 25. Encourage guests to take home their leftover food. | 2.98 | .206 | Moderate |
| Sent to disposal | | | |
| 26. Compost organic kitchen waste. | 2.93 | .188 | Moderate |
| 27. Practice food waste segregation. | 3.67 | .159 | High |
| 28. Pursuit food waste reduction programme. | 3.69 | .158 | High |
| 29. Have a waste management team. | 3.29 | .175 | Moderate |
| 30. Conduct a food waste audit. | 3.07 | .178 | Moderate |

Hotels cater food and beverage services not only to house guests, but also to the outsiders. Hence, hoteliers need to have a systematic process on storage to avoid the spoilage of food. Table 3 shows that most of the hoteliers pursue first in first out (FIFO); labelling food ingredients that show the product expiry dates, and storage instructions in order to avoid damaged raw food ingredients in the storage. These practices also control the stock of raw food ingredients effectively with the right rotation (Halloran et al., 2014). In addition, stored fresh food ingredients at the appropriate temperatures will also prevent food waste. Table 3 shows that the interpretation score for all the items for the process of storage is high, which is above mean 4.31.

Table 3 shows that the mean interpretation of all items for the process preparation of food is high except item 14 (moderate), which means only a few hoteliers reuse quality leftover food. The results indicate that even though the hoteliers have taken every possible effort to minimise their food wastage when preparing food, they still cannot fully avoid leftover food wastage due to the strict hotel policy and food safety standards. Based on food safety standards, hotels' food items should not be left on the buffet table for more than four hours and should be thrown away even though those food are still in good quality condition (Papargyropoulou et al., 2016). For safety and hygienic purposes, leftover food from the buffet breakfast should not be reused for other meals or served again to their staff hotel during lunch time. In fact, a selection of the type of food quality, packaging, and storage at appropriate temperatures are influenced by prolonging the quality of leftover food for safe consumption or reuse for preparing other meals. The above finding is consistent with the study by Pirani and Arafat (2015) who found that while food safety standards of hotels ensures the food served is

fresh and harmless for the guests, but generates a certain amount of buffet leftover waste.

Based on Table 3, an interpretation of mean for all items for the process of serving food is high, which is above mean 3.90. The results also indicate that communication is a very important part in pursuing a systematic process for serving food. For example, clear communication between the waiters and guests regarding food ingredients that are used in the menu, cooking method, and serving portion size of the menu can be avoided in the event of a wrong menu order. In addition, communication between waiters and chefs regarding food menu ordering and number of guest orders is also required. Those clear communications will be helpful to avoid preparing excess quantities of food and preparation food waste. Furthermore, providing various portions of dishes (such as big, medium or small) for guests to choose the size of dishes helps to reduce plate waste. The findings of this study are supported by Kallbekken and Saalen (2013) who found that hoteliers are able to reduce food waste by 19.5% by reducing portion of dishes using smaller size of plate.

The mean interpretation of all items for the process of management of leftover food and guests' plate waste is moderate, which is below mean 3.02. The results indicate that the strict policy of hotels influences the process management of leftover food and guests' plate waste. In order to follow the hotel's policy, hoteliers (especially big hoteliers) do not allow staff to take anything from their hotels even though there is leftover food or guests' plate waste. Moreover, hoteliers also do not encourage their guests to take away excess plate food ('a la carte') for safety and hygienic purposes. In addition, tasteless food (error in the recipe) or food that does not meet their expectations also increases guests' plate waste. Sometimes, hoteliers prepare extra quantity of food to avoid last minute cooking for guests who arrive without any booking or reservation. However, such practice results to creating higher leftover food waste. Besides that, this study found that guests' food consumption pattern also influences the practices towards sustainable food waste management and this is beyond the control of hoteliers. Guests expect to have a variety of food on their tables, especially during buffet. The hotel, consequently, offers a variety of foods to meet the guests' satisfaction. But unsustainable guests' food consumption pattern leads to generating a lot of plate waste. According to Food Wise Hong Kong (2013), plate waste could be reduced by education or raising awareness among guests through an effective communication program. On the other hand, studies done by Jeffery et al. (1994) and, Kuo and Shih (2016) found that overall average plate waste could be reduced significantly by using coercion approach (include penalty) compared to education approach. Thus the best might be to use both approaches to increase guests' awareness.

The mean interpretation of all the items sent for disposal is moderate. Compost is one of the sustainable practices before food waste is sent to the

landfills. The practice of compost shows it is still moderate (Table 3). The finding in this study on compost concurs to findings by Sullivan and Smith (2014) that explain capital and labour intensive in tropical settings, supportive management, and a market for the compost influenced compost practices. Composting practices are attractive options for island hotels to reduce the costs of managing food waste and are good source for landscaping purposes. According to the Environment Protection Agency (2010), composting system at hotels has a capacity to reduce 44% of waste costs. In addition, the separation of waste is the starting point for disposal of food waste in a sustainable way. The results indicate that 95% of the hotels have not implemented a waste audit or established a special team for waste management needs as shown in items 29 and 30 (Table 3).

There are several possible explanations for this overall result. First, the main finding to emerge from this study is that, the lack of concern in hotel policy for food wastage, in which influences the practices towards sustainable food waste management. The results of this study indicate that most of the big hoteliers (4 star and 5 star hotels) have strict hotel policy and food safety standards, which emphasise on safety and standard hygiene purposes but lack of concern about food waste reduction. While most of smaller hoteliers (1 star to 3 star hotels) were more flexible with various situations and were more concern in reducing leftovers food waste. The second major finding from this study is that the unsustainable guests' food consumption pattern also influences sustainable food waste management practices for all type of hotels. As found by Stuart (2009), culture, personal choice and socio-demographic characteristics have been associated with increased food wastage. For hotel sector, guests arrivals from different cultures, background and personal taste, will determine the consumption of different types of food, which will affect food waste generation. Thus, hoteliers should take possible actions in convincing and encouraging their customers towards plate waste reduction.

CONCLUSION AND RECOMMENDATIONS

Hoteliers have difficulty to achieve zero food waste in their hotels because it is a common characteristics for the hospitality sector (Sandaruwani & Gnanapala, 2016). However, sustainable food waste management among the business operations of the hotel sector can reduce maximum food waste from purchasing until disposal. This sustainable practice will lead to the efficient use of resources relating to foodstuff and helps to reduce operational cost. Apart from the internal management, hoteliers need good cooperation with stakeholders such as customers, other hoteliers, suppliers, NGOs, government and communities, which are important to achieve sustainable food waste management in the hotel sector (Thi, Kumar, & Lin, 2015).

From the findings, some recommendations are put forward in the pursuit of sustainable food waste management practice in the hotel sector. These

recommendations provide the platform for developing guidelines and strategies to improve food waste management practice in the hotel sectors.

- Hoteliers should provide fresh and quality food to meet guests' expectations and satisfaction. At the same time, hoteliers should encourage their guests to reduce plate waste. For example, effective communication helps to raise guests' awareness on reducing food waste or preventing over-ordering of food. Other than that, notice boards, written messages or instructions are used to remind customers to reduce plate waste.
- Hoteliers should establish a specific internal audit team and audit food waste generation by measuring the present food waste levels and identify the key sources of food waste generation. Such practices give useful information for hoteliers to implement effective strategies to reduce food waste before food waste is sent to landfills for disposal.
- Hoteliers should provide training to staff on sustainable food waste management from purchasing to disposal in order to instil and educate staff with food waste reduction culture.
- Hoteliers should develop a food waste management policy with clear objectives, procedures, and goals towards reduction of food waste, and at the same time, maintaining the safety and standard hygiene purposes. In other words, hotel policy for food waste reduction should target the circumstances and actions that lead to food wastage and to facilitate the culture of reduce waste in the hotel operation.
- Competitors (other hoteliers) should cooperate to reduce food waste. For example, a win-win situation could be formed if all hoteliers (all competitors) together make a practice of extra charging the customers who leave food on their plates. These practices would help to reduce plate waste, prevent over-ordering, and at the same time, cut down operational costs.
- The government and non-governmental organisations (NGOs) should promote reduce waste awareness by promoting more programmes and campaigns continuously to all types of hoteliers, guests and also to the local communities.
- The government and non-governmental organisations (NGOs) should encourage green practice (including sustainable food waste management) by giving out awards and helping to promote those hotel names internationally.
- Basically, a minimum of 6 criteria requirements are needed for the rating of hotels in Malaysia, such as qualitative and aesthetic requirements; available common areas; quality and atmospheric bedrooms; quality of varied services; safety and standard hygiene; and professionalism of the hotel staffs (Ministry of Tourism and Culture Malaysia, 2013). The

Ministry of Tourism and Culture Malaysia should also consider the criteria regarding sustainable food waste management as a requirement aspect for the star rating of hotels in Malaysia.

REFERENCES

- Agamuthu Pariatamby, & Nagendran Periaiah (2007). *Waste management challenges in sustainable development of islands*. Retrieved from http://www.iswa.org/uploads/tx_iswaknowledgebase/Pariatamby.pdf
- Ahmad, J. (2002). *Pemupukan budaya penyelidikan di kalangan guru di sekolah: Satu Penilaian*. Bangi: Universiti Kebangsaan Malaysia.
- Azizan Marzuki, Shardy Abdullah, Mastura Jaafar, Diana Mohamad, M. M. I. (2016). *Kajian daya tampung sosial dan ekonomi bagi pelancongan di Pulau Langkawi*. Tanjung Malim: Penerbit Universiti Pendidikan Sultan Idris.
- Bohdanowicz, P. (2005). European hoteliers' environmental attitudes: Greening the business. *The Cornell Hotel and Restaurant Administration Quarterly*, 46(2), 188–204.
- Environment Protection Agency. (201). *Case studies of organisations managing food waste properly*. Retrieved from <http://www.envirocentre.ie/includes/images/Case-Studies-of-Organisations-Managing-Food-Waste-Properly.pdf>
- Halloran, A., Clement, J., Kornum, N., Bucatariu, C., & Magid, J. (2014). Addressing food waste reduction in Denmark. *Food Policy*, 49, 294–301.
- Jeffery, R. W., French, S. A., Raether, C., & Baxter, J. E. (1994). An environmental intervention to increase fruit and salad purchases in a cafeteria. *Preventive Medicine*, 23(6), 788–792.
- Kallbekken, S., & Sælen, H. (2013). “Nudging” hotel guests to reduce food waste as a win–win environmental measure. *Economics Letters*, 119(3), 325–327.
- Kasim, A. (2009). Managerial attitudes towards environmental management among small and medium hotels in Kuala Lumpur. *Journal of Sustainable Tourism*. <http://doi.org/10.1080/09669580902928468>
- Kasimu, A. B., Zaiton, S., & Hassan, H. (2012). Hotels involvement in sustainable tourism practices in Klang Valley, Malaysia. *International Journal of Economics and Management*, 6(1), 21–34.
- Kuo, C., & Shih, Y. (2016). Gender differences in the effects of education and coercion on reducing buffet plate waste. *Journal of Foodservice Business Research*, 8020(May), 1–13.
- Langkawi Development Authority [LADA] (2017). Laporan Tahunan Lembaga Pembangunan Langkawi.
- Mensah, I., & Blankson, E. J. (2014). Commitment to environmental management in hotels in Accra. *International Journal of Hospitality & Tourism Administration*, 15(2), 150–171.
- Ministry of Tourism and Culture Malaysia. (2013). *Minimum requirements for star rating of hotel 1*.
- Molina-Azorín, J. F., Claver-Cortés, E., Pereira-Moliner, J., & Tarí, J. J. (2009). Environmental practices and firm performance: an empirical analysis in the Spanish hotel industry. *Journal of Cleaner Production*, 17(5), 516–524.

- Mourad, M. (2016). Recycling, recovering and preventing “food waste”: Competing solutions for food systems sustainability in the United States and France. *Journal of Cleaner Production*, 126, 461–477.
- Ong, P. L., Nurhafizah Yusoff, & Sharina Abdul Halim. (2010). Menjejak semangat 'Kawi': Langkawi sebagai geopark. *Akademika*, 80, 55–68.
- Papargyropoulou, E., Wright, N., Lozano, R., Steinberger, J., Padfield, R., & Ujang, Z. (2016). Conceptual framework for the study of food waste generation and prevention in the hospitality sector. *Waste Management*, 49, 326–336.
- Pirani, S. I., & Arafat, H. A. (2015). Reduction of Food Waste Generation in the Hospitality Industry. *Journal of Cleaner Production*. <http://doi.org/10.1016/j.jclepro.2015.07.146>
- Sandaruwani, J. A. R. C., & Gnanapala, W. K. A. C. (2016). Food wastage and its impacts on sustainable business operations: a study on Sri Lankan tourist hotels. *Procedia Food Science*, 6(2015), 133–135.
- Shamshiry, E., Nadi, B., Mokhtar, M., Komoo, I., Saadiah Hashim, H., & Yahaya, N. (2011). Integrated models for solid waste management in tourism regions: Langkawi Island, Malaysia. *Journal of Environmental and Public Health*, 2011, 1–5.
- Sharina Abdul Halim, Ong, P. L., Nurhafizah Yusoff, & Lim, C. S. (2011). Participation towards heritage conservation: Case of fishing community in Langkawi Geopark. *Planning Malaysia*, (1), 185–196.
- Stuart, T. (2009). *Waste: uncovering the global food scandal*. New York: W.W. Norton & Company.
- Sullivan, K., & Smith, J. (2014). Recycling for small island tourism developments : Food waste composting at Sandals Emerald Bay, Exuma, Bahamas. *Resources, Conservation & Recycling*, 92, 25–37.
- Tan, K.C., Lyman, S. B., & Wisner, J. D. (2002). Supply chain management: a strategic perspective. *International Journal of Operation & Production Management*, 22(6), 614–631.
- Thi, N. B. D., Kumar, G., & Lin, C.-Y. (2015). An overview of food waste management in developing countries: Current status and future perspective. *Journal of Environmental Management*, 157, 220–229.
- Tourism Malaysia. (2017). *Malaysia tourism statistics in brief*.
- Wang, L. en, Liu, G., Liu, X., Liu, Y., Gao, J., Zhou, B., ... Cheng, S. (2017). The weight of unfinished plate: A survey based characterization of restaurant food waste in Chinese cities. *Waste Management*, 66, 3–12.
- Food Wise Hong Kong (2013). *Food waste reduction good practice guide for hotel sector*.
- WRAP (2011). *The composition of waste disposed of by the UK hospitality industry* (Final Report).



CHANGES AND THREATS IN THE PRESERVATION OF THE TRADITIONAL MALAY LANDSCAPE

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Abstract

The cultural landscape is regarded as being of the most complex designs which involves interactions between man, nature, cultural values and the associated built environment. Issues relating to the degradation of the cultural landscape are often caused by rapid urbanisation and industrialisation. The traditional Malay Landscape exists through harmoniously balanced interactions between man, nature and culture together with the traditional house, and contains unique and interesting features that have to be preserved as one of the most important cultural heritage sites. However, the preservation of heritage in Malaysia tends to focus more on architectural buildings rather than adopting a holistic approach that includes the surrounding environment of where the building is located. The absence of such approach has contributed towards the loss of the traditional Malay Landscape. This study highlights the changes and threats in the preservation of the traditional Malay Landscape by focusing on the preservation of a traditional house compound. The research employs a qualitative approach which involves site visits, interviews, and document analysis concerning the research topic. The old Malay villages located in Tumpat, Kelantan and Alor Gajah, Melaka have been selected as case studies. The findings reveal that the changes and threats include four underlying aspects; Unsuitable and inappropriate uses, Ownership Problems, Inadequate fund and consultation and Current development trends. The study concludes that the traditional Malay Landscape is facing numerous changes and threats in terms of its physical characteristics, environmental aspects and cultural values. In addition, the study reveals that traditional Malay landscape is not seen here as an integrating, holistic concept.

Keywords: Traditional Malay landscape; changes; threats; heritage; preservation

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INTRODUCTION

Conservation is known as a process of looking after or managing changes. It also includes maintenance and may, according to circumstances, include preservation, restoration, reconstruction and adoption and often a combination of more than one of these philosophies. According to International Council on Monuments and Site or ICOMOS (2007), conservation is a process which leads to the prolongation of life of cultural property and for its utilization now and in the future, it is also to recapture a sense of the past and to conserve, as much as possible the existing fabric in its original condition or situation. It is also a process that seeks to promote the harmony of both private and community lives in the affected areas (Kottak, 1994; Samsudin, 2013). In addition, it is also referring to the encouragement of the preservation of those cultural properties that constitutes the memory of mankind.

The global society has started to recognise the importance of conservation in early 20th century. Simultaneously, conservation works began to receive positive reaction by all quarters of expert, especially in the field of historic building. In Malaysia, conservation initiatives only began to capture government attention during the 1970's. This culminated in the Antiquity Act (Act 168) in 1976, and most recently, the National Heritage Act (2005).

It is evident that the preservation of heritage in Malaysia tends to focus more on architectural buildings rather than adopting a holistic approach that includes the surrounding environment of where the building is located (Abdul Razak, 2015; Aidatul, Nooridayu & Norajlin, 2012). As a result, the absence of such approach has contributed towards the loss of the traditional or cultural landscape.

This paper aims to explore the current condition and challenges in achieving the holistic preservation effort by focusing on the Malay Landscape. The first objective is to identify the special attributes and components that form the Malaysian landscape. The second objective is to identify the various changes and threats concerning the preservation of the traditional Malay Landscape. The third objective is to study the method of protecting the heritage of the traditional Malay Landscape. The research employs a qualitative approach which involves site visits, interviews, and document analysis concerning the research topic. The old Malay villages located in Tumpat, Kelantan and Alor Gajah, Melaka have been selected as the case studies.

THE MALAY LANDSCAPE

The Malays are well known for having the richness of culture, heritage and inherited values. These personas are shaped from the custom of the Malays in their daily activities. Zakaria, Salleh & Sabrizaa (2014a) state that the standard of living of the Malays is much determined by the cultural and customary practices. This was translated into the development in the Malaysian landscape starting from the early days of the Malacca Sultanate in the 14th century and the 15th. Based

on the record of Abdullah Munsyi in his book "The Travels of Abdullah", the forbidden garden on the Malacca Sultanate era is the earliest garden in Malaysia (Osman & Yusoff, 1983). Munshi also described the beauty of a flower garden of the Kelantan sultanate in the 16th century called as the Tanah Serendah Sekebung Bangui. Moreover, it was also narrated of the Hunting Park and Central Melaka sultanate known as Ghairat Park and Kraton Park (Samsudin, 2014). In the traditional Malay garden, the house compound is divided into three different spaces based on functions. The plants and the components of the compound associate with the space itself. The composition of the Malay garden consists of the front compound, side compound and rear compound (Figure 1). The spaces create the identity of Malay garden and were derived from their culture, belief and religion.

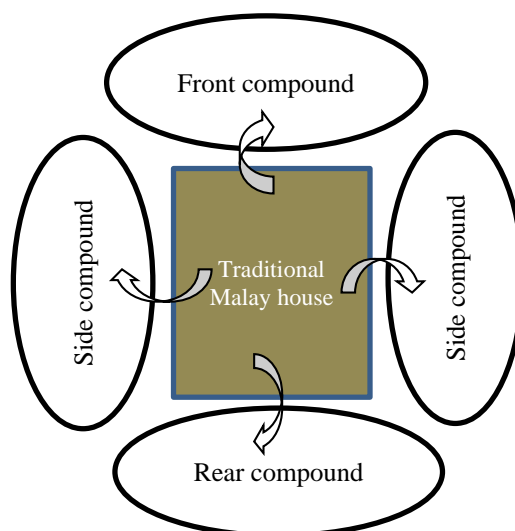


Figure 1 The spatial composition of the traditional Malay garden

Front Compound

The front compound (*laman hadapan*), or the open lawn, is situated in front of the house facing the main road. It is the wide space cleared of any obstruction giving ample space to conduct communal activity when required, such as wedding ceremony, feast, and space for children playing. Ismail, Utaberta and Ismail (2015) state that the open lawn being a main space that connect the front compound and side compound of the garden. In the eastern region of Peninsular Malaysia, this area is being used for drying fish, paddy winding as well as for drying clothes. The plants planted in front compound are usually ornamental, fragrant, colourful and small in size. This is to welcome the guests as well as to accentuate the appearance of the house (Zakaria, Salleh & Sabrizaa, 2012a).

Side Compound

The side compounds (*laman sisi*) are located on the right and left side of traditional Malay house. This space links with the front compound and rear compound. This compound is slightly narrow and elongated to the rear yard. The second entrance is located in this compound to link a house garden with the neighbour's house compound. Moreover, this compound is a multipurpose area to accommodate the daily activities such as space for relaxing, leisure, gathering space for the family, and at the same time to entertain their neighbour and relatives. Hence, it helps to strengthen the relationship among the village society. Trees, such as fruit trees, are planted in this area and being the source of food. Hardscape elements like shelters, paddy store and hen coop are among many important elements that increase the functionality of the space (Zakaria, Salleh & Sabrizaa, 2012b).

Rear Compound

The rear compound (*laman belakang*) is related to the kitchen activities such as cooking, bathing and washing as well as for orchard and farming. It is usually unturfed as the compound normally used for cooking, feeding the livestock and storage of kitchen utensils. This space is usually dominated by the women as they spend more time in the kitchen. This space also creates the sense of privacy due to the planting composition, whereby the trees and shrubs are planted close to one another. Trees with canopy are planted to make the backyard area as an isolated zone. Also, back yard has a high density of plants and scattered layout as its function to absorb the unpleasant smell from the remaining pool or water channel called as *parit* and the livestock. This space is considered as kitchen garden or edible garden as it provided the domestic raw food, fruit trees and herbs as medicinal purpose (Zakaria, Salleh & Sabrizaa, 2014b; Ismail, Utaberta & Ismail 2015).

Hardscape Element

The application of hardscape elements in the traditional Malay garden is to support the daily activities of the residents, their relatives, and guests and village community. As plants are planted according to the suitable use of the space, the landscape furniture are also placed according to the use of the element and the function of the area (Nasir & Wan Teh, 1997). The location of the house, either in the coastal, mainland or rural area, also affects the types of hardscape elements applied (Shuaib & Enoch, 2013). Moreover, the placement of hard landscape element is a manifestation of the house owner status in social, culture and religious belief. Zakaria, Salleh and Sabrizaa (2012b) and (2013), suggest that a Malay landscape garden is a place for the community to develop their social bonding. Table 1 lists the common hard landscape elements in Traditional Malay house compound.

Table 1 Hardscape elements in the Traditional Malay house compound.

| Local name | Common Name | Placement area |
|-------------------|----------------------|----------------|
| <i>Ampaian</i> | Clothes line | |
| <i>Guri</i> | Guri | |
| <i>Kolah</i> | Water tank | Front compound |
| <i>Pasu Bunga</i> | Flower pot | |
| <i>Titi</i> | Log bridge | |
| <i>Wakaf</i> | Gazebo | |
| <i>Perigi</i> | Well | |
| <i>Bangsai</i> | Barn | |
| <i>Kolam</i> | Pond | Rear compound |
| <i>Pelantar</i> | Open timber platform | |
| <i>Tandas</i> | Latrine | |
| <i>Kepok padi</i> | Paddy store | |
| <i>Pangkin</i> | Resting hut | Side compound |
| <i>Reban</i> | Chicken coop | |
| <i>Tempayan</i> | Water vessel | |

Softscape Elements

Softscape elements in traditional Malay house compound represent the nature related to their colloquial activities. It consists of varying types and species of plants. Softscape elements are usually used for ornamental and medicinal purposes. They also provide fresh ingredients for cooking as well as create shade. The type of plants may include climbing plants, orchid plants and exotic plants. Shrubs and ground cover are often planted in the front compound as ornamental, which can give benefits in terms of their shape, colour, smell, and size. In the rear compound is the kitchen garden where herbs and vegetables are planted for use in cooking. Meanwhile, shady trees like *beringin* and *ketapang* are planted in the side compound to provide shade. Fruit trees such as *rambutan*, mango, mangosteen and durian tree are also sometimes planted in the compound of Malay traditional house.

METHODOLOGY

This study employed qualitative research method. Primary data were obtained through site visits, observation and interview. Meanwhile, secondary data were gathered through literature review of Malay culture and traditional Malay garden. Interviews with the house owners and tenants have revealed information regarding the changes or adverse effects on which the hardscape and softscape elements in the ten selected traditional Malay houses were affected or changed.

Sites in Kelantan and Melaka were selected as case studies as both states have rich elements of culture and plenty of traditional Malay villages that are still

being preserved today. The preservation of the traditional Malay houses in Melaka is monitored by *Perbadanan Muzium Melaka* (PERZIM). According to PERZIM, more than 100 traditional Malay houses in villages in Melaka have been earmarked for preservation. Meanwhile, Shuaib and Enoch (2013) believe that the traditional Malay house in Kelantan has the most traditional aesthetic values. The selected site in Kelantan is Kampung Chenderong Batu located in the district of Wakaf Bharu and Tumpat, while in Melaka the sites are located in Kampung Padang Sebang, Kampung Tanjung Rimau Luar and Kampung Gadek, in the district of Alor Gajah.

In overall, ten traditional Malay houses were selected from the study areas. All of the houses were owner-occupied, except two in Alor Gajah, which were rented to local tenants. The houses displayed minimal deterioration. The houses' compounds contained special structures of hardscape and softscape belonging to various historical periods (more than 100 years), which are worthy of preservation.

The very contextual and scope of the study will inevitably influence and limit the generality of the study findings. Besides the above, the major limitations of the study were that the study areas being limited to the locality of the historic buildings within two states. Thus findings may be of slight relevance and applicability to other part in the country. Finally, the study also assumed that the respondents interviewed have some level of knowledge in traditional Malay landscape and the need for their preservation.

FINDINGS

The study shows that the front compound of most of the houses in Kelantan and Melaka still maintain the composition of open free space often found in the front area of a traditional Malay house. Similarly, most of the houses also maintain the traditional combination of plants such as herbs, fragrance, fruit trees and brightly coloured flowering plants. For houses in Kelantan, the side and rear compound were planted with plants that are associated with food and daily necessities for the use in cosmetics and medicine. These imply that the plants were planted to create an aesthetic sense, provide habitat for wildlife as well as to provide shade and shelter. Thus, it can be said that traditional Malay landscape actually creates a balance ecological system. In addition, the use of various shapes and characters of the plants resulted in pleasant and soothing environment. In terms of cultural aspect, the landscape was created for social interaction among the community members suggesting a strong mutual relationship and understanding.

Nevertheless, several issues were identified that have contributed to the deterioration of the landscape of the traditional Malay houses. These are presented below.

Use of Unsuitable Material

From observation, some of the compounds were cleared of the natural turfing and resurfaced with premix and other types of hard surfaces. This has changed the original setting of the compound. In some cases, softscape such as fruit trees and shrubs were removed for easy maintenance of the compounds. But this has led to increase heat during the day.

Some of the houses were inherited by the present owners who may not understand or appreciate the traditional landscape concept and design adopted by the original owner. As a result, present owners have redesigned the compounds according to their liking and, in the process, changed the original traditional setting of the compounds.

Lack of Maintenance

The problem of lack of maintenance can be attributed to several reasons. Firstly, to most residents of the houses, the maintenance of the houses was much more important than the compounds. Therefore, while the houses were repaired and maintained, the compounds were often not. This resulted in poorly maintained compounds of the houses being studied.

The issue of house ownership also contributed to lack of maintenance of the houses compounds. In the event of death of the original owner, the house, including the compounds, is often left unattended until the ownership of the house is legally transferred to an heir or a new owner. The situation was made worse when no heir or new owner was willing to stay in the house even after ownership has been transferred. This leaves the house and the compounds unattended and decayed.

This study also found that the traditional houses which were rented out also tend to have the problem of lack of compound maintenance. This was because tenants were unwilling to spend or cannot afford the cost of maintaining the compounds. As a result, the maintenance of the compounds was being neglected by the tenants.

Inadequate Fund and Consultation

Some of the traditional houses were given a one-off financial assistance by the local authorities for their conservation and maintenance work. However, the fund was mainly for works on the house building rather than the compounds. Thus, the amount of fund received was limited and insufficient to include maintenance and conservation works of the compounds.

Besides financial inadequacy, lack of awareness and knowledge of the traditional house owners in terms of the various forms of the art and Malay landscape has also played a role in poor and irregular maintenance of the compounds. As a result, many of these houses and their compounds have been inappropriately altered.

Current Development Trend

Modern design of development has influenced owners of traditional houses to also upgrade their residence as well as the traditional landscaping in the house compounds. The compound traditional setting was altered to include contemporary landscape components with modern design and materials. This, if left unchecked, would endangered the conservation of traditional Malay landscape in the country.

CONCLUSION

The findings from the study reveal that traditional Malay houses in both states, Melaka and Kelantan, appear to share common landscape characteristics. The landscape is generally characterised by the three types of space, which are the front compound, the rear compound, and the side compounds. The compounds, on the other hand, provide space for social interaction between house owners/occupiers with the community.

The study also found that the traditional Malays landscape is under threat due to lack of, and poor, maintenance work. Issues in house ownership, insufficient funds, and lack of knowledge on traditional Malay landscape have been identified among the factors that threaten the conservation of traditional Malay landscape.

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REFERENCES

- Abdul Razak, D. (2015, December 24). Save our vanishing kampong. *The New Straits Times*. Retrieved from <https://www.nst.com.my/news/2015/12/118833/save-our-vanishing-kampung>
- Aidatul, F. B., Nooridayu, A. Y., & Norajlin, J. (2012). Managing heritage assets: Issues, challenges and the future of historic Bukit Jugra, Selangor. *Procedia - Social and Behavioral Sciences*, 68(2012), 341-352.
- ICOMOS. (2007). *Heritage at risk: ICOMOS world report 2006/07 on monuments and sites in danger*.
- Ismail, N. A., Utaberta, N., & Ismail, S. (2015). A cultural responsive landscape study on Perak Malay garden: An expressional value. *Advances in Environmental Biology*, 9(5), 485-490.
- Kottak, C. P. (1994). *Cultural anthropology* (4th Edition). New York, Random House.
- Osman, M. T., & Yusoff, W. K. (1983). *Kajian Budaya dan Masyarakat di Malaysia*. Kuala Lumpur: Dewan Bahasa dan Pustaka.
- Samsudin, N. A. (2013). Influence of traditional Malay settlements physical design attribute on social characteristic: Johor, Malaysia. Retrieved from: http://www.academia.edu/5418878/Influence_of_Traditional_Malay_Settlements_Physical_Design_Attribute_On_Social_Characteristic_Johor_Malaysia
- Samsudin, N. A. (2014, August). The Physical Design Attributes of Traditional Malay Kampong in Kampung Tanjung Bunut, Kuala Terengganu. *5th International Graduate Conference on Engineering, Science & Humanity*. August 19-21, 2014, Johor Bahru, Malaysia.
- Shuaib, A. A., & Enoch, O. F. (2013). Integrating the Malay traditional design elements into contemporary design: An approach towards sustainable innovation. *Procedia - Social and Behavioral Sciences*, 129(2014), 59-67.
- Nasir, A. H., & Wan Teh, H. (1997). *The traditional Malay house*. Kuala Lumpur: Institut Terjemahan Negara Malaysia.
- Zakaria, A. Z., Salleh, I. H., & Sabrizaa, M. (2012a). Landscape furniture present in the ancient Malay garden according to old manuscripts and their effects on the formation of Malay garden design concept model in Malaysia. *Procedia - Social and Behavioral Sciences*, 91 (2013), 28-35.
- Zakaria, A. Z., Salleh, I. H., & Sabrizaa, M. (2012b, December). Plants present in the ancient Malay garden according to old manuscripts and their effects on the formation of a Malay garden design model in Malaysia. *The 9th Regional Symposium of the Malay Archipelago, SIMPORA 9:2012*. December 11-12, 2012, Seri Iskandar, Perak, Malaysia.
- Zakaria, A. Z., Salleh, I. H., & Sabrizaa, M. (2013). Malay landscape elements as depicted in the old Malay films. *Jurnal Pengajian Melayu*, 24, 43-55.

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Zakaria, A. Z., Salleh, I. H., & Sabrizaa. (2014a). The Malay garden design concept opportunity to be developed as the tourism product. *Procedia-Social Behavioral Sciences*, 153, 298-307.

Zakaria, A. Z., Salleh, I. H., Harun, S. N., & Sabrizaa, M. (2014b). Preservation characteristics of Malay garden: A catalyst for sustainable cultural landscape in Malaysia. DOI: 10.1007/978-981-287-332-3_28



**THE TRANSFORMATION OF THE MONOCULTURE SYSTEM
TOWARDS SUSTAINABLE FARMING PRACTICES AMONG MALAY
SMALLHOLDINGS IN KLUANG, JOHOR**

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ABSTRACT

Malaysia is known as the largest exporter and second largest producer of world palm oil market. Despite such contributions, a huge amount of forest land has been supplanted by oil palm cultivation. This activity is considered as a major driver of deforestation, which contributes to three-quarters of tropical deforestation globally. Critiques suggest agroforestry systems as option to overcome the issues brought up by the monoculture system of oil palm cultivation. This study is directed to study plant composition and arrangement for agroforestry systems in oil palm smallholdings. Data were gathered using a qualitative approach involving 10 biggest oil palm Malay smallholdings at Kluang, Johor. The study reveals that arrangement involves triangular, double avenue, and boundary planting systems. Further analysis traced that these plant species and arrangement can be categorized into two main categories which are: (i) sustainable plant composition and arrangement, and (ii) unsustainable into sustainable plant composition and arrangement. The study concluded that the transformation of the monoculture system with low sustainability towards more sustainable farming practices of agroforestry systems can actually be achieved through five considerations identified as (i) crop component (ii) maturity of oil palm (iii) market values and demand (iv) belowground and aboveground interaction, and (v) diversification of plant composition and arrangement.

Keywords: agroforestry, smallholdings, oil palm cultivation, sustainable agriculture

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INTRODUCTION

It is reported that food sufficiency, environmental stewardship, and socioeconomic viability and equity are the major paradigms of sustainable agriculture development (Devendra, 2011). Sustainable agriculture is a multi-dimensional concept considering the environmental or ecological, social, and economic dimensions (Suryanto & Susila Putra, 2012). Environmental aspects focus on the plant development, including plant growth and its management, which are affected by the agronomic study of soil, water, and crops (Smit & Smithers, 1993). From an economic perspective, the importance of sustainable agriculture is seen in its sufficient economic returns as an enterprise at the farm level, and a vital economic sector at the regional and national levels. The sector contributes a large amount in the national gross domestic product (GDP) (Dahlan & Kamal Hisyam, 2014).

It has been reported that 50% of 4 billion poor rural people depending largely on the crops and livestock production in order to sustain their basic quality of life (Dahlan & Kamal Hisyam, 2014; Devendra, 2011). Furthermore, it has been reported that the average income of Indonesian smallholder oil palm farmers was seven times higher than subsistence farmers (Wong & Moog, 2001), but vice versa to Malaysian smallholder farmers (Faridah, 2001). In overall, Malaysian and Indonesian smallholder farmers contribute 35 to 40% of the whole oil palm production. Based on the situation, Malaysian smallholder farmers need to have initiatives to gain proper technical skill to become skilled and trained farmers. However, without giving and exposing appropriate knowledge and institutional support to the smallholder farmers, they are unable to perform good and sustainable agriculture practices in terms of farming techniques and strategies. These efforts have further improved their land use management in terms of appropriate planning and design of farming practices, suitable selection of composition and arrangement of agroforestry components, and produce continues self-sufficiency products. Taking into such circumstances this study therefore examines the implementation of agroforestry systems as sustainable agriculture practices in oil palm cultivation among smallholdings. The study concerns about how the plant composition and arrangement of agroforestry systems provide positive and neutral benefits to oil palm growers and the surroundings.

LITERATURE REVIEW

Agroforestry system has been seen as the approach in sustainable agriculture practices that consider the principles of sustainability. It is defined as a dynamic and harmonious solution of natural resources management with the efforts to integrate trees and animals in farming system (Suryanto & Susila Putra, 2012). The purpose is to increase environmental, social, and economic benefits for both agriculture and forestry sectors. In addition, agroforestry system is also known as a practice of growing crops, trees, and animals in the same unit of agricultural

land in accordance to the principles of sustainability. It becomes dynamic systems in which the joint application of agricultural crops, plant, and animal species is able to improve the effectiveness of natural resource usage, increase job opportunities and income, as well as an increase pragmatic production system (Devendra, 2011).

Agroforestry system is also an attempt to overcome the negative effects of the oil palm monoculture development in the agriculture sector. The system is seen as sustainable form of land use option which have the capability to improve the productivity and well-being of rural community (Faridah, 2001; Ahmad Fauzi & Huda Farhana, 2006; Nurul Ain et al., 2011). Most importantly, the system enables oil palm farmers to maximize the utilization of agricultural land in a sustainable way. Therefore, for this research, agroforestry system refer to various types of farming practice concerning the composition and arrangement of the components that involve in the system. The system must be systematically planned and designed in order to be adopted as a mechanism in planning good agricultural practices (GAP) (Faridah, 2001; Ahmad Fauzi & Huda Farhana, 2006; Dahlan & Kamal Hisyam, 2014; Devendra, 2011).

Generally, the evolution of agroforestry system started in Europe, America, Africa, and Asia through shifting cultivation, intercropping, and mixed farming practices (Conklin, 1957; Zeleza, 1993). The system was first implemented in Malaysia through *taungya* method or intercropping in 1950 (Ahmad Fauzi & Huda Farhana, 2006). It involved a combination of agricultural and forestry components of agricultural crops, plant, and livestock species. As the knowledge developed, these farming practices were improved by considering the environmental, social, and economic aspects thus known as agroforestry system.

The implementation of agroforestry system within oil palm cultivation by the Malay smallholding farmers often involve integration of oil palm crops with livestock, although mostly cattle instead of goat, buffalo, and poultry. This integration is known as a silvopastoral sub-system, and is popular in Malaysia due to the reduced availability of arable land, as well as rapid demand for animal protein production including meat and dairy products (Dahlan & Kamal Hisyam, 2014; Devendra, 2011).

In contrast, studies that analysed the integration between oil palm crops and other plant species, or known as agrisilviculture sub-system, are only slightly developed and undervalued its potential, especially towards the environment. As mentioned by Devendra (2011), the initial focus of sustainable agriculture is on environmental aspects. However, it has expanded into broader socioeconomic and political aspects more than the environmental aspects. As the knowledge on sustainability has been spreading in all sectors, it is important to draw attention on the environment, social, and economic benefits of agroforestry system especially with the integration of oil palm crops and other plant species.

Table 1 shows that earlier studies on agroforestry were mostly focused on the socioeconomic benefits such as increase yield production, additional income for the farmers, and decline cost of weeding and herbicides instead of environmental benefits. Studies on environmental benefits of agroforestry has only increased in the early 2010, especially those conducted by governmental sector including Malaysian Palm Oil Board (MPOB), Sabah Forestry Department, and Forest Research Institute Malaysia (FRIM). Consideration on three aspects of environment, social, and economic benefits is further developed in more recent studies.

Table 1 Studies on the benefits of agroforestry systems in oil palm cultivation in Malaysia

| Year | Author | Concern of study | Benefit |
|------|--------------------------------------|---|---|
| 2000 | Rosli Awaludin | Agrosilvopastoral sub-system: Oil palm – cattle (portable electric fence) | Save cost of weed control and reduce labor required for maintenance works |
| 2003 | Rosli Awaludin & Shariffhuddin | Agrosilvopastoral sub-system: Oil palm – cattle | Save cost for weed control, reduce labor required for maintenance works and increase cattle production for food supply |
| 2005 | Lee et al. | Agrisilviculture sub-system: Oil palm – laran (<i>Neolamarckia cadamba</i>) Oil palm – binuang (<i>Octomeles sumatrana</i>) | Supply good quality logs for the timber industry with a very high price for per unit of biomass and the species are less labour-intensive that can reduce the reliance on foreign labor |
| 2006 | Ahmad Fauzi & Huda Farhana | Agrisilviculture sub-system: Oil palm – banana (<i>Musa</i> spp.) Oil palm – sentang (<i>Azadirachta excelsa</i>) | Increase production cost and gross income |
| 2008 | Ahmed Azhar et al. | Agrisilviculture sub-system: Oil palm – sentang (<i>Azadirachta excelsa</i>) Oil palm – teak (<i>Tectona grandis</i>) | Increase smallholder farmers' income |
| 2008 | Tapsir Serin et al. | Agrosilvopastoral sub-system: Oil palm – cattle | Improvement of productivity and efficiency of beef cattle production through farmers' skill and land use management |
| 2009 | Norkaspi Khasim et al. | Agrisilviculture sub-system: Oil palm – tongkat Ali (<i>Eurycoma longifolia</i>) | Increase in land productivity and generate additional income, |

Social & economic

| | | | | |
|------|--|---|--|----------------------|
| | | | especially during the immature phase | Environmental |
| 2012 | Hasnol Othman, Farawahida, & Zulkifli Hashim | Agrisilviculture sub-system: Oil palm – <i>Mucuna bracteata</i> | Improve soil fertility, palm growth, and lower immaturity phase | |
| 2014 | Dahlan Ismail & Kamal Hisyam | Agrosilvopastoral sub-system: Oil palm – cattle | Increase family income and standard of living, improve crops and cattle production through centralization of cooperative marketing and management system, and improve the soil fertility via decomposition of dung and urine from cattle | |

Recently, with the increasing concern for sustainable oil palm production, the significance of agroforestry system has increased. As a result, a monoculture system for oil palm cultivation, formerly known as the most important agricultural activity that contributes to the main agricultural sector of GDP (Kushairi, Azman & Esnan, 2009) has changed into a more diverse oil palm farming practices of agroforestry system, especially among smallholdings (Devendra, 2011). This tendency towards commercialization of agricultural sustainability was supported by various kinds of subsidy schemes provided by the Department of Agriculture since 2001.

METHODOLOGY

This study applied exploratory research that employed qualitative research approach. It is to provide a better understanding on how two or more variables are related each other in a situation through the application of inductive reasoning based on empirical evidence through site study. In this research, exploratory was utilized for three purposes; to clarify any intrusiveness of the study for better understanding, to test the feasibility of the study, and to develop the methods to be implemented in other range of study. In addition, Elijido-Ten (2007) also identifies other purposes of exploratory research, which are to observe patterns, ideas, or propositions of the study. It was also decided that exploratory research suggests inductive reasoning.

For the purpose of this study, constructive learning was applied to explore the experiential knowledge, understanding, and awareness on the plant composition and arrangement of oil palm crops and plant species, which is also known as agrisilviculture sub-system. It covers various sources of documentations that are discovered and adapted to fit the knowledge with the scope of this study. Attempt to discover the knowledge also involved social

interaction with many experts in different specialization in agriculture field, as well as a participants, in this case, the smallholding farmers. Hence, the strategy of inquiry in this study involved the participation and response of smallholding farmers in the selected study area, as well as experts in agriculture field on their experience with agroforestry system. Hence, this study involved in-depth exploration of a process by employing observation, interview, and document analysis as methods of data collection to facilitate the specific direction of the research design.

Study Area

This study was conducted in Kluang district in Johor, Malaysia, but focusing in Paloh Township. The district is located in the middle of Johor state. In 2010, its population was at 288,364 population, mostly Malay (138,223), and Chinese (86,690) and Indians (24,102) (Department of Statistic Malaysia, 2010). Except for oil palm cultivation in Kluang, the study area consists of a huge number of smallholding farmers. The latest data showed Kluang as the highest district of oil palm smallholdings with the total area of 46,515 hectares being cultivated by 13,053 smallholder farmers. Meanwhile, the selection of Paloh Township as a focus of study is subject to the suggestion by the MPOB officer as the oil palm smallholdings are continuously applied agroforestry system and among the most successful smallholding farmers in Kluang.

Data Analysis

The data collected were analysed using thematic analysis by conducting different process of qualitative data analysis (QDA) to understand, represent, and formulate an interpretation on the better meaning of the data (Creswell, 2003). The process involves documentation, categorization, connection, corroboration, and representation of the data throughout the study (Schutt, 2012). Hence, the examination of the data analysis for this study includes documentation, conceptualization, coding, and categorizing; examining relationship and displaying data; and triangulation.

FINDINGS AND DISCUSSIONS

Agroforestry systems as sustainable agriculture practices in oil palm smallholdings

The findings from the study reveal that transforming agriculture practices into a sustainable one begins with the planning stage. A dynamic interaction from the combination of agriculture and forestry activities is emphasized through agricultural landscape planning and design. The initiatives that consider productivity, sustainability, and adoptability are based on a greater structural and functional complexity of the plant composition and arrangement of the systems.

It refers to the systematic composition and arrangement by getting the right number of oil palm crops and plant species, the right species of plant to be integrated within oil palm smallholdings, and the right arrangement to integrate oil palm crops and plant species in an agricultural land.

Agroforestry planning and design, which involves the consideration of composition and arrangement, is both an artful science of sustainable agriculture development. This consideration is based on the notion that agroforestry system integrates belowground and aboveground interaction that involves perennial crops, annual crops, leguminous cover crops, and grasses. The positive and neutral interactions that contribute to the suitability of the system involve mutualism, facilitation, commensalism, and neutralism interactions. Numerous and diverse plant composition can be found in each level of stratification, partly because of its environmental benefits and the socioeconomic factors such as food and income production. Unlike monoculture system, the integration of agroforestry system ranges from a simple to complex systems with many layers of plant composition.

The diversity and profitability of agroforestry potentially make it as an alternative farming system that is locally acceptable by smallholding farmers. It further creates a sustainable agricultural practices based on the principles of sustainability involving environment, social, and economic aspects. The diversification of plant composition and arrangement has significantly generated profit and economic return to the smallholding farmers either for self-sufficiency or commercial purposes.

The findings gathered from the interview with experts and smallholders, as demonstrated in Figure 1, show how the output return of agroforestry system can be reasonably generated in a short period. These circumstances indeed have resulted in a systematic concept for agroforestry system where the revenue of agroforestry system can be gained in the short or long period depending on the selection of plant composition and arrangement. As a result, currently agroforestry system has become a more important farming system among the smallholding farmers subjected to its ability for rural environment improvement based on its reasonable short period for economic return.

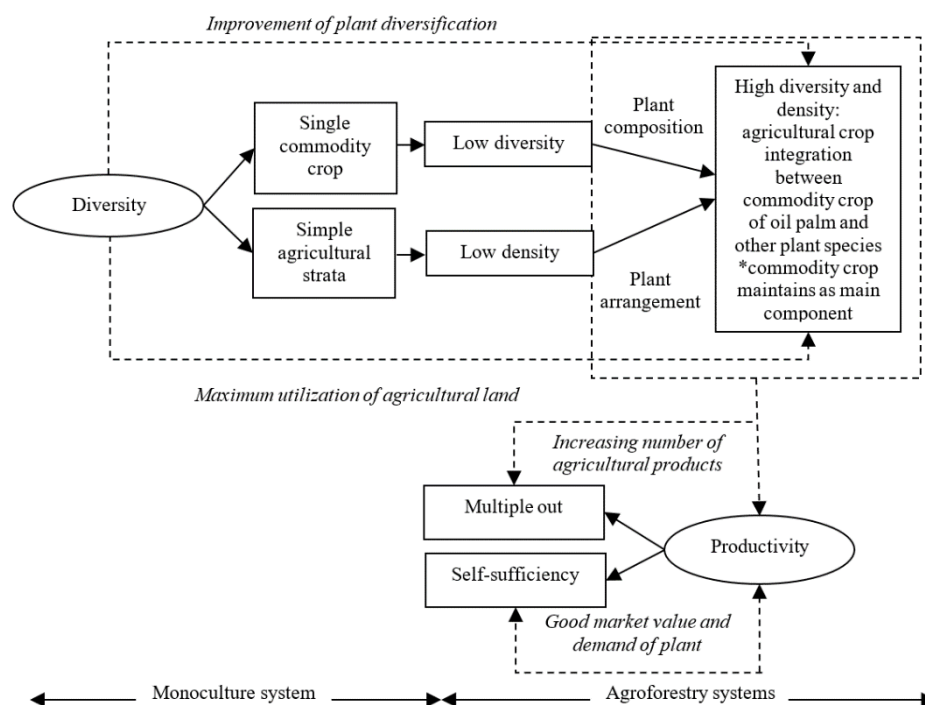


Figure 1 The process of creating sustainable agriculture practices for oil palm smallholdings through agroforestry systems

Plant composition and arrangement of agroforestry system for a sustainable oil palm smallholdings

In terms of plant arrangement, normally one to three short-term perennial crops is integrated with 2 life cycles in oil palm smallholdings to optimize crop productivity and enhance the environmental conditions. Smallholding farmers are more interested to concentrate on one or two crop production by ensuring a good quality of the product instead of cultivating many crops in the same land. In parallel, the integration of more than two plant species in oil palm smallholdings was only among the same plant family but different species of banana. The plant arrangement that involved in agroforestry system is the process of cultivating a series of different belowground plant composition over time. Compared to monoculture system, belowground integration of plant species was systematically integrated using triangular and double avenue planting systems instead of boundary planting system.

Meeting the needs of a continuous source of income for smallholding farmers will require the integration of various plant species. Currently based on the findings of this study, the oil palm smallholdings are integrated with 10 plant species with the implementation of triangular, double avenue, and boundary

planting systems. The integration was done either during immature phase only or both during immature and mature phase of the oil palm trees. The triangular planting system offered the most suitable plant arrangement for oil palm smallholdings by referring to the total land area owned by the farmers. Here, the range of land area of 1 to 4 hectares for each oil palm smallholdings limits the planning for double avenue planting system. This implies that the implementation of agroforestry system in oil palm smallholdings is on the right track, using the definition of an agrisilviculture sub-system. It implies that the integration of plant species with oil palm crops in the same unit of agricultural land was implemented as the secondary components by focusing on the oil palm production as the main crop productivity.

The most preferred plant composition and arrangement for oil palm smallholdings is the integration of banana species with the triangular planting system. There are five banana species of *pisang berangan* (*Musa acuminata* 'Dwarf Cavendish'), *pisang tanduk* (*Musa parasidiaca*), *pisang susu* (*Musa sapientum fixa lacte*), *pisang emas* (*Musa acuminata* 'Lady Finger'), and *pisang rastali* (*Musa sapientum Cv Rastali*), which is eventually preferred as the most species integrated by smallholder farmers. The integration also becomes financially sustainable as an alternative source of income for smallholding farmers during the immature or unproductive phases of oil palm crops.

As a whole, the agricultural sustainability of agroforestry systems for oil palm cultivation is influenced by 5 factors as follows (Figure 2):

- i. Oil palm crops as main component: oil palm crops considered as central crop production and other plant species as alternative crop production.
- ii. Maturity of oil palm crops: the suitability of plant composition and arrangement depends on the oil palm age that involving the immature and mature phase of oil palm crops.
- iii. Belowground and aboveground interaction: agroforestry systems produce positive or neutral interaction between oil palm crops and other plant species which involving mutualism, facilitation, commensalism, and neutralism interaction.
- iv. Agricultural landscape planning and design: integration is not decreasing the oil palm growth performance through appropriate management of plant composition and arrangement.
- v. Market values and demand: farmers' interest in selecting profitable plant species

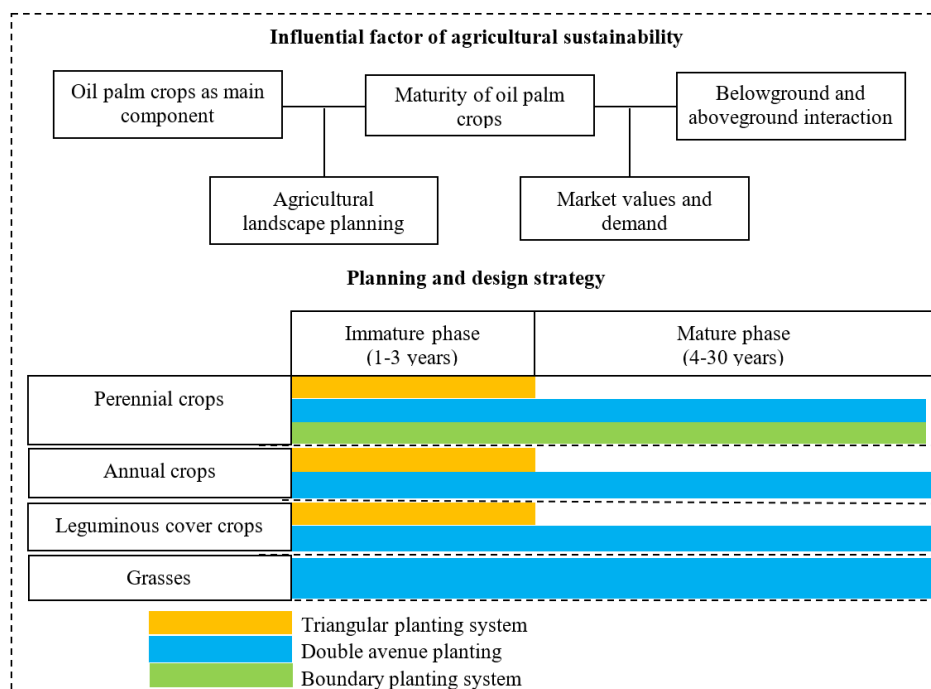


Figure 2 Influential factor of agriculture sustainability

CONCLUSION

Agroforestry system is a new name of old agricultural practices which includes shifting cultivation, intercropping, and mixed farming. The term is derived from a combination of agriculture and forestry activities and involved multiplicity of environment, social, and economic interaction. This interaction makes people recognize agroforestry systems as an approach in creating sustainable agriculture practices. In terms of oil palm smallholdings, rapid development and expansion of natural forest into oil palm land has decreased the agricultural sustainability of Malaysian oil palm production. In this study, it shows that diverse plant species can be integrated with oil palm crops in creating and balancing the sustainable agriculture land. The detailed examination indeed has highlighted that only certain types of plant species were chosen by the smallholder farmers as their alternative crops. As a whole, their selection was influenced by the reflection of oil palm crops as main crop production, agricultural landscape planning and design, and comparative advantages concept of the alternative crops.

In broader aspect, as plant species being integrated within the area of oil palm crops, the revenue obtained is socially alleviating poverty among the rural smallholding farmers. It is expected that implementation of agroforestry system in oil palm smallholdings is considered as a potential sustainable approach to create a better environmental and socioeconomic values. Therefore, it is vitally

important for agriculturists, planners, and farmers to plan and design suitable plant composition and arrangement in order to create sustainable agriculture land use system. Likewise, enhancing the positive values and avoiding negative values with the proper planning and farming system may present an environmentally friendly, socially capable, and economically viable sustainable agriculture practice.

REFERENCES

- Ahmad Fauzi Puasa, & Huda Farhana Mohammad Muslim. (2006). The study of several agroforestry systems and land used options in Malaysia. In *International Agroforestry Conference 2006: Harnessing the Benefits*.
- Ahmed Azhar Jaafar, Norman Kasiran, Suhaimi Muhammed, & Wan Hanisah Wan Ismail. (2008). Agroforestry practices in Malaysia - Integrating plantations crops with timber species. In *International Plantation Industry Conference & Exhibition*. Retrieved from <http://www.ipicex.com/docs/posters/Ahmed Azhar et al.pdf>
- Conklin, H. C. (1957). Hanunoo agriculture. *Unasylva*, 11(4). Retrieved from <http://www.fao.org/docrep/x5385e/x5385e05.htm>
- Creswell, J. W. (2003). *Research design: Qualitative, quantitative and mixed method approaches* (2nd Ed.). London: SAGE Publication Ltd.
- Dahlan Ismail, & Kamal Hisyam Abdul Wahab. (2014). Sustainability of cattle-crop plantations integrated production systems in Malaysia. *International Journal of Development and Sustainability*, 3(2), 252–260.
- Department of Statistic Malaysia. (2010). *Johor-Department of Statistic Malaysia* (pp. 231–243). Retrieved from http://www.statistics.gov.my/portal/download_Population/files/population/05Jadual_Mukim_negeri/Mukim_Johor.pdf
- Devendra, C. (2011). Integrated tree crops-ruminants systems in South East Asia: Advances in productivity enhancement and environmental sustainability. *Asian-Australian Journal of Animal Sciences*, 24(5), 587–602.
- Elijido-Ten, E. (2007). Combining qualitative and quantitative methods in environmental accounting research. In *6th Australasian Conference on Social and Environmental Accounting Research (CSEAR)*. Sydney, Australia.
- Faridah Ahmad. (2001). Sustainable agriculture system in Malaysia. In *Regional Workshop on Integrated Plant Nutrition System* (pp. 18–20). Bangkok. Retrieved from <http://banktani.tripod.com/farid International Agroforestry Conference 2006ah.pdf>
- Hasnol Othman, Farawahida Mohamad Darus, & Zulkifli Hashim. (2012, June). Best management practices for oil palm cultivation on peat: *Mucuna bracteata* as ground cover crop. *MPOB Information Series*.
- Kushairi A., Azman Ismail, & Esnan Ab Ghani. (2009). Industri sawit di Malaysia. In E. Ab Ghani & I. Omar (Eds.), *Perusahaan Sawit di Malaysia-Satu Panduan*. Malaysian Palm Oil Board.
- Lee, Y. F., Chia, F. R., Anuar, M., Ong, R. C., & Ajik, M. (2005). The use of Laran and Binuang for forest plantations and intercropping with oil palm in Sabah. *Sepilok Bulletin*, 3, 1–13.

- Norkaspi Khasim, Raja Zulkifli Raja Omar, Suboh Ismail, & Wahid Omar. (2009, June). Integration of tongkat Ali with oil palm. *MPOB Information Series*.
- Nurul Ain Noor Rahman, Mohd Nazip Suratman, Abdul Rasip Abdul Ghani, & Tsan, F. Y. (2011). Karas (*Aquilaria malaccensis*) agroforestry system for sustainable land use. In *Rehabilitation of Tropical Rainforest Ecosystems* (pp. 401–407).
- Rosli Awaludin. (2000, August). Systematic integration of cattle in oil palm. *MPOB Information Series*. Retrieved from <http://www.mpob.gov.my/tot/tt96.pdf>
- Rosli Awaludin, & Shariffhuddin Hj. Masurni. (2003). Systematic beef cattle integration in oil palm plantation with emphasis on the utilization of undergrowth. *Lakakarya Sistem Integrasi Kelapa Sawit-Sapi*, 23–35.
- Schutt, R. K. (2012). *Investigating the social world. The process and practice of research* (Seventh Ed.). Boston: SAGE Publication Ltd.
- Smit, B., & Smithers, J. (1993). Sustainable agriculture: Interpretations, analyses and prospects. *Canadian Journal of Regional Science*, XVI(3), 499–524.
- Suryanto, P., & Susila Putra, E. T. (2012). Traditional enrichment planting in agroforestry marginal land Gunung Kidul, Java, Indonesia. *Journal of Sustainable Development*, 5(2), 77–87.
- Tapsir Serin, Alias Radam, Mad Nasir Shamsudin, & Zainalabidin Mohamed. (2008). The efficiency of beef cattle production : A case study in the target area of concentration in Johor, Malaysia. *Economic and Technology Management Review*, 3, 57–74.
- Wong, C. C., & Moog, F. A. (2001). Forage, livestock and tree crop integration in Southeast Asia: Present position and future prospects. In *7th Meeting of the Regional Working Group on Grazing and Feed Resources*. Indonesia. Retrieved from <http://www.fao.org/ag/agp/agpc/doc/proceedings/manado/chap1.htm>
- Zezeza, T. (1993). *A modern economic history of Africa*. Nairobi: East African Educational Publishers Ltd.



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ECO PUBLIC ART PLACEMAKING FRAMEWORK: A CASE STUDY OF LAMAN SENI SHAH ALAM, MALAYSIA

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Abstract

The implementation of public art in the outdoor spaces has been acknowledged by various designers and researchers to enliven public spaces. The contributions of public art towards social well-being have also gained a growing attention among researchers for the past three decades. Within the recent years, efforts of placemaking have begun to be initiated by local authorities, as a way of reinforcing the sense of belonging among the public towards their public spaces. While the placemaking process is commonly adopted as a method to revive cities and communities, however, there has not yet been any documentation on the use of public art as part of the process, particularly in Malaysia. This study aims to establish the Eco Public Art Placemaking Framework to guide local authorities and built environment professionals adopt public participation in the public art process. This study has examined Laman Seni Shah Alam as a case study, which is a back lane revitalization project that has been transformed through eco public art. Through semi-structured interviews with the local authority, the organizer and the artists, this study has discovered that the framework is collaborative and multidisciplinary, and that there are four main phases in the framework. This study concludes that the framework has potential to be adopted by local authorities in Malaysia, and it can enable a more holistic process between the local government, consultants, artists and the public.

Keyword: eco public art, placemaking, back lane.

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INTRODUCTION

The integration of public art in landscape architecture has been known to promote activities, values, functions and roles to the public. The discourse on the contribution of public art towards the social wellbeing of the public has gained a growing attention among landscape architects, local authorities and academicians over past three decades. This is especially relevant in promoting public participation that is in line with Local Agenda 21. The public's engagement in the execution of public art has been widely advocated as part of the placemaking process. However, in Malaysia, there is currently no existing framework that can act as a point of reference for landscape architects to adopt when engaging with public art and placemaking projects.

Furthermore, there is an escalating concern in the industry on the needs to create public space projects that are green and eco-friendly, while also improving the public's appreciation and awareness of the environment. To achieve this, the implementation of Eco Public Art as an approach to transform underutilized public spaces has been widely implemented in many countries, such as America, Australia, China, Japan, Singapore, and including Malaysia. Recent studies and revitalization projects prove that revitalizing underutilized public spaces, such as the back lanes, has contributed to the increase in public space comfort, engaging provisions for pedestrians within the urban core, functioning as the green lungs to the city, functioning as flexible spaces, and increasing the public's environmental awareness (Mohd Tawil et al., 2013; Lorinc, 2014; Fialko & Hampton, 2013). The engagement of the public in Eco Public Art is part of the Placemaking Process. While Placemaking Process is common in the development of community spaces, however, there has not yet been documentation on the "Eco Public Art Placemaking Framework" in particular. The absence of this framework in current Malaysian landscape architecture industry poses a challenge for the public and private practitioners to adopt the public participation process for public art.

The aim of this study is to establish the Eco Public Art Placemaking Framework to guide local authorities and landscape architects adopt public participation in the public art process, in line with Local Agenda 21. This study has examined Laman Seni Shah Alam as a case study, which is a back lane revitalization project that has been transformed through Eco Public Art. The objectives are: (1) To identify and document the Eco Public Art Placemaking Process and the roles of landscape architects, local authority, artists and the public; (2) To examine the Eco Public Art Attributes that can guide the implementation of other Eco Public Art in different context; and (3) To propose the "Eco Public Art Framework" that can be referred and adopted by local authorities and consultants.

RESEARCH BACKGROUND

The introduction of public art as an approach of back lane transformation has been widely implemented in many countries and cities such as America, Australia, China, Japan, Singapore and Malaysia. Recent studies and revitalization projects found that back lane revitalization has contributed to the increase of comfort in public spaces, enhance engagement of pedestrians within the urban core, contribute to the green lungs of the city and can function as flexible spaces (Mohd Tawil et al., 2013; Lorinc 2014; Fialko & Hampton 2013). The newly activated back lanes also offer better connections between larger public hubs, and have enhanced the character of the city by serving as lively, dense, and human-scale spaces. Recently, the public's engagement in the execution of public art has been widely conducted as part of the placemaking process. While the increasing community engagement can be viewed as a means of achieving improved outcomes, placemaking is a process with the approach of 'revitalizing, planning, designing and managing the public space' (Greenspace Scotland, 2015). In this case, placemaking process is not just the act of building or fixing up a space, but it fosters the creation of public places where people feel a strong sense of connection to their surroundings.

Public art indeed plays an important role in contributing to enhance and develop the character and identity of an area (Weber, 2003). Not only because of its aesthetic value that attracts people, but it also helps to create the sense of place (Hall & Robertson, 2001; Sucher, 1995), which means the particular experience of a person in particular setting (Steele, 1981). On the other hand, Hall and Robertson (2011) claim that public art contributes to the development of a sense of community, civic identity, addressing community needs, tackling the social exclusion, promoting the educational value and promoting the social change. Thus, public art is not just a matter of an artwork sited in public space. Public art is an art that aims to create spaces, which also engages with its audience and community of an area.

While the urban development and community's needs are sometimes not in parallel, public art bridges these two. Looking to the positive side of it and realizing the great contribution of public art and potential of back lanes, recently, many countries have put an effort to implement the use of public art as part of their back lane revitalization strategy.

The public art programme is aligned with the placemaking concept, which focuses on planning, designing and managing the public space for the community. The concept of placemaking has been studied extensively across multiple discipline. "Placemaking" is an idea derived originally from Jane Jacobs in the 1960's and William H. Whyte in the 1980's. Both of these urban researchers studied on how people interact with space (Jacobs, 1961; Whyte, 1980). Rather than merely focusing on developing space in urban planning, they instead look at the users that inhabit that place. Placemaking lies between the

concepts of transforming space into a place and the roles of community in participatory processes for future urban planning. The community here, refers to a geographical region, such as neighbourhood, town or city. On the other hand placemaking can be defined as the act or process of creating great places with an emotional connection with its users. It is how we construct and connect to our surroundings, the way we build the communities, and build the relationship with the people in an area. While there is no agreed definition of placemaking, it is generally understood as a process that is part of urban design that makes places liveable and meaningful (Flemming, 2007).

Recent studies have proven that placing public art in public space can enhance user experience and enliven spaces. Developing the public art plan encompasses public art committee who is the key player to shape the whole plan, set up the vision, mission, goals, finding source of funding, selection of location, artist, to look into the relevant regulations and what are the benefits to the community (Schneekloth & Shibley, 1995). The public art programme is an effort of creating continuous experiences that shape the community by developing the sense of place, articulate the aesthetic values of the public art itself in order to create a desirable place to live, work and play. The public art programme and placemaking process have the same goals and share the same process of shaping and designing public space, through building up the community and the place (Martin 2001; Zukin, 1995). While placemaking is a process, public art acts as the additional attraction elements in it. It is also part of the practice of placemaking.

METHODS

A qualitative method was used for this study through a case study approach, where the site selected is Laman Seni 7 in Shah Alam, Selangor. Laman Seni 7 is a back lane revitalization project that implements the use of public art as part of its placemaking approach. Semi-structured interviews were conducted with six purposefully selected respondents based on their expertise. In order to get a deeper understanding of the process, the interviews were conducted with two of Shah Alam City Council Officers, Principal and Public Relations (PR) person of KHZNH.Studio, and two of the artists involved in the Laman Seni 7 project. Located at the commercial urban area in Section 7 Shah Alam, the Laman Seni 7 is a continuous project of Laman Seni Section 2 that was initiated by Shah Alam City Council (SACC) in collaboration with KHZNH.Studio, aiming to transform the back lanes to be the focal point for the youth to utilise. The transformation of Laman Seni 7 was done through a competition as an effort to engage the public to together involve in this project. It is said to act as a platform for the younger generations, especially the students, to explore their talents and fresh ideas.

The aim of the interview was to find out the initial ideas and procedures involved in revitalizing the back lane and public art for Laman Seni 7 from three (3) different point of views: the Local Authority (SACC), the Organizer (KHZNH.Studio) and the Artists as public participants. Three sets of interview questions were developed based on each of their expertise. However, the main points for each interview are similar according to the process involved.

FINDINGS AND DISCUSSION

From the interviews, the first distinction that can be made between the different parties involved throughout the public art placemaking process were phases and process involved. There were four main phases, which were: 1) Planning stage; 2) Designing stage; 3) Executing and implementing stage; and 4) Maintenance and programming stage. Each of these phases had to undergo the detailed procedure and had to follow the timeline as outlined during the early planning stage. Each phase also incorporated collaborations between other parties, who were from the local authority, the organizer, the artist and the public. SACC represented the local authority, KHZNH.Studio represented the organizer, while the artists were selected based on a competition held. Respectively, each of them had their own tasks to be completed, managed or delegated. Their roles were in line with their expertise in order to make sure the actions taken by them followed the initial planning and timeline made for the project to complete. Based on the analysis of the interview data as informed by each respondent, the phases involved in the eco public art placemaking process is illustrated in Figure 1.

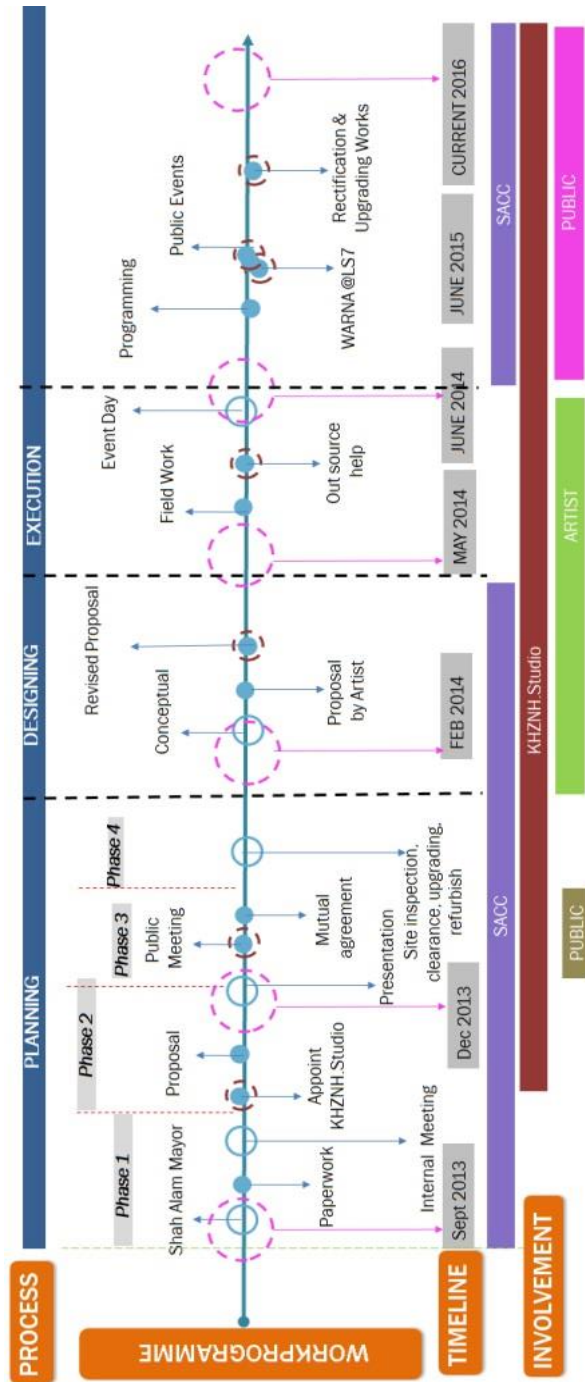


Figure 1 Public art placemaking process for Laman Seni 7

Roles of the Local Authority

Literature review shows that public art placemaking in Washington D.C. involves the Public Art Placemaking Commission Board (PAPCB), which is a team under the local authority that is led by the Mayor to run and evaluate actions on matters with regards to the arts and encourage any arts programme for the benefit of a city and the community (D.C Public Art Master Plan, 2009). PAPCB is responsible to appoint members of the Public Art Placemaking Committee (PAPC). PAPC shall consist of people with different expertise, backgrounds and skills, not necessarily to be from the city council members. They are responsible to advise the local authority in carrying out the placemaking process, dealing with the public and community, recommend appropriate locations for the project, and oversees the commissioning of artwork, maintenance programs, annual programs and also events to be held. However, for this case study, a different approach was used.

The SACC were both the PAPCB and PAPC themselves. They were the main key players in placemaking project for Laman Seni 7, and responsible for the initial ideas and planning until the execution and post-execution phase. According to Respondent LA1:

“We are appointed by the Higher Management of SACC (PACB) as the Secretariat for Laman Seni 7 revitalization project. As the Secretariat for this project, our duty starts from preparing the paperwork, the best strategy, funding and budget, liaise with the internal support system of SACC which are the technical team from various departments, monitoring the execution and action plan, also as the middle man between SACC and the organizer.” (LA1, public relations officer, March 25, 2015).

Ultimately, the SACC were responsible for the whole programme of revitalizing the Laman Seni 7 back lane project, especially on the planning details, annual programmes, funding, and the selection of location, including the laws and regulations that need to be followed. At this stage, the local authority played an important role in the overall two years planning for Laman Seni 7. In addition, particularly for this project, three divisions in SACC were involved. They were the Higher Management led by Shah Alam Mayor or also known as the PAPCB; the Public Art Placemaking Prelim Consultant (PAPPC) which was the technical supporting system consisting of architects, landscape architects, planner, engineers, lawyers; and the PAPC, which the members were from the Corporate Department of SACC. Each team had different roles and responsibilities. All of the action plans or programmes proposed and done by the corporate department as the PAPC must get the approval from the Mayor prior to any decisions and actions taken.

The corporate department were responsible for the proposal preparation phase until the action plan was executed. Not only that, they were also responsible

for the programming stage, which was during the post-execution of the public art stage. Their scope of work began from preparing the proposal to be presented to the mayor, planning the annual public art placemaking work plan, community programmes, liaising with a few other parties, and the artist selection. The Public Art Placemaking Prelim Consultant (PAPPC) was the technical team from the technical department responsible in giving advices based on their expertise. These departments comprised the Building Department, Development Department, License Department, Enforcement Department, Engineering Department, Landscape Department and Solid Waste Department. Their advises included giving ideas and comments on any proposal done by the corporate department, laws and regulations related to developing back lanes, the site upgrading process, solid and waste issues, and involved in site visits and clearance stage.

Role of the Organizer

The Public Art Placemaking Action Team (PAPAT) is appointed by PAPC with the approval form PAPCB to act as the ‘middle man’ in developing a collaborative relationship between the public and local authority. KHZNH.Studio was appointed by SACC based on their previous experience as the organizer for the Laman Seni 2 project. Hence, they have had series of experience in handling similar projects, which made it easier for SACC to work with. KHZNH.Studio was responsible for the process of selecting the artist, preparing proposal for any public programmes at Laman Seni, and carrying out the publicity and promotions. Not only that, they were accountable to make sure all programmes that have been approved are done accordingly. Furthermore, the organizer was also liable in conducting workshops to present the ideas of back lanes revitalization for Laman Seni 7 to the shop owner and operators as part of the public engagement. Basically, as the PAPAT, they were involved in most of the phases throughout the Laman Seni 7 Backlane Revitalization programme. According to Respondent OR1:

“We are involved in the planning process from updating a detail proposal for public art programmes including the concepts, themes, the types and illustration to be presented to the Mayor to get his approvals”. (OR1, principle of KHZNH.Studio, February 18, 2015)

The organizer took the leading role in coordinating the project to meet both the needs of the local authority, the artists and the public. For Laman Seni 7, the organizer was a group composed of individuals with multidisciplinary architectural-based background that focuses on solving community-related issues through architecture, design and public engagements. Their role in this project as the organizer can be adopted by other design consultants or organizations that intend to conduct a public art placemaking project.

Role of the Artist

For Laman Seni 7, the selection of artists was done through a competition that was held for about two months before the installation of public art at the site. It was an open competition, whereby artists from all over Malaysia need to submit their first draft proposals according to the themes that have been determined by both the Placemaking Committees and Action Team. There are a total of four categories and three themes to be followed. At this stage, both Placemaking Committees and the Action Team were also the review panels for artist selections. As informed by Respondent AR2:

“We heard about the LS 7 competition from a mutual friend who accidentally found the competition page on Facebook. So when the opportunity presented itself we didn’t think twice in participating. Because as a designer, we felt it was the perfect medium for us to express our creativity and talent. So we decided to enter three of the four categories available.” (AR2, Architect, April 16, 2015)

After the first round of qualifications and requirements reviewed by the selection panels, several of the artists were shortlisted to submit their final proposals for the second stage. For Laman Seni 7, 40 artists were shortlisted, where ten artists submitted for each category. The shortlisted artists were given about one month to execute and install their artworks. A workshop between the artists, Placemaking Committee and Action Team was held to do the final review of their submitted final proposals. This was the stage where some of their artwork needed to be changed in accordance with the laws, guidelines and also several factors such as the theme, the colour selection and the materials. During the execution phase, some of the artists outsourced specialized works to other experts in order to make sure their installations can produce great artworks similar to their proposals.

Table 1 summarizes the roles of the local authority, organizer and the artists in the public art place making process.

Table 1 Roles in public art placemaking process for Laman Seni 7

| Organization | Roles |
|--|--|
| Local Authority | : Shah Alam City Council (SACC) |
| a. Public Art Placemaking Commissions Board (PAPCB) | - Initiate PAPP ideas - Approve PAPP action plan / annual plan / yearly plan |
| - Higher Management Team | - Approve budget and funding - Appoint member of PAPC and PAPPC |
| b. Public Art Placemaking Prelim Consultant Team (PAPPC) | - Advise on technical issues - Involve in site clearance, upgrading and maintenance works |

| | |
|--|--|
| c. Public Art Placemaking Committee (PAPC) | <ul style="list-style-type: none"> - Review and approve the technical proposal and actions prior to Mayor's approval - Prepare the proposal, annual plan, documentation -Outline goals, policies, and procedures -Involves in selecting the artist - Programs / Publicities -Identify collaboration and source of fund |
| Non-Government Organisation (NGO): Khznh.Studio | |
| a. Public Art Placemaking Action Team (PAPAT) | <ul style="list-style-type: none"> - Appointed by PAPC - Oversees the public art installations and programs - Publicity / social network /media - Handling workshops - Liaise with local authority and public -The event's organizer /planner -Other works required by SACC |
| Artist | |
| a. Public Art: The makers | <ul style="list-style-type: none"> - Initiate artwork ideas -Artworks Installation & Execution |

RECOMMENDATION AND CONCLUSION

The eco public art placemaking process is a collaborative and multidisciplinary process. There are many factors to take into account in order to achieve the main goal of creating a meaningful and useful place that benefits the community. Based on the findings of this study, what can be concluded is the importance of having a good collaboration and a great team throughout the whole process. Despite the different backgrounds and scope of work of each committee involved in the Laman Seni 7 back lane revitalization project, they had actually managed to work together to ensure the completion of the public art meets the objectives and timeline of the project. A thorough understanding of the different roles and high commitment by each of these parties is one of the factors that need to be coordinated. Mapping this process is important in order to produce a comprehensive and a detailed operational document for the eco public art placemaking process. Furthermore, this process can be used as a reference in any public space projects that involves public art in future.

This study recommends the Eco Public Art Placemaking Framework, as illustrated in Figure 2.

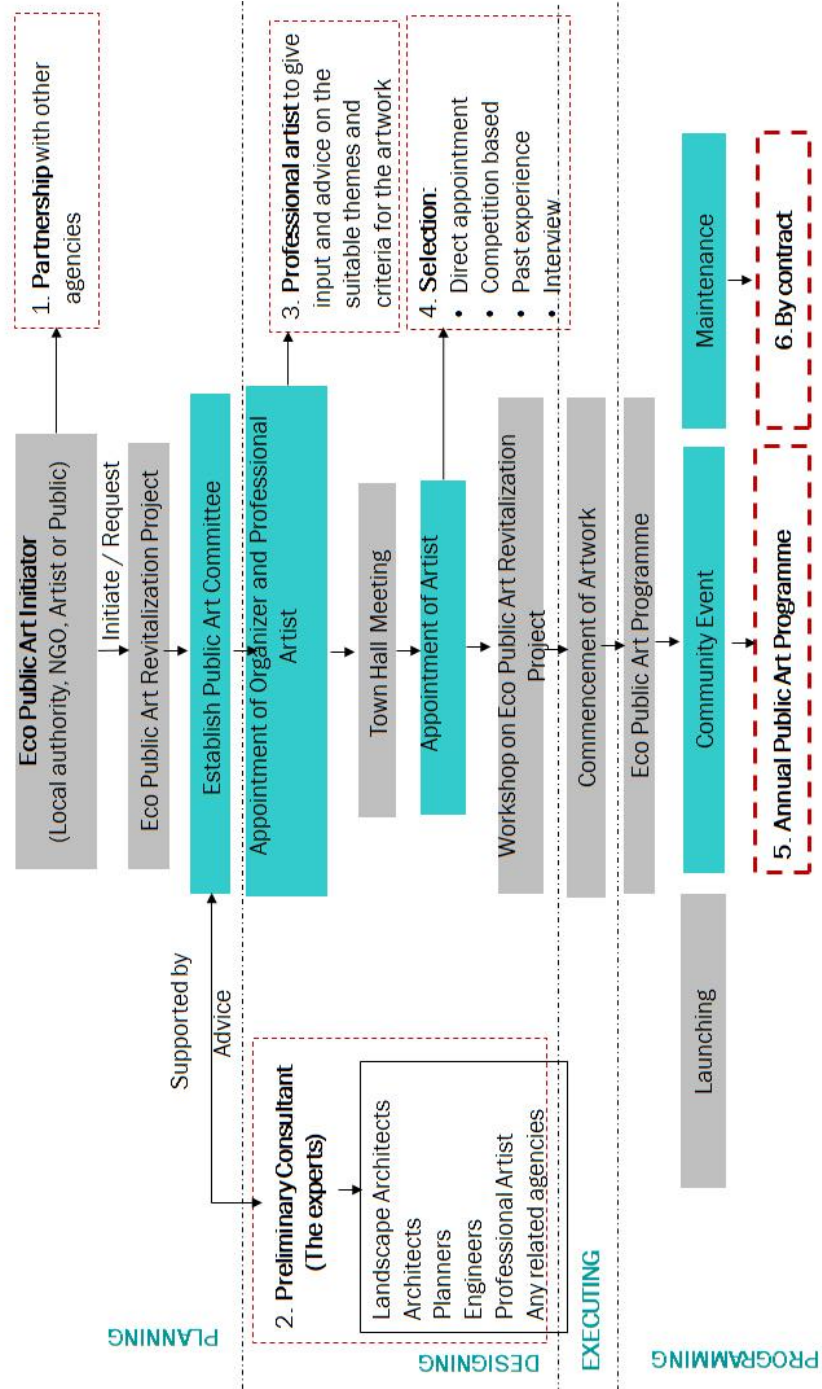


Figure 2 Eco Public Art Placemaking Framework

This study has discovered several key findings. First, the Eco Public Art Placemaking Framework is a collaborative and multidisciplinary framework that can be adopted by local authorities, consultants, developers and the community in incorporating public participation in public art. The execution of public art should include representatives from the public, and this is in line with Local Agenda 21 in ensuring public spaces meet the needs of the community. The framework is not limited to public art in the back lanes, but rather can be adopted by any public art projects. Second, the identification of the Eco Public Art Placemaking Framework can guide other local authorities to plan and implement public art as part of their public space revitalization initiative. The implementation of the public art in public spaces also helps to revitalize underutilized spaces as functional spaces for public use. This study concludes that the framework has potential to be adopted by local authorities in Malaysia, and it can enable a more collaborative process between the local government, consultants, artists and the public.

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REFERENCES

- Greenspace Scotland (2015). *Community placemaking*. Retrieved July 8th 2015 from <http://greenspacescotland.org.uk/outcomes-planning-and-evaluation.aspx>.
- Fialko, M., & Hampton, J. (2013). *Activating alleys for a lively city*. Seattle, Washington: Integrated Alley Handbook
- Flemming, R. L. (2007). *The art of placemaking*. New York: Merrel.
- Hall, T., & Robertson, I. (2001). Public art and urban regeneration: Advocacy, claims and critical debates. *Landscape Research*, 26(1), 5-26.
- Jacob, J. (1961). *The death and life of great American cities*. New York: Random House.
- Lorinc, J. (2014). From garbage to greenery: revitalizing Toronto's downtown laneways. *The Globe and Mail*. Retrieved from <https://beta.theglobeandmail.com/news/toronto/from-garbage-to-greenery-revitalizing-torontos-downtown-laneways/article1358493/?ref=http://www.theglobeandmail.com&>
- Mohd Tawil, N., Md Lias, S. F., Usman, I. M. S., & Kosman, K. A. (2013). Evolution of back lane design: A view of terrace housing in Malaysia. *Asian Social Science*, 9(15), 277-288.
- Martin, M. D. (2001). The question of alleys, revisited. *URBAN DESIGN International*, 6(2), 76-92.
- Schneekloth, L. & Shibley, R. (1995). *Placemaking: the art and practice of building communities*. New York: John Wiley & Sons, Inc.
- Steele, F. (1981). *The sense of place*. Boston, Massachusetts: CBI Publishing Company, Inc.
- Sucher, D. (1995). *City comforts: How to build an urban village*. Seattle: City Comforts Inc.
- Weber, J. P. (2003). *Politics and practice of community public art: Whose murals get saved?* California: The Getty Conservation Institute.
- Whyte, W. H. (1980). *The Social Life of Small Urban Spaces*. New York: Conservation Foundation.
- Zukin, S. (1995). *The cultures of cities*. United Kingdom: Blackwell Publishers.

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PUBLIC PERCEPTION ON TRAFFIC POLLUTION IN FEDERAL TERRITORY OF KUALA LUMPUR, MALAYSIA

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Abstract

Increasing pollutant emission from vehicles and traffic jams is a serious environmental problem in major cities. This study is focused on the level of public perception and awareness on traffic pollution in the capital city of the Federal Territory of Kuala Lumpur, Malaysia. Analytical tools such as descriptive analysis were applied to investigate the percentage of public perception and awareness towards traffic pollution and identify factors that influence this problem. Results showed that almost all respondents (99%) were very sensitive and were aware on traffic pollution regarding the physical, non-physical factors and the health effect. Most respondents indicated that emissions from exhaust after switching on was the major contributor of air pollution. In terms of health, respondents perceived that traffic pollution impacted health and a cause of illness. Most respondents agreed with initiatives that provide incentives for public transport usage so that emission from vehicles can be reduced significantly.

Keyword: Traffic pollution, public perception, descriptive analysis

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INTRODUCTION

Traffic was the main source of ground level pollution in the urban environment and undesirable consequences to the human health. Gaseous and particulate sources such as carbon dioxide (CO₂), carbon monoxide (CO), oxides of nitrogen (NO_x), lead compounds, hydrocarbons (HC's), sulphur dioxide (SO₂), suspended particles (PM₁₀), water vapour, nitrogen oxides (NO₂) and ozone are emitted by vehicles. In Malaysia, the PM₁₀ daily concentrations measured were above the 50 µgm⁻³ criteria limit set by the World Health Organization Air Quality Guidelines for most of the month and exceeded the 24-h Recommended Malaysian Air Quality Guidelines of 150 µgm⁻³ on three separate periods from the 13th to the 30th August 2004 (Mahmud 2013).

Traffic emissions can cause serious public health impact within the urban environment. Researches around the world estimated that up to 1.6 billion people globally were exposed to increased risk of cardiovascular diseases, respiratory illnesses, cancers, mortality (Brook et al., 2004; Pope & Dockery, 2006; Badland & Duncan 2009), heart attacks, respiratory diseases and lung cancer (Cunningham, Cunningham & Saigo, 2005; Mabahwi, Ling & Omar, 2015), chronic coughing and susceptibility to infections, bronchial inflammations, allergic reactions, and irritation of the mucous membranes of the eyes and nose. All these studies implicate that air pollution must be reduced (Enger & Smith, 2000).

The serious adverse health effects of traffic pollution in the urban environment have contributed in creating public awareness and perception in term of mitigation processes and management strategies (Mabahwi, Ling & Omar, 2015). This perception is related with the psychological processes that people are more likely to perceive environmental problems when they can hear (noise), see (smoke), smell or feel, and the media is a dominant source that has a social amplification effect and influence public perceptions and attitudes (Gatersleben & Uzzell 2000). Therefore, research about the relationship between individual perception and attitude towards traffic pollution focusing on the socioeconomic factors around the world clearly found that most people are highly aware of the meaning of air pollution (Elosta, Leksono & Purnomo, 2013; Byrd, VanDerslie & Peterson, 1997; Badland & Duncan, 2009; Gregory et al., 2008; Tonne et al., 2008).

LITERATURE REVIEW

Emission from vehicles caused serious health effects to human depending on the level of exposure, pollutant concentration and individual health status (WHO, 2000; Han & Naeher 2006). Traffic related air pollution remains a key target for public-health action in Europe. About half of more than 40,000 cases caused by air pollution was attributed to motorised traffic, accounting more than 25,000 new cases of chronic bronchitis (adults); more than 290,000 episodes of bronchitis

(children); more than 0.5 million asthma attacks; and more than 16 million person days of restricted activities (Künzli et al., 2000). Bayer-Oglesby et al. (2006) provided the strong confirmation that living near busy streets lead to adverse respiratory health effects. This is agreed by Garshick et al. (2003), who show that men living within 50 metres of a major roadway were more likely to report persistent wheeze compared with those living more than 400 metres away of heavily trafficked roads.

Katsoulis et al. (2014) indicate that long-term exposure to traffic related air pollution has an impact on cardiovascular disease (CVD) and ischemic heart disease (IHD) morbidity, particularly among women and younger people. Chen, Jackson and Bina (2009) explored the geographic pattern of adenocarcinoma incidence rates of the lung (ADL) and its relation to motor vehicle density, and found that risks accounted at 136% and 68% higher for ADL and squamous cell carcinoma, respectively, for male residents living in areas with 937 motor vehicles per square mile, compared with those living in areas with about one motor vehicle per square mile. However, for allergic symptoms and illnesses like asthma, allergic rhinitis, atopic dermatitis, wheeze, and allergic sensitization, less consistent results have been found (Heinrich & Wichmann 2004). Traffic pollution are also associated with emergency hospital admissions for cardio-respiratory diseases especially among those living in areas with the highest socioeconomic deprivation (Halonen et al., 2016).

Socioeconomic background also related to differences of perception, knowledge and awareness among respondents such as age, gender, education and employment. The domination of males on the knowledge and information related to traffic pollution has been proved by other studies such as Alvinsyah, Soehodho and Nainggolan (2005) that indicated strong influence and relationship between gender and age factors with air pollution. Studies also shown that males have stronger preference to drive and are less likely to shift to public transport than women (Morikawa et al., 2003; Chee & Fernandes, 2013).

Meanwhile, age factor also influenced the perceptions and opinions about traffic pollution. Elderly group (above 60 years) recorded very low knowledge and information about traffic pollution, and that more elderly men than women drive themselves (Chang & Wu, 2005). Other socio-economic factors related with air pollution are education, income, household sizes and license ownership. Therefore, this study is focussed on analysing the perception, opinion and awareness among the public in the Federal Territory of Kuala Lumpur on details of physical and ambient environment factors, health effects and causes, besides the strategies and initiatives to control and reduce traffic pollution.

METHODOLOGY

This study employed questionnaire survey as the method of primary data collection. Respondent were randomly sampled from several areas in Kuala

Lumpur, namely Manjalara, Wangsa Maju-Maluri, Bandar Tun Razak, Sungai Besi, Damansara-Penchala, and Kuala Lumpur City Centre. The questionnaire was developed based on operational definitions for each construct based on findings of previous studies. The data obtained from the survey were analysed using IBM SPSS version 22. Descriptive analysis were used to describe information about the background and analysis of the samples to provide an initial overview of the respondents' profile like gender, race, age, education, occupation, income and place of residence, as well as their perceptions of traffic pollution.

RESULTS AND DISCUSSION

Demographic Profile of Respondents

Analyses of the data obtained from the survey show that the number of respondents was dominated by men (57%). Majority of the respondents were Malays (72%), followed by Indians (16%), Chinese (9.5%) and other races (2.5%). Adults formed the highest number of respondents at 69% and most respondents (48%) attained secondary school education. In terms of employment, 47% of the respondents worked in the private sector, 32% were self-employed and the rest were civil servants. 37% of the respondents earned less than RM2,000 monthly, 33% earned between RM2,000 to RM5,000.

Public Perception and Awareness on the Traffic Pollution

The focus of the survey was to evaluate public perception and awareness on the sources of traffic pollution, the health effects of the pollution and the strategies to mitigate the pollution. In terms of the sources of traffic pollution, majority (63.5%) of the respondents agreed that the problem of traffic pollution was 'emission from the engine after switch on' (Figure 1). They also agreed that 'emission from the fuel's evaporation process' (62.5%) also contributed to traffic pollution (Figure 2). Moreover, respondents (20.5%) did not agree that 'emissions from vehicle moving and road surface' automatically influenced the vehicle's emission. They were also unsure that 'emission from the fuel's evaporation process' and 'emission from the engine thermal operation' (26%) significantly impacted the level of traffic pollution.

The respondents (71%) perceived that 'wind speed' is the primary cause of increasing the concentration of traffic pollutants but were not aware of the 'green surface in the city' (17%). Meanwhile, small number of respondents (22%) were also confused on how 'topography' can also affect traffic pollution (Figure 2).

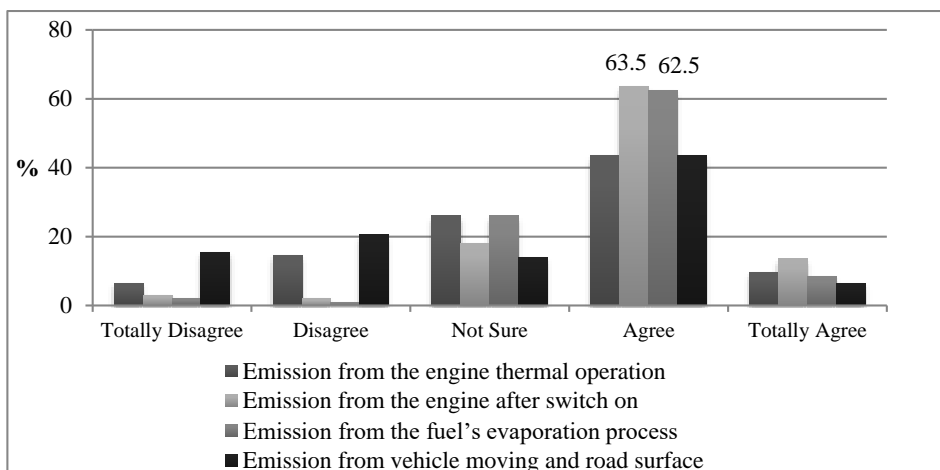


Figure 1 Physical factors of motor vehicles and how individuals exposed to traffic pollutants

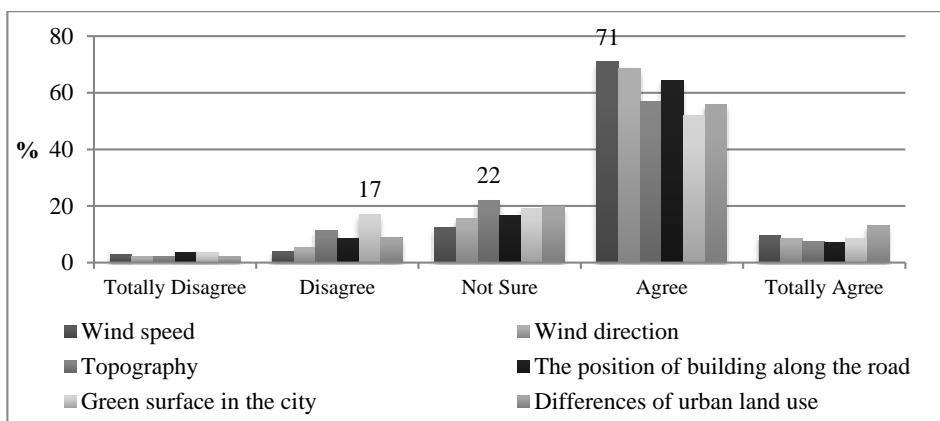


Figure 2 Ambient environment factors

Respondents were also asked of their perceptions on health effects of traffic pollution. Highest percentage of respondent (75%) agreed that 'pneumonia' is an effect of traffic pollution. This is followed by 'asthma', where 70.5% of respondents perceived it to be an illness related to traffic pollution (Figure 3). In terms of factors, most respondents perceived that 'current health status' is the major cause of illnesses (82%) related to traffic pollution. Meanwhile, 77% and 76% of the respondents agreed that 'age' and 'frequency and duration of exposure' exacerbated illnesses related to traffic pollution (Figure 4).

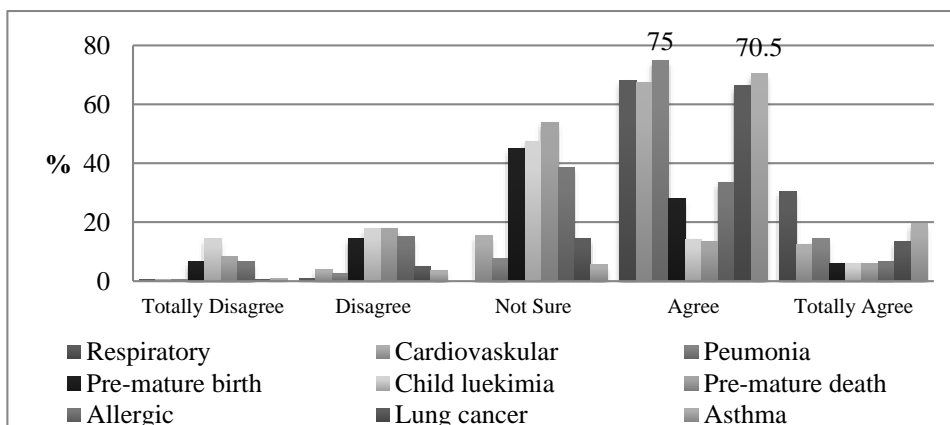


Figure 3: Health effect of traffic pollution

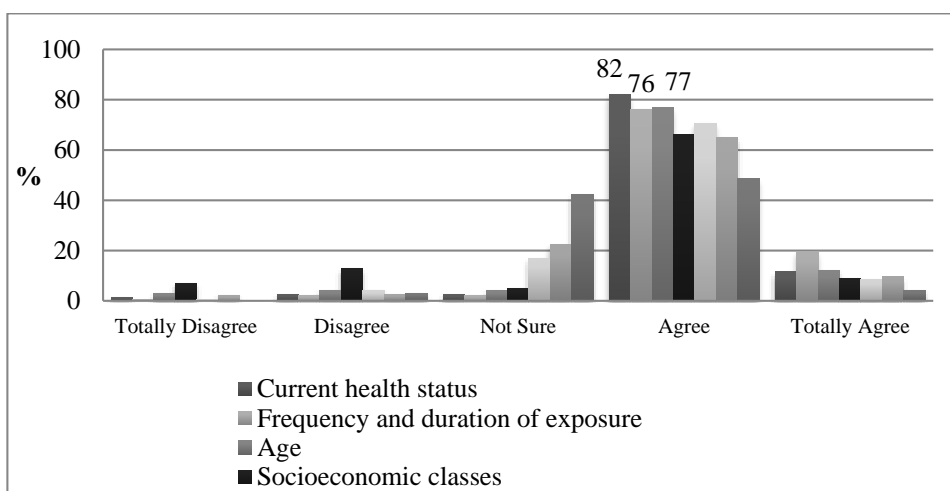


Figure 4: Factors of health effects

In terms of measures to mitigate traffic pollution, Figure 5 shows that most respondents (72%) agreed that ‘providing incentives to public transport users’ would be one of the main measures to reduce traffic pollution. Other measures which were agreed to by majority of the respondents were ‘use public transport’ (71%), ‘using hybrid vehicle’ (70.5%) and ‘using electric vehicle’ (68.5%). However, respondents strongly disagreed and disagreed with ‘increasing fuel prices’ (69%) and ‘charge motorist during busy times’ (84%) as measures to reduce traffic pollution because these would further contribute to the higher cost of living.

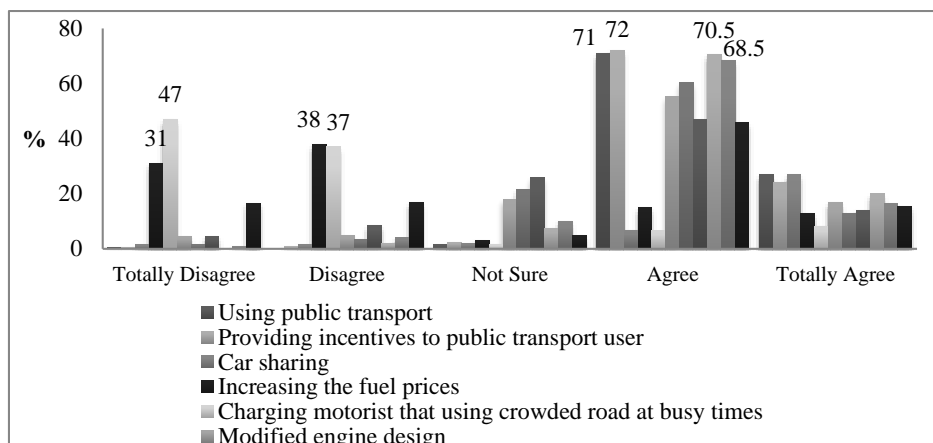


Figure 5 Initiatives and incentives to control and reduce traffic pollution

From the results of the analyses, it can be deduced that most of the respondents knew and were aware of the traffic pollution problems in the study area. The public knowledge was identified as a major influence to the understanding about sources of traffic pollution, drivers' behaviour change and implementation of effective health promotion strategies and policy to control negative impacts of traffic pollution. In spite of the public perception, risk perception is influenced by a mixture of environmental and contextual factors and is crucial to the public response in mitigating risks and can cause effects on the way plans are made, such as seeing or smelling exhaust fumes or seeing traffic congestion that led to a heightened perceived risk (Badland & Duncan, 2009).

RECOMMENDATION

Traffic pollution in Kuala Lumpur is identified as a serious environmental problem to public health, ecosystems and climate change. Therefore, various acts, policies and strategies from the government and stakeholders can be implemented to tackle, control and reduce traffic emission to the minimum level and pave the way towards sustainable environment.

Integrating Environmental Concerns into Economic Decisions

National sustainable development strategies must be developed and followed up with evaluation and monitoring procedures that have been established at the regional level. In the field of taxation, the restructuring of the car registration tax and annual circulation tax on the basis of CO₂ emissions, some strategies can be implemented such as internalising externalities and implementing the polluter pays and user pays principles to integrate further environmental concerns into transport policies. Policies and strategies that give special attention to the use of

specific economic instruments (green certificates to promote renewable energy, tax on NO_x emissions, road pricing) can also be formulated.

Integration of Environmental and Social Decisions

Local governments should be encouraged to invest in public outreach activities and programmes to build strong public awareness of regional and local air quality issues. Local governments can conduct meetings to hear citizen concerns regarding air quality and environmental justice. Residents should also be informed of proposed large development projects, and updated on cumulative air quality impacts and evaluate various options to reduce health impacts from exposure to air pollution. Collaboration with local school can help to increase student awareness of air pollution and health effects. These can be in the form of distributing air quality information, brochures and fact sheets on the health effects of air pollution. Additionally, collaboration can also be towards developing air quality curricula for students.

Stronger public transport policies is also needed. Public transport emits less pollution than private cars. Public transport has the biggest potential to become a very sustainable and clean mode of transport that provides mobility for all citizens. A policy of modal shift to public transport not only leads to reduce space consumption in urban areas and regained public spaces for the citizens but also to reduced emissions.

CONCLUSION

Traffic pollution impacts public health, as well as the environment. This study found that respondents were aware of the problem of traffic pollution in Kuala Lumpur. They have identified that traffic pollution is influenced by physical factors, such as 'emissions from the exhaust', and non-physical factors, such as 'wind speed'. They also agreed that traffic pollution contributes to major illnesses such as pneumonia and asthma. Most of the respondents were favourable to policies and strategies that give incentives to public transport users and also to increase the use of greener vehicle such as hybrid and electric vehicles. The findings of this study should, therefore, be taken into account by the relevant authorities in formulating policies and measures to mitigate traffic pollution in Kuala Lumpur.

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REFERENCES

- Alvinsyah, Soehodho, S., & Nainggolan, P. J. (2005). Public transport user attitude based on choice model parameter characteristics (Case study: Jakarta busway system). *Journal of the Eastern Asia Society for Transportation Studies*, 6, 480-491.
- Badland, H. M., & Duncan, M. J. (2009). Perceptions of air pollution during the work-related commute by adults in Queensland, Australia. *Atmospheric Environment*, 43, 5791-5795
- Bayer-Oglesby, L., Schindler, C., Hazenkamp-von Arx, M. E., Braun-Fahrländer, C., Keidel, D., ... & the SAPALDIA Team. (2006). Living near main streets and respiratory symptoms in adults the Swiss cohort study on air pollution and lung diseases in adults. *American Journal of Epidemiology*, 164(12), 1190-1198.
- Brook, R., Franklin, B., Cascio, W., Hong, Y., Howard, G., & Lipsett, M. (2004). Air pollution and cardiovascular disease: A statement for healthcare professionals from the expert panel on population and prevention science of the American heart association. *Circulation*, 109, 2655-2671.
- Byrd, T. L., VanDerslice, J., & Peterson, S. K. (1997). Variation in environmental risk perceptions and information sources among three communities in El Paso risk. *Health, Safety and Environment*, 8, 355-372.
- Chang, H. L., & Wu, S. C. (2005). Exploring the mode choice in daily travel behavior of the elderly in Taiwan. *Journal of the Eastern Asia Society for Transportation Studies*, 6, 1818-1832.
- Chee, W. L., & Fernandez, J. L. (2013). Factors that influence the choice of mode of transport in Penang: A preliminary analysis. *Procedia - Social and Behavioral Sciences*, 91, 120-127.
- Chen, F., Jackson, H., & Bina, W. F. (2009). Lung adenocarcinoma incidence rates and their relation to motor vehicle density. *Cancer Epidemiology Biomarkers and Prevention*, 18(3), 760-764.
- Cunningham, B., Cunningham, M. A., & Saigo, B. W. (2005). *Environmental science: A global concern* (8th Ed.). Boston: McGraw Hill.
- Elosta, A. B., Leksono, A. S., & Purnomo, M. (2013). People knowledge and perceptions about carbon dioxide (CO₂) air pollution in Malang caused by motor vehicles. *International Refereed Journal of Engineering and Science*, 2, 46-51.
- Enger, E. D., & Smith, B. F. (2000). *Environmental science: A study of interrelationships* (7th Ed.). Boston, Mass: McGraw-Hill.
- Garshick, E., Laden, F., E. Hart, J., & Caron, A. (2003). Residence near a major road and respiratory symptoms in U.S. veterans. *Epidemiology*, 14(6), 728-736.
- Gatersleben, B., & Uzzell, D. (2000). The risk perception of transport-generated air pollution. *IATSS Research*, 24, 30-38.
- Gregory, C., Blanck, H., Gillespie, C., Maynard, L., & Serdula, M. (2008). Perceived health risk of excess body weight among overweight and obese men and women: differences by sex. *Preventive Medicine*, 47, 46-52.
- Halonen, J. I., Blangiardo, M., Toledano, M. B., Fecht, D., Gulliver, J., ... & Tonne, C. (2016). Long-term exposure to traffic pollution and hospital admissions in London. *Environmental Pollution*, 208, 48-57.

- Han, X., & Naeher, L. P. (2006). A review of traffic-related air pollution exposure assessment studies in the developing world. *Environment International*, 32, 106-120.
- Heinrich, J., & Wichmann, H. E. (2004). Traffic related pollutants in Europe and their effect on allergic disease. *Current Opinion in Allergy and Clinical Immunology*, 4(5), 341-348.
- Katsoulis, M., Dimakopoulou, K., Pedeli, X., Trichopoulos, D., Gryparis, A., Trichopoulou, A., & Katsouyanni, K. (2014). Long-term exposure to traffic-related air pollution and cardiovascular health in a Greek cohort study. *Science of the Total Environment*, 490, 934-940.
- Künzli, N., Kaiser, R., Medina, S., Studnicka, M., Chanel, O., ... & Sommer, H. (2000). Public-health impact of outdoor and traffic-related air pollution: A European assessment. *Lancet*, 356(9232), 795-801.
- Mabahwi, N. A., Ling, O. H. L., & Omar, D. (2015). Urban air quality and human health effects in Selangor, Malaysia. *Asian Conference on Environment-Behaviour Studies*, August 25-27, 2014.
- Mahmud, M. (2013). Assessment of atmospheric impacts of biomass open burning in Kalimantan, Borneo during 2004. *Atmospheric Environment*, 78, 242-249.
- Morikawa, T., Dissanayake, D., Sanko, N., Kurauchi, S.,... & Rivera, M. (2003). *Travel behavior analysis and its implication to urban transport planning for Asian cities: Case Studies of Bangkok, Kuala Lumpur, Manila, and Nagoya*. Research Project, International Cooperative Research Activity (ICRA). Japan: Nagoya University
- Pope, C., & Dockery, D. (2006). Health effects of fine particulate air pollution: Lines that connect. *Journal of Air and Waste Management*, 56, 709-742.
- Tonne, C., Beevers, S., Armstrong, B., Kelly, F., & Wilkinson, P. (2008). Air pollution and mortality benefits of the London congestion charge: Spatial and socioeconomic inequalities. *Occupational and Environmental Medicine*, 65(9), 620-627.
- World Health Organization (2000). *Transport, environment and health*. WHO Regional Publications, European Series, No. 89.



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A REVIEW ON THE NEEDS TO IMPROVE MALAYSIAN TREE PRESERVATION ORDER (TPO) (ACT 172)

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Abstract

Trees are important to human and the environment, and should always be protected to continuously benefit us. The Malaysian government, recognising that the rapid development of the country has put trees at risks of being damaged and killed, thus introduced Tree Preservation Order (Act 172) in 1996. However, recently, there have been cases whereby trees that were meant to be preserved were felled down without consent of the local authorities. This situation has raised questions on the effectiveness of the tree protection legislation. This paper gives information on the progress of the TPO (Act 172) gathered through literature review and proposes improvements of the legislation.

Keyword: Tree Preservation Order (TPO), Town and Country Planning Act 1976, Act 172

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INTRODUCTION

Trees give the environment and human endless benefits. They provide oxygen, improve air quality, conserve water, preserve soil and support wildlife. Because trees are important part of every community, especially in the urban area, it is critical that trees in urban settings such as at parks, road sides and buildings are preserved (retained) and sustainably managed. For a developing country such as Malaysia, which in 2016 its construction projects was estimated to reach RM83 billion (Kaur, 2015), the need to preserve trees becomes more pertinent due to the rapid development of the country. Forested areas need to be preserved from being indiscriminately cleared for urban development purposes.

Realising this fact, Malaysia has introduced the Tree Preservation Order (TPO) under the Town and Country Planning Act 1976 (Act 172) (Malaysia) that would protect the trees that are meant to be preserved from being damaged or killed. However, there were two recent cases of old and large trees being felled down in the name of development that have raised questions whether or not the TPO has been effectively implemented. In the first case, as reported by Bernama (2015), a property development company would face a fine of RM 966,000.00 for cutting down 19 trees of more than 30 years at Melaka Raya a month before. Less than a year after that, a contractor was ordered by DBKL to pay RM 300,000.00 as a penalty for chopping down 16 rain trees along Jalan Cochrane in March 2016 (Fined RM 300,000 for felling rain trees, 2016).

In both cases, the concerns over the tree felling were also shared by organizations related to historical conservation such as the Malacca Historical City Council (MBMB) and Ecotourism and Conservation Society Malaysia. In the second case, it was reported that the residents living in the area were horrified to find only stumps left of what were once magnificent trees at the site. Thus, this raised the question of whether the city councils were really serious or indiscriminate in taking care of old and protected trees. Were there similar cases that we do not know?

This paper aims to inform on the progress of the TPO (Act 172) since its inception. It also elaborates on what needs to be done to make this legislation more effectively enforced by looking at the TPOs of other countries.

TREE PRESERVATION ORDER (TPO) OF OTHER COUNTRIES

According to Department of Communities and Local Government of UK (DCLG, 2012b), Tree Preservation (also Protection or Retention) Order (also Policy or By-Law) or TPO, is a written order made by a local planning authority which, in general, makes it an offence to cut down, top, lop, uproot, wilfully damage or wilfully destroy a tree protected by that order without the authority's permission. Its purpose is to protect trees which bring significant amenity benefit to the local area (Nicholson, 2016). This protection is particularly important where trees are under threat.

In a TPO related publication by the Leichhardt Municipal Council of Australia (LMC) (2001), it is mentioned that unless the Council gives written consent for specific works, it is prohibited to ring bark, cut down, lop, top, remove, injure or wilfully destruct any tree in the Leichhardt Local Government Area. The publication further states that while the TPO is aimed at conserving and enhancing tree cover and general landscaping of Leichhardt, it will also conserve and enhance the ecological, climatic, amenity, aesthetic, economic and cultural values of the area.

Types of tree to be preserved and protected are different from one country to another. A TPO adopted by a City of Canada Bay Council (CCBC) (2006) defines preserved trees as those with the following properties - height of 4 m or more, trunk girth of 500 mm and bigger (at any point), and the tree is a cycad or mangrove irrespective of its dimensions. In Northampton Borough Council, all types of tree can be protected except hedges, bushes or shrubs (Wright, 2010). The Blue Mountains City Council in Australia elaborates that all trees are protected but gives a list of exempted trees which includes the trees which are proven dead or which could pose an imminent danger to property or life by the authorities (BMCC, 2012).

The pertinent remarks of each of the TPO related publication reviewed above are highlighted and summarised in Table 1.

Table 1 Remarks of TPO in other Countries

| No. | Publication | Remarks |
|-----|------------------|---|
| 1 | DCLG (2012b) | General definition: TPO is to prevent cutting down, topping, lopping, uprooting, wilfully damaging or destroying protected trees. |
| 2 | Nicholson (2016) | Trees to be preserved are including: <ul style="list-style-type: none"> • trees that benefit the local area • trees under threat |
| 3 | LMC (2001) | Any tree in the Leichhardt Local Government Area shall not be damaged (cut down, <i>etc.</i>) without a written consent of the Council |
| 4 | CCBC (2006) | Preserved trees are defined as: <ul style="list-style-type: none"> • trees with height ≥ 4 m • trees with trunk girth ≥ 500 mm • cycad (regardless of size) • mangrove (regardless of size) |
| 5 | Wright (2010) | All types of tree can be protected except hedges, bushes or shrubs. |
| 6 | BMCC (2012) | The local authorities shall provide a list of trees exempted from preservation which includes the proven dead and hazardous trees. |

CONTINUOUS EVALUATION OF TPO IN OTHER COUNTRIES

Recently, the Australian Capital Territory (ACT) government amended its Tree Protection Act (TPA) 2005 effective from 21 June 2016. About six months before, an editorial in the Canberra Times (Tree Regulation Needs Reviewing, 2015) urges the review of Tree Protection Act and citing that the ACT chapter of the Australian Institute of Architects had long been asking for the review to avoid unnecessary delays and increased costs to housing projects. In April 2012, the British Government published new regulations cancelling the provisions in the TPOs issued before 6 April 2012 and replaced them with the provisions of the same year's The Town and Country Planning (Tree Preservation) (England) Regulations 2012.

The moves by the Australian and the British governments mentioned above reveal that as with other Acts or Legislation, TPO is not a static document, and it should be subjected to continuous reviewing and evaluation to improve and expand its contents as well as its implementation and enforcement. Reports of evaluation by the professionals, consultants and academicians are meant to be presented to the government officials who have the power to bring forward suggestions and make the amendments.

Examples of such reports or consultation papers are those by Jessop (2002) for the Scottish Government; FitzGibbon & Summers (2002) for Southern Ontario governance, Canada; and Brown et al. (2016) for the Town of Concord, a municipal in the state of Massachusetts, USA. The responses from government and authorities are as in documents by One Scotland (2010), the Department of Community & Local Government in London (DCLG) (2012a) and Waverley Council in Australia (WC) (2013).

Among the Scottish TPO aspects that need improvement as reported by Jessop (2002) are the non-existent or the very low standard of management at many local TPO sites which could be caused by a combination of a lack of knowledge, finance and commitment to the maintenance of protected trees and a distinct lack of up-to-date government advice on TPOs with regard to procedures and technical standards. He further compared the situation with that in England where 'Tree Preservation Orders: A Guide to the Law and Good Practice', produced by Department of the Environment, Transport and Regions (DETR) in 2000, provides a very effective coverage of the key issues, something that Scotland could follow.

FitzGibbon & Summers (2002) reveals the fact that many municipalities within the studied area do not have tree by-laws (equivalent to TPOs) and many others do not actively enforce their tree by-laws. This situation has caused significant forested areas in Southern Ontario left unprotected. The report also concludes that the lack of a stop work order within the tree by-laws passed under the Forestry Act limits the ability of by-law enforcement officers to protect trees during improper cutting. Many trees may be cut during the time of offence

awareness and the actual charges being laid. The inability of tree by-law officers to issue tickets under the Forestry Act limits their ability to immediately impact upon a situation of illegal cutting. It also forces them to undertake the more arduous task of laying charges involving a court hearing.

Furthermore, the report mentions that while the by-law under the Forestry Act can be effectively enforced, it is not efficiently enforced. A great level of effort and finances are required to convict offenders. Many councillors or members of the judiciary are unaware of the importance of the tree by-law, thus they do not support stringent enforcement. The influence of politics and economics can take precedence over environmental concerns. Finally, while the level of expertise of tree by-law officers has increased there is no formalized training for tree by-law officers.

Brown et al. (2016), after analysing the implementation of tree by-laws (TPOs) in four neighbouring towns, suggest that the Town of Concord should have TPO which includes the following elements. First, it must have as a specific and clear 'trigger' such as a demolition permit for an existing residence or a building permit for expansion of >50% footprint. Next, the TPO requires a tree survey and is based on setbacks (similar to zoning), which is important for wildlife corridors and streetscape aesthetics, and attempts to preclude the major cause for concern, *i.e.*, clear cutting of lots for development. Moreover, the TPO should have a provision for a tree fund if on-site replacement is not feasible. Last but not least, it should also include penalties sufficiently high as to deter non-compliance.

GUIDELINES FOR TREE PRESERVATION ORDER

Legislation, such as the TPO should be accompanied by efforts to guide the people to understand what are required by the legislation so that it can be effectively enforced and complied with. The guidance can be done in many ways such as awareness campaigns and trainings. The guidance materials given-out during the campaigns or to support the trainings can be in the forms of guidelines, manuals and legislative interpretation notes.

In developed countries such as the UK, Australia and the USA, there are already many guidance materials available to help the local authorities interpret the TPO legislative requirements, to understand the definitions and terms, and to develop the procedures for the implementation and enforcement of the TPO. Examples of such TPO legislative interpretation guidelines and notes are DCLG (2012b), City of Richmond (CR) (2016) and District of Saanich (DS) (2015).

Another type of guidelines is the more technical, with step-by-step tree protection procedures and illustrations to be followed by the construction industry, are plenty and can be downloaded easily from the internet from various sources abroad. Among the illustrative documents are Stirling Council (SC) (2003), Devon County Council (DCC) (2006), City of Edinburgh (CE) (2007),

Oregon State University (OSU Extension Service) (2009) and NYC Parks & Recreation (NYCPR) (2009).

MALAYSIAN TREE PRESERVATION ORDER (ACT 172)

TPO in Malaysia was established in 1995 when Part VA entitled 'Tree Preservation Order' was added to the Town and Country Planning Act 1976 (Act 172). In the layman's terms, the TPO enables local planning authorities to prohibit the cutting down, topping, lopping, uprooting, damaging or destroying of trees that are meant to be preserved and to prosecute the offences with a fine not exceeding one hundred thousand ringgit (RM100,000) or an imprisonment for a term not exceeding six (6) months, or both. Felled trees should be replaced according to time and place determined by the local planning authority. Examples of trees to be preserved are such as those planted by the local authorities, trees that have historical values and trees of endangered species, regardless of their sizes.

The TPO (Act 172) also states that, by default, all trees with girth exceeding 0.8 meter are meant to be preserved and they are not allowed to be felled unless the trees are dying, posing imminent danger or the felling is required to comply with other legal regulations. In all the cases, the felling of preserved trees must have written permission by the local authorities.

The TPO (Act 172) is already three decades old, thus should have been implemented or enforced very well to have positive impacts on national agenda of greening the environment. However, according to Nor Hanisah & Hitchmough (2015), the progress of TPO (Act 172) has been unsatisfactory since its launching due to problems like funding, staffing, and people's perception.

Early Days of the TPO (Act 172)

The commencement of the TPO (Act 172) was initially applauded and has drawn a lot of attention among those attending the Workshop on Tree Management in Urban Areas in Malaysia held at FRIM in December 1996. The participants were those whose jobs are related to or affected by trees such as landscape architects, contractors and researchers and also the people from municipalities and private nurseries (Philip, 1997).

About three years after that, the TPO (Act 172) was again mentioned in a report by the Economic Planning Unit (EPU) (2002) on a study for the sustainable development of the highlands of Peninsular Malaysia. The report, in its Chapter 6 emphasises on the enforcement of the TPO (Act 172) by local planning authorities to prevent the rampant clearing of trees in local authority areas.

Enforcement and Implementation Status of the TPO (Act 172)

A decade after the launching, Malaysians began reviewing the effectiveness of the TPO (Act 172), and the early comments were not favourable. Sharifah Zubaidah (2006), perhaps being raged by the felling of an old and huge Jati tree (*Tectona grandis*) to make way for new quarters for government health workers near the Penang Hospital, has mocked the TPO (Act 172) as ‘teeth without the bite’ to reflect its ineffectiveness especially in the enforcement aspect.

Another disappointing remark on the TPO (Act 172) collectively came from a larger group of professionals, i.e., the Construction Industry Development Board (CIDB). In its publication *Strategic Recommendation for Improving Environmental Practices in Construction Industry*, CIDB (2007) clearly states that the enforcement of Tree Preservation Order (Act 172) was not satisfactory and that Selangor was the only state to take action to gazette the tree preservation order and prevent certain trees from being felled. The report also stated that TPO (Act 172) has yet to be adopted by other states and suggest that it is adopted and enforced uniformly in all states of Malaysia. CIDB also recommends that the State Governments and the Ministry of Housing and Local Government to work towards increasing the awareness and enforcement among local authorities regarding the TPO (Act 172).

The National Landscape Department (JLN) (2011) in the National Landscape Policy has put up a strategy that enables it to re-evaluate and formulate landscape related legislation with several action plans including to strengthen the enforcement of the TPO (Act 172).

Academic Research Containing the TPO (Act 172)

Malaysian scholars have also included the TPO (Act 172) as the subject matters of their research. For example, Rafiuddin (2011) evaluates the adoption and implementation of the TPO (Act 172) by the Kuala Lumpur City Hall (DBKL) through interviews with personnel from various departments within the City Hall. The thesis finding too highlights on the lack of implementation of the TPO (Act 172), even though legal provision has already existed to support the whole management and practices process. Nor Akmal et al. (2011), in analysing the status of urban greenspace policy, planning, and management in Malaysia, have included knowledge on TPO (Act 172) as one of the questions asked in the expert interviews with municipal officers in selected cities. Meanwhile, Raziah (2013), reports that one of the interview respondents has suggested that in the context of landscape conservation, the Department of National Heritage of Malaysia needs to specify the conservation and preservation means for the National Heritage Act comparable to the functions of TPO (Act 172) in the Town Planning Act. Intan Afida and Halimatun Saadiah (2014) conducted a preliminary review on disaster risk reduction agendas incorporated in development plans and reports in Malaysian urban planning practice namely the National Physical Plan (NPP), the

State Structure Plan (SSP), the Local Plan (LP), the Special Area Plan (SAP) and the Development Proposal Report (DPR). For the DPR stage, TPO (Act 172) is mentioned as the disaster risk reduction agenda to be adopted when assessing the conditions of vegetation in the existing site.

Nor Hanisah and Hitchmough (2015) compared the perceptions among landscape professionals' on tree retention and legislation which also include the TPO (Act 172). The study concludes that in the landscape professionals section, the disparities of responses between the landscape architects and town planners are notable. Issues such as legislation and practical; and tree biology were tested among the landscape professionals. The most significant results were gathered from the monetary issue on preserving trees, their understanding of the TPO (Act 172) and their knowledge on tree biology. When further questions were asked to the landscape professionals on the tree root biology, very few of the landscape architects could answer the questions right. Knowledge about tree root system and structure are lacking among the landscape architects and they have to undertake in-house training for the enrichment of their knowledge.

Wan Noor Anira et al. (2016), in their study to introduce and promote the characteristics of heritage trees in Taiping Lake Garden to the community, used the TPO (Act 172) to justify and support their research efforts. Ramly, Noriah and Raziah (2016) analysed the implementation of TPO (Act 172) in tree management practice through interview and survey. The results show that 80% of the respondents considered the TPO (Act 172) were not fully utilized during landscape design stage.

Summary of the TPO (Act 172) Literature Review

All the TPO (Act 172) related literatures reviewed above are summarized in Table 2. It provides proofs that Malaysian TPO (Act 172) is still far from perfect and should be reviewed, re-evaluated and improved from time to time to ensure its purpose of greening the country is achieved.

Table 2 The TPO (ACT 172) Related Publications

| No. | Publication | Remarks on TPO (Act 172) |
|------------|---|--|
| 1 | Town and Country Planning Act 1976: Revision 1995 | Inclusion of Tree Preservation Order (TPO). |
| 2 | Philip (1997) | Applause and praise of the TPO (Act 172). |
| 3 | EPU (2002) | Emphasising the enforcement of the TPO (Act 172) by local planning authorities. |
| 4 | Sharifah Zubaidah (2006) | TPO (Act 172) is 'teeth without the bite'. |
| 5 | CIDB (2007) | Expressing dissatisfaction over the enforcement of the TPO (Act 172) by local authorities. |

| | | |
|----|--|--|
| 6 | JLN (2011) | Strategy 6.1. Re-evaluate and Formulate Legislation Related to Landscape (including the TPO (Act 172)). |
| 7 | Rafiuddin (2011) | Highlighting the lack of the TPO (Act 172) implementation within KL City Hall. |
| 8 | Nor Akmal et al. (2011) | Questioning the knowledge of TPO (Act 172) among the greenspace municipal officers. |
| 9 | Raziah (2013) | Revealing a suggestion that TPO (act 172)-like means should be included in the National Heritage Act to enhance landscape preservation. |
| 10 | Intan Afida & Halimatun Saadiah (2014) | TPO (Act 172) as the disaster risk reduction agenda to be adopted in Development Proposal Report when assessing the conditions of vegetation in the existing site. |
| 11 | Nor Hanisah & Hitchmough (2015) | Disclosing the fact that knowledge about tree root system and structure are lacking among the landscape architects. |
| 12 | Wan Noor Anira et al. (2016) | Using the TPO (Act 172) to justify the efforts to save heritage trees in Taiping. |
| 13 | Ramly, Noriah & Raziah (2016) | Reporting that 80% of the respondents considered the TPO were not fully utilized during proposed landscape design. |

CONCLUSION

TPO has been enforced and implemented in many developed countries as ways to protect trees, especially those that are meant to be preserved. Furthermore, most of the countries have also reviewed and revised their TPO from time to time to make it more effective. They have also had guidelines for TPO. Malaysian TPO (Act 172), introduced more than two decades ago, has not made much progress in term of its implementation and enforcement. This fact was also loudly voiced up by a Malaysian public figure, *i.e.*, Tun Jeanne Abdullah, the chairman of Landskap Malaysia (an NGO she established in 2009) who urges the authorities to enhance the implementation of TPO (Act 172) and forcing the developers to replace the trees that were cut for development projects.

No doubt, as that of other countries, Malaysian TPO (Act 172) also needs constant reviews and further revisions. Additionally, a guidelines to help parties understand the TPO (Act 172) better is also required. However, such guidance materials that is solely dedicated to the TPO (Act 172) is not forthcoming. The State of Selangor in its planning guidelines and standards has included the implementation of sub-section 35A(1) of the TPO (Act 172) and enforcement of the TPO guidelines without further guidance for tree protection on construction sites (JPBDS, 2010). Thus, it is imperative for the relevant authorities to quickly publish a set of guidelines to help other parties understand and implement TPO (Act 172) effectively.

REFERENCES

- Bernama (2015, April 18). Developer slapped with almost million-ringgit fine for felling 30-year-old trees in Malacca. *Malay Mail*. Retrieved from www.themalaymailonline.com
- Blue Mountains City Council [BMCC] (2012). *Tree Preservation Order (Local Environmental Plan 1991)*. Blue Mountains City Council, Australia.
- Brown, E., Collins, C., Gailus T. B., Funkhouser, E., Hire, G. M., Munro, T., Meltzer, R., Lodynsky, L., Cash, B. W., & Hughes, E. (2016). *Tree preservation subcommittee report to planning board*. TreePS.
- City of Canada Bay Council [CCBC] (2006). *Tree Preservation Order Policy*. City of Canada Bay Council.
- City of Edinburgh [CE] (2007). *Tree technical manual: standards and specifications*. Planning & Zoning Department. City of Edinburgh.
- City of Richmond [CR] (2016). *Tree Protection Bylaw 8057*. City of Richmond.
- Construction Industry Development Board [CIDB] (2007). *Strategic recommendations for improving environmental practices in construction industry*. Lembaga Pembangunan Industri Pembinaan Malaysia.
- Department of Community & Local Government [DCLG] (2012a). *Tree preservation orders: proposals for streamlining - government response to the consultation*. Department for Communities and Local Government, London.
- Department of Community & Local Government [DCLG] (2012b). *Protected Trees. A Guide to Tree Preservation Procedures*. Department for Communities and Local Government, London.
- District of Saanich [DS] (2015). *Tree Protection Bylaw No.9272*. District of Saanich.
- Devon County Council [DCC] (2006). *Tree protection and new development guidance note*. Environment, Economy & Culture Directorate, Devon County Council.
- Economic Planning Unit [EPU] (2002). *Study for the sustainable development of the highlands of peninsular Malaysia – final report volume II*. Prime Minister's Department, Malaysia.
- Fined RM 300,000 for felling rain trees (2016, March 28). *The Star Online*. Retrieved from www.thestar.com.my.
- FitzGibbon, J., & Summers, S. (2002). *Report on tree conservation by-laws in Southern Ontario*. School of Rural Planning and Development, University of Guelph.
- Kaur, G. (2015). Construction sector to be busy in 2016 with projects worth RM83bil. *The Star*. Retrieved from www.thestar.com.my
- Intan Afida M.A. & Halimatun Saadiah H. (2014). Disaster risk reduction in Malaysian urban planning. *Planning Malaysia*. 12, 35-58.

- JPBD Selangor (2010). *Manual Garispanduan & Piawaian Perancangan Negeri Selangor. Edisi kedua*. Jabatan Perancangan Bandar dan Desa Negeri Selangor.
- Jessop, R. (2002). *The effectiveness of tree preservation orders in Scotland*. Scottish Executive Social Research.
- Leichhardt Municipal Council [LMC] (2001). *Tree Preservation Order*. Leichhardt Municipal Council, Australia.
- National Landscape Department [JLN] (2011). *National Landscape Policy*. Kementerian Perumahan dan Kerajaan Tempatan.
- Nicholson, R. (2016). Trees protection matters. *RICS Building Surveying Journal*. July/August 2016, 22-23.
- Nor Akmal, A. A., Konijnendijk, C. C., Sreetheran, M., & Nilsson, K. (2011). Greenspace planning and management in Klang Valley, Peninsular Malaysia. *Arboriculture & Urban Forestry*, 37(3), 99-107.
- Nor Hanisah, M. H. & Hitchmough, J. D. (2015). The comparison of perceptions among landscape professionals' on tree retention and legislation. *International Academic Research Journal of Social Science*, 1(2), 164-176.
- NYC Parks & Recreation [NYCPR] (2009). *Parks tree preservation protocols*. City of New York Parks & Recreation.
- One Scotland (2010). *Tree preservation orders (TPOS): Analysis of consultation responses*. Scottish Government.
- Oregon State University [OSU] Extension Service (2009). *Tree protection on construction and development sites: A best management practices guidebook for the Pacific Northwest*. Oregon State University.
- Philip, E. (1997). Workshop on tree management in urban areas in Malaysia. *PROSEA Newsletter*, No. 18, April 1997.
- Rafiuddin, R. (2011). *Urban tree management: Towards best practices and applications* (Master thesis). Universiti Teknologi MARA, Malaysia.
- Ramly H, Noriah O., & Raziah A. (2016). Tree Preservation Order and its role in enhancing the quality of life. *Procedia – Social and Behavioral Sciences*, 222, 493-501.
- Raziah, A. (2013). *Cultural landscapes as heritage in Malaysia: Potentials, threats & current practices*. Delft, Netherlands: Eburon Academics Publisher.
- Stirling Council [SC] (2003). *Protecting and managing trees on development sites: Development advice note*. Stirling Council.
- Sharifah Zubaidah, S. A. K. (2006). Tree Preservation Orders Under Malaysian Planning Law: Teeth Without The Bite. *Malaysian Institute of Planners' Buletin Perancang*, February 2006, 10 & 18.
- Tree Protection Act 2005 (Australian Capital Territory).

- Tree Regulation Needs Reviewing (2015, December 5). *The Canberra Times Online*. Retrieved from www.canberratimes.com.au.
- Town and Country Planning Act 1976 (Act 172) (Malaysia).
- Town and Country Planning (Tree Preservation) (England) Regulations 2012.
- Wan Noor Anira W.A, Norasikin H, Khalilah H & Nadiyah M.N (2016). The morphology of heritage trees in colonial town: Taiping Lake Garden, Perak, Malaysia. *Procedia - Social and Behavioral Sciences*, 222, 621-630.
- Waverley Council [WC] (2013). *Tree Management Policy*. Waverley Council.
- Wright, L. (2010). *Tree protection - a guidance leaflet on new and existing tree preservation orders*. Northampton Borough Council.



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UNDERSTANDING LOCAL AUTHORITY PERFORMANCE THROUGH ROLE THEORY

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Abstract

Local government performance is frequently interpreted through stakeholders' satisfaction measured by statistical analyses. Apart from testing the relationship, the perception of satisfaction on services provided is further influenced by the degree of expectation being met, and understanding the customer behaviour. Thus, this study attempts to explore an alternative explanation on the character of the local authority (LA) and put in perspective through the comprehension of the role theory. This was an exploratory case study on Kulim Hi-tech Local Authority, Malaysia. The mixed method approaches were firstly carried out by questionnaire surveys, followed by interviewing stakeholders and ended with site observations. Descriptive analyses were applied to the random samples. Findings showed that the LA has executed its roles of control and collect very well. However, it did not fare well in the role of publish.

Keywords: Local Authority, Service Performance, Satisfaction, Behaviour, Role Taking

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CURRENT RESEARCH BACKGROUND

The function of local government is mainly on providing services to inhabitants resided within its administrated area and secondly, in development control. These broad ranges of services encompass public health and sanitation, waste removal and management, town planning, environmental protection and building control, and general maintenance of urban infrastructure and socio-economic development (Abdul Khalid, 2010). Supposedly in ideal situation, the local councils are to serve at their best in meeting citizens' needs and wants based on the power accorded by the Local Government Act 1976 (Act 171) and ensure that everyone is happy and satisfied with the councils' clear defined role and functions, effectiveness, caring, and prompt attendance on local issues. However, analysis of related literature indicates that in reality the majority of the citizens were found discontented (Bello, Martin & Kasim 2017b; Zakaria et al., 2011; Zikri, Tarmiji & Aziz, 2015), very few were revealed satisfied (Mansor & Che Mohd Razali, 2010). These were due to many reasons such as the local government is under the 'state-list' and the State has direct financial powers to appoint councillors over the local government. Furthermore, most governmental expenditures on development are channelled through the Federal level ministries and statutory bodies such as the Urban Development Authority (UDA) and State Economic Development Corporation (SEDC). These lacking of financial autonomy issues were justified and suggestions were proposed even before the formation of the Act 171 (cf. Cheema & Hussein, 1978; Nahappan Report, 1970); however, they have remained as challenges until today.

Most of the prior studies on local council's service performance were found to adopt statistical analyses to evaluate service performance to customer satisfaction (Mansor & Che Mohd Razali; Zakaria et al., 2011; Zikri, Tarmiji & Aziz, 2015; Bello et al., 2017a). For example, Zakaria et al. (2010) used Pearson correlation to test the hypothesis and conclude that there was a significant correlation between satisfaction and cleanliness, and proposed to increase better performance and more active collaboration with the stakeholders. In fact, such observation was vague. Thus, another aspect of analysis must be explored from the angle of human behaviour. Seeing that citizens are humans and their behaviour influences expectation, which mould their satisfaction towards the performance of the local council. Therefore, the socio-psychological aspect was missing in most of the previous assessments.

Hence, this study proposes the use of role theory to understand and assess the performance of local councils. Using role theory, the issue is viewed from the angle of the officers' behaviour, which reflects towards their customers. Role theory is an established social theory that elaborates deeply on human's characters (cf. Ojo & Adedayo, 2017). Other than the psychological field, this theory has been applied widely in other fields, such as in service encounter

(Solomon et al., 1985), lecturer's role (Valk et al., 2014) and social media communicators (Carpenter & Lertpratchya, 2016).

PREDICTORS OF PERFORMANCE

In the national political system, the local government lies on the third tier, which is the closest to the local population. To the population, the most important aspect of local councils is the service quality provided by the councils because it directly affects their lives. Thus, what are the predictors of performance that can be measured to satisfy the local inhabitants' need and wants? Prior studies indicate that these include service quality, public complaints, community development, law enforcement, environmental management, basic amenities, community health, street and light, cleanliness, employees' performance, layout of facilities, counter service quality, and size of council (Abdul Khalid, 2010; Joseph, 2010; Mansor & Che Mohd Razali, 2010; Zakaria et al., 2011; Zikri, Tarmiji & Aziz, 2015; Bello et al., 2017a).

In fact, the functional performance of the local government largely involves the regulation of the local affairs (Hazman & Kalianan, 2008). Functional performances are expected roles, which are different from the private organisations. As pointed out by Alford and Speed (2006), cited in (Hazman & Kalianan, 2008), local government do not always pursue to produce, supply and provide but also prevent, limit or shape consumption. Another issue to ponder is the mandatory and discretionary functions debated by some studies (Cheema & Hussein, 1978; Joseph, 2010; Nahappan Report, 1970; Zakaria et al., 2011). Mandatory functions are those critical functions that local councils are obligated to perform regardless of financial status such as refuse collection and activities pertaining to public health. Meanwhile, discretionary functions refer to other optional development functions such as providing amenities, housing and commercial activities. Nahappan Report (1970) proposes to include these divisions of functions in Act, so that local government will have more grant allocation in the national system. However, it remains an issue. Bearing in mind of these responsibilities, the possible predictors for this study were classified into four main predictors (verbs) thought as vital viz. control, collect, service, and publish.

The selection of predictors is not exhaustive as the first three predictors are basic functional responsibilities while the fourth is related to information dissemination, which is important in this information era. These four main predictors were further categorised into 15 sub-predictors as follows:

1. Expected role of control - land, building, industry and public spaces.
2. Expected role of collect - charges, taxes and fines.
3. Expected role of service - solid waste, drainage, landscape, street and lighting, and complaints.

4. Expected role of publish - tenders and contracts, bulletins and statistics, and website.

ROLE THEORY IN PERFORMANCE PERSPECTIVE

The role theory is widely used in the behavioural study. Initially, in the 1930s, scholars like George Herbert Mead initiated the study on self, Robert Merton on social structure and Ralph Linton on man. These social ideas were later termed as the role theory by Biddle (1986) and others. Then again, what is the role and how is it related to this study? Turner (2001) conceives role as a pattern for behaviour, while Allen and van de Vliert (1984) view role as a behaviour referring to normative expectations associated with a position. This study adopts the definition by Biddle (1986, p. 67), whom explains roles by presuming that persons are members of social positions and hold expectations for their own behaviour and those of another person. The behavioural expectation is the key term in role theory. While Parsons (1991) views it as the norm, others see it as belief (Stryker, 2002) and also preference (Turner, 2001). In other words, behaviour is human characteristics, which stimulate expectation to a particular subject. In this study, the subject is the performance of local council. The result of the behavioural expectation is reflected in the degree of satisfaction perceived. Therefore, to enlighten the understanding of performance, the role theory was selected in this study as it was considered suitable and deeply related to behaviour expectation.

Prior to the discussion of performance, two related traditions, namely the symbolic interactionism and organizational role theory will be explained. In symbolic interactionism, the focus is on the individual actor socially interacting in a system that constitutes of shared norms. It is a micro-level theoretical framework in sociology that addresses how society is created and maintained through repeated interactions (Carter & Fuller, 2015). Persons use language and significant symbols to disseminate information in their communications. This type of interactive communications between a service provider and customer is a reciprocal process rather than a linear one. According to Solomon et al., (1985), service experience which distinguishes one from another is a result of the unique interaction between an experienced and contact person.

In an organisational role theory, the attention shifts from individual to the organisations. Scholars focused their discussion on social systems that are pre-planned, task-oriented, and hierarchical and discussed on employee performance and workplace behaviour as well as cost and conflict (Fisher & Gitelson, 1983). This tradition also implies that organisations are rational and stable entities that all conflicts within them are merely role conflicts and that the participant will inevitably be productive once the role conflict is resolved (Biddle, 1986). Thus, a lot of role conflict articles come from this organisational tradition. Stryker and Macke (1978) point out that the reasons for conflict were due to stress, while

Rizzo, House and Lirtzman (1970) and Carpenter & Lertpratchya (2016) studied on role conflict and ambiguity. Role conflict is the simultaneous occurrence of more role expectations such as compliance with one would make another more difficult (Katz & Kahn, 1978). This opinion is related to this study, where LA holds multi-roles and tends to spark conflicts to others.

To put the discussion in perspective, the performances of local councils are influenced by four concepts, namely the controversial concept of role conflict, while the other three agreeable concepts were role taking, consensus, and conformity. The first concept was described in the previous paragraph. Meanwhile, the role taking concept refers specifically to every social position holder and represents expected behaviours (Katz & Kahn, 1978). In the role holder behaviour, Neale and Griffin (2006) explain according to the model they created, which consists of self-concept (holder's own perception), system requirements (required by organizations and rules), and role schema (pre-existing expectations in a broader sense by society). The model by Neale and Griffin (2006, p.25) was found suitable in building role identity for LA. It creates a set of role clarity to stakeholders, thus, contributes to less conflict in the process of interacting with the public. The consensus construct refers to an agreement among the expectations that are held by various persons. In this concept, shared norms, preference, and beliefs in the social system are discussed as the crucial part to achieve consensus among all. To achieve consensus, consistency in doings and information is crucial. This leads to the last construct of conformity, which investigates the relationship between expectation and behaviour. Many scholars have assumed that conformity is good and social integration and personal satisfaction, are greater when persons obey their own and other's expectation (Biddle, 1986). If one does not know what is expected, (s)he will not know how to behave due to unclear evaluation standards (Carpenter & Lertpratchya, 2016).

METHOD

This study used a random sample, where members of a population were selected one at a time, independent of one another and provided the ability to generalize a population (Creswell, 2014; Fowler, 2009). Kulim Hi-tech Local Authority was selected as the case study. Respondents were the stakeholders' viz. officers, residents, workers, and students. Non-stratified random sample method was applied in sample selection due to incomplete stakeholders' data in the Kulim Local Plan. Yamane formula and Israel's (1992, p.3) sampling table were used to guide the determination of sample size. For the population size of 59,000 (Lim, 2005, p. 100), the size applied was 99. This allows for the level of precision at $\pm 10\%$, confidence level at 95%, and maximum variability of 50% on the normal distribution population sample.

A mixed method was applied, firstly by quantitative (questionnaire) followed by qualitative (interview and site observation) methods. A set of semi-

structured questionnaire was developed, consisting of three parts. Particularly, part II is on the assessment of the predictors by using a 10-point scale ranging from very poor to very excellent. Interviews were conducted after respondents filled up the surveys. In-depth interviews were carried out on officers in order to verify data and challenges faced. Finally, the data collected were analysed using descriptive statistics, namely percentage and mean score via SPSS v21, and explained through role theory.

The mean score (MS) of each indicator was grouped into five categories, namely the poor category with MS 0 to 1.9, low with MS 2.0 to 3.9, moderate with MS 4.0 to 5.9, good with MS 6.0 to 7.9, and the category of excellent with MS 8.0 to 10 (cf. Rahimi et al., 2013, p. 1151).

FINDINGS

Demography of the Respondent

In general, the respondents of this study ranged from 19 to 70 years old, where the majority were youths, ranging from 15 to 40 years old, male, locals, staying inside the Kulim Hi-Tech Park, three to nine years of dwelling history, professionals, and serving in private sector (refer Table 1).

Table 1 Respondents Profile, total 99 samples

| | Frequency | Percent | Min. | Max. | Mean | Std Dev. |
|--|-----------|---------|------|------|-------|----------|
| Gender | | | | | | |
| Male | 50 | 50.5 | | | NR | |
| Female | 49 | 49.5 | | | | |
| Age | | | | | | |
| | | | 19 | 70 | 38.59 | 15.06 |
| Youth, age between 15 to 40 | 65 | 65.7 | | | | |
| Adult, age between 41 to 59 | 22 | 22.2 | | | | |
| Pensioner, 60 years old & above | 12 | 12.1 | | | NR | |
| Nationality | | | | | | |
| Local | 83 | 83.8 | | | | |
| Foreigner | 16 | 16.2 | | | | |
| Stay inside the industrial park | | | | | | |
| | | | 1 | 20 | 6.32 | 5.08 |
| No | 20 | 20.2 | | | | |
| Yes, less than 3 years | 26 | 26.3 | | | | |
| Yes, 3 to 9 years | 33 | 33.3 | | | | |
| Yes, 10 years and above | 20 | 20.2 | | | | |
| Sector of occupation | | | | | | |
| Public | 17 | 17.2 | | | NR | |
| Private | 48 | 48.5 | | | | |
| Non-working | 34 | 34.3 | | | | |
| Occupation breakdown | | | | | | |
| Professional | 53 | 53.5 | | | | |

| | | |
|--------------------------------|----|------|
| Non professional | 12 | 12.1 |
| Student | 19 | 19.2 |
| Housewife | 5 | 5.1 |
| Pensioner | 10 | 10.1 |
| Using LA's website | | |
| No | 67 | 67.7 |
| Yes | 32 | 32.3 |
| Understanding LA's role | | |
| No | 35 | 35.4 |
| Yes | 64 | 64.6 |

* NR- Not related
Source: The authors, 2017

The Mean Score Analysis

Among the major roles, control received the highest score of 6.37 (based on the average mean scores of four sub-predictors of controls), which is in the range of 'good'. The other three predictors were only 'moderate', where collect received MS of 5.53, service 5.22, and publish 4.37 (refer Figure 1). No roles were considered by respondents as in either the poor or excellent range.

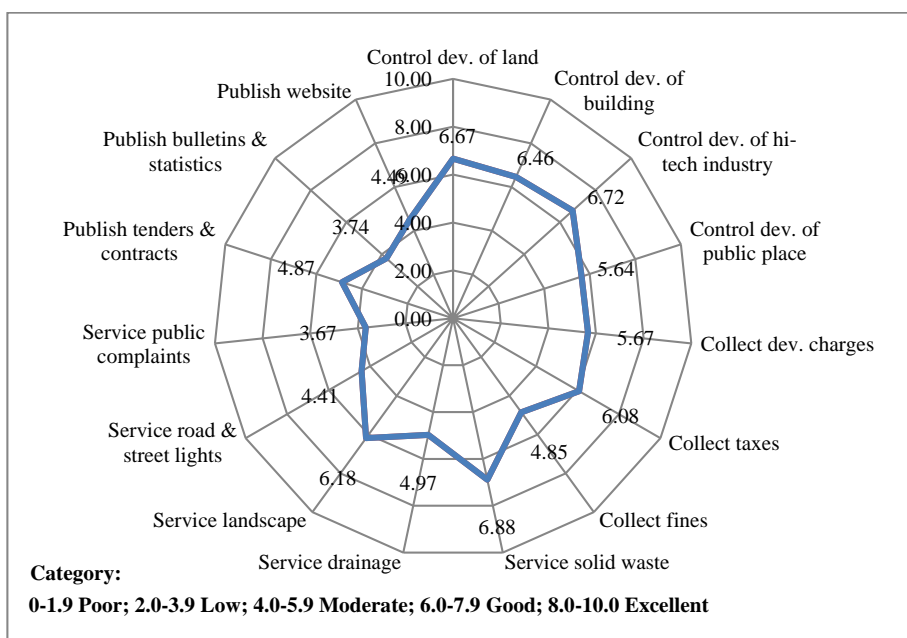


Figure 1 The spidergram model of the role sets of Kulim Hi-tech Local Authority
Source: The authors, 2017

In detailing the sub-role set of control, LA plays a significant role in controlling the development of land, building, industry and public places. Based on the interview, the planning officer identified limited development land as an

issue faced by LA, while an architect respondent was satisfied with the one week respond of plan approval. On the pollution issue, there was no major complaint and LA seemed to have coordinated well with the environmental department. In terms of public places, site observations showed that the recreational park and roadsides were green, clean and tidy. A corporate officer mentioned that there was a newly built sports centre to provide space for leisure.

In the second role of collect, LA showed moderate ability in managing its financial affairs, where taxes received MS of 6.08, charges 5.67 and fines 4.85. According to the finance officer of the LA, only 70% of assessment taxes were paid. The reasons for not paying include land sub-division issue, unaffordability and also LA failed to contact premise owner. To reduce tax arrears, LA issued warning and followed by 'red notice'. This has been effective in collecting 10% of the arrears.

On the third role of service, solid waste received the highest satisfaction from survey whereas public complaints were recorded as in the least satisfied. From the interview, there were complaints where respondents urged LA to take action on the issue of foreigners renting houses in the area without control, leading to safety threats. Some respondents were also not satisfied with council's responses or actions since there seemed to be too little change even after complaints were lodged.

On the fourth role of publish, the sub-predictors received moderate and low MS between 3 to 4. During the site visits, only two leaflets about recycling and tax refund were at the service counter. In terms of the website, despite being published since 2007, it received low number of visitors averaging only 180 visitors per day. According to the council's IT officer, efforts were made to gradually update the website such as by adding functions to allow visitors to check payment status on taxes. However, many sub-pages were blank of information viz. the latest news, and community and programs. Results also indicated that the role of publish received least attention from the LA compared to the other three roles.

DISCUSSION ON SPIDERGRAM

Based on the mean score, a spidergram was formulated (refer Figure 1). Based on the spidergram, it can be concluded that the LA service performance is moderate skewing towards good. This means that the LA has executed its role consciously, was accepted in a certain degree of inconsistency among the officers and satisfied most of the requirements by the stakeholders. However, LA also faces conflicts in terms of service and publish role expectations. The two roles viz. collect and publish are potential for LA to leap towards excellent position and being free from all conflicting expectations in the future. This is because, once financial income is adequate and the strategies of disseminating information through various publication channels are sound, LA will gain public conformity

and confidence. These can be achieved through changes in behaviour, i.e., increase seriousness towards building good governance image. LA must also be quick to inform the public of any major decisions as this assists in gaining conformity from the public (Carpenter & Lertpratchya, 2016).

Conflicts also exist in the role of collect. According to Biddle (1986), the limit of achieving normative consensus may appear to be integrated into the mass media or the imposition of power. In this case, LA was suggested to exercise its power and inform through mass media or by giving notice. This instrumental type of conformity is effective as persons who conform are also likely to grow status or idiosyncrasy credits for their actions (Stryker, 2002).

For the role of service, the consensus on solid waste and landscape services were good. However, severe conflicts and low position also occurred in handling public complaints and servicing road lights. These negative impacts of role stress can be mitigated by several organisational interventions such as developing conflict management skills, job redesign, empowerment, and socialisation programs (Valk et al., 2014, p. 103–104). Various empowerment programs will definitely help in mitigating role stress to create participation from the public (Hazman & Kalianan, 2008). In terms of manpower, currently the LA has 37 staff and only five are permanent. Similar to the finding by Cheema and Hussein (1978), the study also discovered that lack of permanent human capital is critical to administration. To close the gap of citizens' expectation, LA is proposed to increase the number of permanent staff. The suggested government-citizen model by Hazman and Kalianan (2008) is a factor to consider where LA may empower citizens in certain projects gradually. As more civic engagement are involved, it is believed that both role holder and recipients will be sharing accountabilities and beliefs, thus contributing to public consensus.

Last but not least, the current skewed low position of the role of publish is viewed as a potential area to embark on and eventually push the whole MS rating up to excellent. Publication is a powerful tool in symbolic interaction in building a vibrant identity. It is crucial to project a good governance identity. The LA is also suggested to respond promptly to public complaints, and to strategically share their beliefs, norms and preferences with the general public. This is one of the measures to improve the LA's identity among the public. The costs of projecting such identity can be planned wisely through publications.

CONCLUSION

This research is an exploratory study of the stakeholders' view to explain the quantitative results presented in spidergram using role theory. This attempt of using the role theory in explaining the performance of LA has filled the gap in studying the public organisation role from the socio-psychological point of view. This study also implied that organizational leaders need to re-evaluate public expectations, utilise publication tools, and provide attentive behaviour towards

citizens' need and wants, as well as means to arrive at the mutual consensus status. The selection of predictors and the spidergram presentation served the purpose of forming the performance scripts in understanding the role of public organisations. The agreement on norms, beliefs, and preferences set by LA will be easier to perceive and allow normative conformity from the public when these expectations are shared strategically through participating initiatives. Future research may modify the method to include the ethnographic approach or changing the target respondent to the public organization leaders and exploring the role theory in related to staff-behaviour in articulating their tasks and communications within the expected functions.

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REFERENCES

- Allen, V. L., & van de Vliert, E. (1984). *Role transitions: Explorations and explanations*. New York: Plenum.
- Biddle, B. J. (1986). Recent developments in role theory. *Annual Review of Sociology*, 12, 67–92.
- Carpenter, S., & Lertpratchya, A. (2016). A qualitative and quantitative study of social media communicators: An extension of role theory to digital media workers. *Journal of Broadcasting & Electronic Media*, 60(3), 448–464.
- Carter, M. J., & Fuller, C. (2015). Symbolic interactionism. *Sociopedia.isa*, (1), 1–17.
- Cheema, G. S., & Hussein, S. A. (1978). Local government reform in Malaysia. *Asian Survey*, 18(6), 577–591.
- Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th Ed.). UK: Sage Publications.
- Fisher, C. D., & Gitelson, R. (1983). A meta-analysis of the correlates of role conflict and ambiguity. *Journal of Applied Psychology*, 68(2), 320–333.
- Fowler, F. J. (2009). *Survey research methods* (4th Ed.). Thousand Oaks, CA: Sage.
- Hazman, S. A. & Kalianan, M. (2008). From customer satisfaction to citizen satisfaction: Rethinking local government service delivery in Malaysia. *Asian Social Science*, 4(11), 87–92.
- Israel, G. D. (1992). Determining sample size. *Fact Sheet PEOD-6*, 1–5.
- Joseph, C. (2010). *Sustainability reporting on Malaysian local authority websites* (Doctorate Thesis). Curtin University of Technology.
- Katz, D., & Kahn, R. L. (1978). *The social psychology of organizations* (2nd Ed.). New York: Wiley.

- Lim, S. B. (2005). *A comparative study of technology firms in Tsukuba Science City, Japan and Kulim Hi-Tech Park, Malaysia* (Master's Thesis). Universiti Teknologi Malaysia.
- Bello, M. U., Martin, D., Kasim, R., Abubakar, M., & Umar, M. A. (2017a). An examination of relationship between quality municipal services and citizen satisfaction in Malaysian local council, Batu Pahat in perspective. *Path of Science*, 3(5), 2.1-2.4.
- Bello, M. U., Martin, D., & Kasim, R. (2017b). Municipal awareness as a tool for enhancing citizen satisfaction in municipal councils of Malaysia. *European Journal of Social Sciences Studies*, 2(5), 109–121.
- Nahappan Report. (1970). *Report of the royal commission of enquiry to investigate into the workings of local authorities in West Malaysia*. Kuala Lumpur: National Printers
- Neale, M., & Griffin, M. A. (2006). A model of self-held work roles and role transitions. *Human Performance*, 19(1), 23–41.
- Mansor, N., & Che Mohd Razali, C. H. (2010). Customers' satisfaction towards counter service of local authority in Terengganu, Malaysia. *Asian Social Science*, 6(8), 197–208.
- Ojo, J. O., & Adedayo, S. O. (2017). Analysis of some selected theories applicable to consumer behaviour research. *Pyrex Journal of Business and Finance Management Research*, 3(4), 112–120.
- Parsons, T. (1991). *The social system* (2nd Ed.). London: Routledge.
- Rahimi, A., Che Sobry, A., Norlena, H., Shahimi, M., & Nur Hasni, O. (2013, March). The impact of technology parks services on the high technology industry: A case study on Kulim Hi-Tech Park. *20th IBIMA Conference*, March 25-26, Kuala Lumpur, Malaysia.
- Rizzo, J. R., House, R. J., & Lirtzman, S. I. (1970). Role conflict and ambiguity in complex organizations. *Administrative Science Quarterly*, 15(2), 150–163.
- Abdul Khalid, S. N. (2010). Improving the service delivery: A case study of local authority in Malaysia. *Global Business Review*, 11(1), 65–77.
- Solomon, M. R., Surprenant, C., Czepiel, J. A., & Gutman, E. G. (1985). A role theory perspective on dyadic interactions: The service encounter. *Journal of Marketing*, 49(1), 99–111.
- Stryker, S. (2002). Traditional symbolic interactionism, role theory, and structural symbolic interactionism. In J. H. Turner (Ed.), *Handbook of Sociological Theory* (pp. 211–231). New York: Kluwer Academic/ Plenum Publishers.
- Stryker, S., & Macke, A. S. (1978). Status inconsistency and role conflict. *Annual Review of Sociology*, 4, 57–90.
- Turner, R. H. (2001). Role Theory. *Handbook of Sociological Theory*. Springer US.
- Valk, A., Järvet, S., Kratoviš, M., & Aron, S. (2014). Insights into the public defence speciality lecturer's roles in the institution of professional higher education and the controversial role expectations in developing their professional identity. In *Proceedings of Estonian Academy of Security Sciences 2014* (pp. 95–118). Tallinn, Estonia: Sisekaitseakadeemia.

Sengboon Lim, Jalaluddin Abdul Malek, & Zurinah Tahir
Understanding Local Authority Performance Through Role Theory

- Zakaria, Z., Ngah, N., Mustaffa, J., Noordin, N., & Mohamed Sawal, M. Z. H. (2011). Public satisfaction in local authorities: A case study in Kedah. *International Review of Social Sciences and Humanities*, 1(2), 46–54.
- Zikri, M., Tarmiji, M., & Aziz, A. M. (2015). Local government service efficiency: public participation matters. *International Journal of Social Science and Humanity*, 5(10), 827–831.



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REVIEWS ON THE SOCIO-ECONOMIC INDICATORS FOR SPATIAL URBAN SCALE

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Abstract

In recent decades, socio-economic variables have been widely used to investigate regional scale particularly in climate change studies. This paper aims to review appropriate socio-economic indicators for studies related to environment and climate at the level of spatial urban scale. It has been a challenge to select appropriate indicators because the interrelationship between human interference and the environment has proved difficult to be understood. The method used for the review is content analysis. The finding proposes the future research to choose suitable socio-economic indicators by referring to the scale of study and the spatial coverage of the topic. This article also provides a socio-economic framework to ensure that the appropriate of urban scale is the key aspect for selection of indicators in environmental and climate related studies.

Keyword: Environment, socio-economic indicators, urban scale

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INTRODUCTION

An assessment of indicators' relevance is required to ensure accurate information on the effect of climate on processes specifically the relationship between the local environment and human activities. Selecting the right indicators is important in order to refine the understanding of the linkages between the dynamic of climate and the socio-economic indicators. Although humans and the environment are interrelated, a very limited effort has been appropriately done to an assessment of socio-economic indicators in relation to environment (Bowen & Riley, 2003; Marin & Modica, 2017).

An indicator is a direct measure, proxy, or index used to understand, evaluate, and communicate the impacts and vulnerabilities that result from climate change and variability (Keeney et al., 2012). It is also a constructed measure of several variables that are combined to assess a particular problem that could not be captured using a single measure or proxy (Keeney & Gregory, 2005). In other words, an indicator used for urban scale analysis should be spatially measureable because climate is closely related to space. The identification of indicators should also be relevant with environment policy, thus there is a need to assess the policies using indicators that may impact the environment.

Indicators should be described by dynamic measures in order to understand and minimise the number of variables (Bowen & Riley, 2003). The characteristics of a good indicator should be measureable, precise, and reliable. The indicator is measureable in the sense that it can be quantified by using tools or methods. An indicator is considered precise in the sense that it is a defined tool and is direct toward the objective, which can avoid confusion. The indicator is also reliable by time intervals and by different observers.

Many studies have discussed the impact of socio-economic indicators to health (Galobardes et al., 2006; Turrell et al., 2002), and climate change (Hoorweg et al., 2011; Masson et al., 2014; Schlünzen & Bohnenstengel, 2016), but very few were conducted in an urban setting. Planners used to plan the future of an area mostly by looking at the socio-economic needs (Ng & Ren, 2015) without providing information on the climate. "Climate information" was rarely included at the strategic level, despite the planners having learned the importance of climate at university level. Yet, earlier study have attested the necessity of socio-economic factors to be implemented at the urban scale (Goodchild, Anselin, & Deichmann, 1993). Ng & Ren (2015) particularly noted that besides preparing a master plan, the economic and socio-economic benefits need to be stated as well. This gap points to the need to understand the link among socio-economic factors at urban scale.

Thus, the objective of this review is to analyse the selected socio-economic indicators specifically at urban scale. Socio-economic indicators for spatial analysis used in previous studies are reviewed in order to understand the methods

of the indicators' selection from a climatic perspective. Content analysis is used to achieve the study objective, covering range of related studies in climatic, socio-economic, environmental and urban planning.

ENVIRONMENT AND SOCIO-ECONOMIC INDICATORS

There are many studies conducted in several particular themes in relation to environmental and socio-economic indicator, ranging from the urban form, urban climate, air pollution, environmental study, urban growth, urban forest and urban infrastructure. It is a challenge to capture the alternate approach to understand the relationship between the environment and socio-economic indicators (Chrysoulakis et al., 2014). Each city has its own socio-economic and physical attributes and conditions that should be reflected in a scientific analysis and climate policy formation (Lee & Painter, 2015). Hence, the governing parties, such as local experts, local governments, and policymakers should cooperate with the local communities to understand the challenges and solutions for particular climatic problems.

All themes of development have different scale of spatial climate studies; either such study is a regional, global, meso or micro scale. Thus, scale analysis should be appropriately done before any measure of indicators is conducted. This is to ensure that the identified result explained what is the real scenario is about. By understanding the scale of spatial climate studies (such as regional, local, and micro scales), socio-economic indicators can be determined appropriately. Each indicator measures can give a different interpretation. The dimensions also vary; the spatial dimensions are measured in continuous scale, whereas the socio-economic dimension is observed based on average on over finite areas.

Spatial studies such as the urban form, urban growth, urban forest and urban infrastructure usually up to the urban level only; which can be identified as a local scale. A micro study; such as township level should use a micro indicator only. An urban climate, air pollution and environmental study, however, depends on the type of the scale; thus it is important to know the objectives of the research to be conducted.

Literatures in related studies indicate that authors tried to establish a relationship between different climate/spatial data and socio-economic data. An earlier study by Goodchild et al., (1993) proposed a general framework to integrate spatially referenced socio-economic data from heterogeneous sources, which can be digitised using geographical information system (GIS), but no further related research had been conducted until the recent research (Plumejeaud-Perreau et al., 2015). Prior studies have also shown that analysing socio-economic indicators can be linked with urban scale. One local-scale study by Khalyani et al. (2013) aimed to understand the relationship between socio-economic data (income data for population in urban and rural) and climatic variables (such as

mean annual rainfall and mean annual temperature). The study found that forest loss was due to the increase in urban population and the forest drying induced by climate change, but this trend has not occurred in the rural setting. Nesbitt and Meitner (2016) found a high correlation between vegetation cover and population density, house age, income, and race respectively and the importance of different measures of access to urban forest.

The availability of temporal remote sensing datasets supports the potential for an assessments of urban environmental quality and the quality of life. The selection of algorithm for remote sensing should rely on the purpose of each indicator and its impact on urban sustainability. The development of remote sensing is crucial because the information behind it should not be denied. The improved processing and development of algorithm has given a paradigm shift to the understanding of the real problem on the earth surface. Moderate resolution imaging spectroradiometer (MODIS) was used to link socio-economic indicators with environment (Grekousis, Mountrakis, & Kavouras, 2016). The information derived from remote sensing can be directly related to measuring important socio-economic impacts. Another research by Jing et al., (2016) found that indicators of human-related activity have a good correlation with the day-night band of the Visible Infrared Imaging Radiometer Suite (VIIRS) composite.

The selection of appropriate indicators is important for policy making in order to measure the condition and trends and to re-examine an ineffective policy. Several problems have been discovered including the availability of data and all social, economic, and environmental datasets are available on an annual basis. Another problem encountered was that many data were generated at a very high cost. Koomen (2003) interpreted several indicators that can be used to measure spatial analysis, which are population/demography, economic activity, and available facilities. These indicators are measured in terms of structure (actual state) and performance (development over time), and they are able to measure quantitatively and be analysed over time.

REVIEW ANALYSIS AND DISCUSSION

Indicators for Urban Scale

To evaluate the current knowledge on the interaction between socio-economic indicators and urban scale, a total of 48 studies on socio-economic indicators in urban scale were reviewed (Table 1).

Table 1 Summary of Socio-economic Indicators in Urban Scale Analysis

| | Economic Indicators | Social Indicators | Author | Main variable | Scale |
|----|--|--|---|----------------------|--------------|
| 1 | GDP per capita | | (Huang, Lu, & Sellers, 2007; Schwarz, 2010; United Nation Statistics Division, n.d.) | Income | Local |
| 2 | | Population number | (Schwarz, 2010) | Population | Local |
| 3 | | Population distribution | (Schwarz, 2010) | Population | Local |
| 4 | | Density of housing | (Schwarz, 2010) | Housing | Local |
| 5 | | Number of vehicles | (Schwarz, 2010) | Transportation | Local |
| 6 | | Local population estimation | (Jensen & Cowen, 1999) | Population | Local |
| 7 | Quality of life | | (Jensen & Cowen, 1999) | Housing | Local |
| 8 | Total GDP | | (Gong, Yu, Joesting, & Chen, 2013) | Income | Local |
| 9 | GDP of agriculture, industries and professions | | (Gong et al., 2013) | Income | Local |
| 12 | Local government revenue | | (Gong et al., 2013) | Income | Local |
| 13 | Resident income per capita | | (Gong et al., 2013) | Income | Local |
| 14 | | Total resident population | (Gong et al., 2013) | Population | Local |
| 15 | | Total resident household | (Gong et al., 2013) | Population | Local |
| 16 | | Natural increase of resident population | (Gong et al., 2013) | Population | Local |
| 17 | | Migrant increase | (Gong et al., 2013) | Population | Local |
| 18 | Total construction area of urban green land (ha) | | (Gong et al., 2013) | Population | Local |
| 19 | | Population density | (Frenkel & Orenstein, 2012; United Nation Statistics Division, n.d.; Vigu  , Hallegatte, & Rozenberg, 2014) | Population | Local |
| 20 | | Population density | (Plumejeaud-Perreau et al., 2015) | Population | Micro |
| 20 | | The number of households living in collective housings | (Plumejeaud-Perreau et al., 2015) | Housing | Micro |
| 21 | | the number of proprietary households, | (Plumejeaud-Perreau et al., 2015) | Housing | Micro |

| | | | | | |
|----|--|--|--|-----------------|-------|
| 22 | | the surface of their housings | (Plumejeaud-Perreau et al., 2015; Vigiúé et al., 2014) | Housing | Micro |
| 23 | Income ranges of household | | (Chakraborty, 2009; Plumejeaud-Perreau et al., 2015) | Income | Micro |
| 24 | Real GDP per capita growth rate | | (United Nation Statistics Division, n.d.) | Income | Meso |
| 25 | Production and consumption patterns | | (United Nation Statistics Division, n.d.) | Income | Meso |
| 26 | Investment share in GDP | | (United Nation Statistics Division, n.d.) | Income | Meso |
| 27 | | Population growth rate | (United Nation Statistics Division, n.d.) | Population | Meso |
| 28 | | Urban/rural migration rate | (United Nation Statistics Division, n.d.) | Population | Meso |
| 29 | | Calorie supply per capita | (United Nation Statistics Division, n.d.) | Health | Meso |
| 30 | Population size (region and locality) | | (Frenkel & Orenstein, 2012) | Population | Local |
| 31 | Population growth (region and locality) | | (Frenkel & Orenstein, 2012) | Population | Local |
| 32 | Proportional of population size and growth | | (Frenkel & Orenstein, 2012) | Population | Local |
| 33 | | Built space divided population size (%) | (Frenkel & Orenstein, 2012) | Population | Local |
| 34 | | Single-family and duplex versus high-rise building | (Frenkel & Orenstein, 2012) | Population | Local |
| 35 | Vehicles per household | | (Chakraborty, 2009; Frenkel & Orenstein, 2012) | Transportation | Local |
| 36 | Percentage labor force working outside of home community | | (Frenkel & Orenstein, 2012) | Population | Local |
| 37 | National main telephone lines/1000 people | | (Huang et al., 2007) | Facilities | Local |
| 38 | Vehicle/1000 population | | (Huang et al., 2007) | Transportation | Local |
| 39 | Employment | | (Chakraborty, 2009) | Quality of life | Local |
| 40 | Land and real estate values | | (Vigiúé et al., 2014) | Income | Local |
| 41 | Unemployment | | | Crime | |
| 42 | | Poverty | (Brochu et al., 2011) | Air pollution | Local |
| 43 | | Education | (Brochu et al., 2011) | Air pollution | Local |
| 44 | Income | | (Brochu et al., 2011) | Air pollution | Local |
| 45 | Mean income | | (Habermann, Souza, Prado, & Gouveia, 2014) | Air pollution | Local |

| | | | | |
|----|--|---|---------------|-------|
| 46 | The % of households connected to the sewage system | (Habermann et al., 2014) | Air pollution | Local |
| 47 | Occupation | (Fernández-Somoano, Hoek, & Tardon, 2013) | Air pollution | Local |
| 48 | Educational level | (Fernández-Somoano et al., 2013) | Air pollution | Local |

The scale of area demonstrates that local is the main scale used to analyses the indicators. As such, the content analysis confirms that little attention has been given on the use of socio-economic indicators towards urban scale. It is unclear as to how socio-economic indicators in local climate are selected because they are newly addressed (Lee & Painter, 2015; Sethi & de Oliveira, 2015), although they were already proposed in earlier studies (Goodchild et al., 1993). Yet, many researchers who have adopted the socio-economic indicators towards climate change have debated the subject in this century (Greer, Ng, & Fisman, 2008; Schlünzen & Bohnenstengel, 2016; Sethi & de Oliveira, 2015; Singh, 2010). However, it was found that some of the researches give focus to the urban form and urban growth analysis, i.e. nine and seven studies respectively. This review discovers that very lacking studies was found in the urban climate analysis as only recently this topic has emerged by researchers (Ng & Ren, 2015) as it is crucial to understand the behaviour of socio-economic analysis in the urban area, although it has widely used in the climate change study.

Socio-Economic Indicators

The finding also shows that GDP is the method adopted by most researchers (Gong et al., 2013; Plumejeaud-Perreau et al., 2015) as the economic indicator. However, it must be understood that adopting the method would not yield a scenario that is better or worse. For example, if one needs to measure the quality of life, using GDP would not be a good indicator. The increase of goods production will give a higher GDP, but environmental damage and health (noise or pollution) will not be considered, which indirectly gives a lower quality of life. Therefore, each of the elements should be seen from the objective of the study in order to scrutinize appropriate indicators.

Population density is also another indicator used to measure social indicators (Plumejeaud-Perreau et al., 2015; Schwarz, 2010; United Nation Statistics Division, n.d.). It should be concerned that if population density in an area is higher, the urban scale can be deteriorated. For example, Elsayed (2012) reported that higher population density may increase temperature value, and higher population density may increase pollution risk because the increased use of vehicles can increase the amount of carbon monoxide to the earth surface. Types of houses and household amounts (Frenkel & Orenstein, 2012; Gong et al., 2013;

Plumejeaud-Perreau et al., 2015) are also among the socio-economic indicators used to measure the individual trend of residents for particular years.

Further analysis has attested the lack of consistency between the scale of study and the indicators used. For example, studies in the urban scale (local scale) should have adopted GDP per capita and not the total GDP because the coverage of local area is not as wide as that of regional studies, which can cover a whole country. The latter case, if concern regional scale, justifies the use of total GDP. For urban studies, local scale can be used because it covers between 100 m to 1 km. Thus, it is important to understand that remote sensing data is different in terms of pixel size. For a broader image such as MODIS data, the pixel size is 1km x 1km. This type of image can adopt total GDP because it covers regional areas. In this regards, Table 2 demonstrates the relevant suitable indicators to be used depending on the field and topic of studies.

Table 2 Summary of Relevant Indicators According to Field and Topic

| Field | Topic | The relevance of indicators in the urban scale |
|----------------------|---|--|
| Urban form | Analysis of the urban form, morphology of the city and urban growth study | GDP per capita, population number, population distribution, density of housing, number of vehicle, household income, telephone lines |
| Urban climate | Climate analysis including meteorology and climatology analysis | Number of households, population density, the housing surface |
| Air pollution | Environmental problems; CO2 and other polluted gases, related to other variables | Unemployment, education, income, mean income, household connected to sewage system, occupation, education level |
| Environmental study | Open topic, particularly on air, soil and water issues | GDP per capita, production and consumption, investment share, population growth, Urban rural migration rate, calorie supply per capita, vehicle |
| Urban growth | Analysis on the increment of urban changes due to the intense of urbanization | Population size, population growth, density, family in terrace vs high rise building, vehicle per household, labour force percentage |
| Urban forest | Analysis focuses on the temporal study in urban forest fragmentation, carbon analysis and land cover analysis | Total GDP, GDP industries, GDP agriculture, GDP other professions, local government revenue, resident income per capita, total population, total household, increase of population (%), migrant increase of population |
| Urban infrastructure | Understanding on the population and infrastructure in urban or rural area | Population, quality of life |

Whilst, the proposed model shown in Figure 1 is intended to serve as a framework to facilitate the process of collecting information on the socio-economic indicators at the level of urban scale.

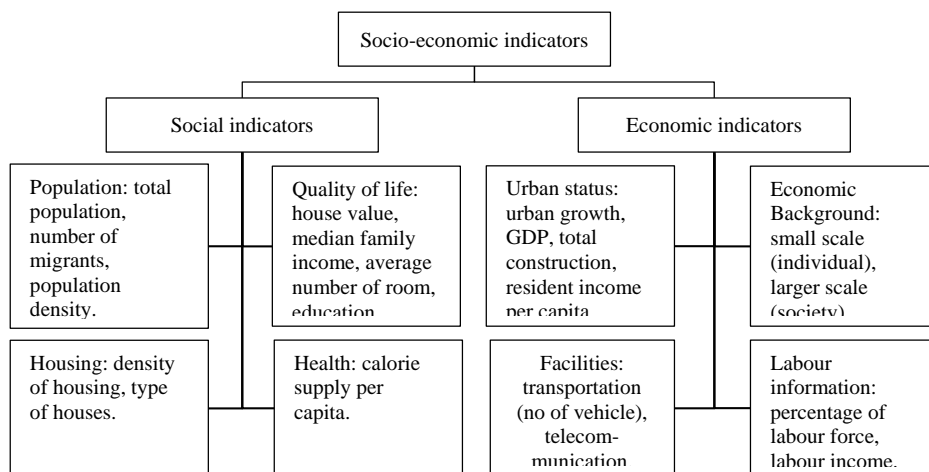


Figure 1 A conceptual model for socio-economic data collection associated with urban scale study

Each factor is categorised into each particular indicator that is related from the analysis in Table 1. The framework can facilitate planners to prioritise the important elements of socio-economic indicators that need to be used in the particular studies.

CONCLUSION

This paper reviews the current state of knowledge on socio-economic indicators in the urban scale setting. Understanding human-induced activities such as deforestation and air pollution can facilitate the understanding of individual or society role towards the environment. This paper suggests appropriate socio-economic indicators to be used in any urban scale and provides the conceptual framework. In fact, understanding the relationship between the socio-economic indicators towards environment is very crucial because it deals with different dimensions such as, regional, meso, local and micro.

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REFERENCES

Bowen, R. E., & Riley, C. (2003). Socio-economic indicators and integrated coastal management. *Ocean and Coastal Management*, 46(3–4), 299–312.

- Brochu, P. J., Yanosky, J. D., Paciorek, C. J., Schwartz, J., Chen, J. T., Herrick, R. F., & Suh, H. H. (2011). Particulate air pollution and socioeconomic position in rural and urban areas of the northeastern United States. *American Journal of Public Health*, 101(Suppl 1), S224–S230.
- Chakraborty, M. (2009). *An approach towards urban form analysis and landuse classification: A case of Ahmedabad, India*. International Institute for Geo-information Science and Earth Observation Enschede, The Netherlands.
- Chrysoulakis, N., Feigenwinter, C., Triantakostas, D., Penyevskiy, I., Tal, A., Parlow, E., Marconcini, M. (2014). A conceptual list of indicators for urban planning and management based on earth observation. *ISPRS Int. J. Geo-Inf*, 3, 980–1002.
- Elsayed, I. S. M. (2012). Effects of population density and land management on the intensity of urban heat islands: a case study on the city of Kuala Lumpur, Malaysia. In B. Monwar (Ed.), *Application of geographic information systems* (pp. 267-283). Rijeka: InTech.
- Fernández-Somoano, A., Hoek, G., & Tardon, A. (2013). Relationship between area-level socioeconomic characteristics and outdoor NO² concentrations in rural and urban areas of northern Spain. *BMC Public Health*, 13, 1. <http://doi.org/10.1186/1471-2458-13-71>
- Frenkel, A., & Orenstein, D. E. (2012). Can Urban growth management work in an era of political and economic change? *Journal of the American Planning Association*, 78(1), 16–33.
- Galobardes, B., Shaw, M., Lawlor, D. A., & Lynch, J. W. (2006). Indicators of socioeconomic position (Part 1). *Journal of Epidemiology and Community Health*, 60(1), 7–12.
- Gong, C., Yu, S., Joesting, H., & Chen, J. (2013). Determining socioeconomic drivers of urban forest fragmentation with historical remote sensing images. *Landscape and Urban Planning*, 117, 57–65.
- Goodchild, M. F., Anselin, L., & Deichmann, U. (1993). A framework for the areal interpolation of socioeconomic data. *Environment and Planning A*, 25(3), 383–397.
- Greer, A., Ng, V., & Fisman, D. (2008). Climate change and infectious diseases in North America: The road ahead. *Canadian Medical Association Journal*, 178(6), 715-722.
- Grekousis, G., Mountrakis, G., & Kavouras, M. (2016). Linking MODIS-derived forest and cropland land cover 2011 estimations to socioeconomic and environmental indicators for the European Union's 28 countries. *GIScience & Remote Sensing*, 53(1), 122–146.
- Habermann, M., Souza, M., Prado, R., & Gouveia, N. (2014). Socioeconomic inequalities and exposure to traffic-related air pollution in the city of Sao Paulo, Brazil. *Cad Saude Publica*, 30(1), 119–125.
- Hoornweg, D., Freira, M., Lee, M. J., Bhada-Tata, P., & Yuen, B. (Eds.) (2011).

- Cities and climate change: Responding to an urgent Agenda*. Washington D.C.: The World Bank.
- Huang, J., Lu, X. X., & Sellers, J. M. (2007). A global comparative analysis of urban form: Applying spatial metrics and remote sensing. *Landscape and Urban Planning*, 82(4), 184–197.
- Jensen, J., & Cowen, D. (1999). Remote sensing of urban suburban infrastructure and socio-economic attributes. *Photogrammetric Engineering and Remote Sensing*, 65(5), 611–622.
- Jing, X., Shao, X., Cao, C., Fu, X., & Yan, L. (2016). Comparison between the Suomi-NPP day-night band and DMSP-OLS for correlating socio-economic variables at the provincial level in China. *Remote Sensing*, 8(1), 1–24.
- Keeney, R. L., & Gregory, R. S. (2005). Selecting attributes to measure the achievement of objectives. *Operations Research*, 53, 1–11.
- Kenney, M. A., Chen, R. S., Maldonado, J., & Quattrochi, D. (2012). Climate change impacts and responses: Societal indicators for the national climate assessment. *National Climate Assessment (NCA)*, 5c, 1–111.
- Khalyani, A. H., Mayer, A. L., Falkowski, M. J., & Muralidharan, D. (2013). Deforestation and landscape structure changes related to socioeconomic dynamics and climate change in Zagros forests. *Journal of Land Use Science*, 8(3), 321–340.
- Koomen, E. (2003). *Spatial analysis in support of physical planning* (Dissertation). Vrije Universiteit, Amsterdam.
- Lee, T., & Painter, M. (2015). Urban climate comprehensive local climate policy : The role of urban governance. *Urban Climate*, 14, 566–577.
- Marin, G., & Modica, M. (2017). Socio-economic exposure to natural disasters. *Environmental Impact Assessment Review*, 64, 57–66.
- Masson, V., Marchadier, C., Adolphe, L., Aguejdad, R., Avner, P., Bonhomme, M., ... Zibouche, K. (2014). Adapting cities to climate change: A systemic modelling approach. *Urban Climate*, 10(P2), 407–429.
- Nesbitt, L., & Meitner, M. J. (2016). Exploring relationships between socioeconomic background and urban greenery in Portland, OR. *Forests*, 7(8), 1–14.
- Ng, E., & Ren, C. (Eds.) (2015). *The urban climatic map for sustainable urban planning*. New York: Routledge.
- Plumejeaud-Perreau, C., Poitevin, C., Plumejeaud-perreau, C., Poitevin, C., & Build, N. L. (2015, July). Building local climate zones by using socio-economic and topographic vectorial databases. *ICUC9*, July 20-24 July, Toulouse, France.
- Schlünzen, K. H., & Bohnenstengel, S. I. (2016). Socio-economic impacts: Urban climate. In M. Quante and F. Colijn (Eds.), *North Sea region climate change assessment* (pp. 417-429). Springer International Publishing.

- Schwarz, N. (2010). Urban form revisited-Selecting indicators for characterising European cities. *Landscape and Urban Planning*, 96(1), 29–47.
- Sethi, M., & de Oliveira, J. P. (2015). From global “North–South” to local “Urban–Rural”: A shifting paradigm in climate governance? *Urban Climate*, 14, 529–543.
- Singh, M. K. (2010). *Socio-economics of climate change (impact on agriculture land use changes in India)* (Doctoral dissertation). Szent István University, Gödöllő.
- Turrell, G., Hewitt, B., Patterson, B., & Oldenburg, B. (2002). Socioeconomic differences in food purchasing behaviour and suggested implications for diet-related health promotion. *J Hum Nutr Diet.*, 15(5), 355–364.
- United Nation Statistics Division. (n.d.). Environmental indicators. Retrieved October 12, 2016, from <http://unstats.un.org/unsd/environment/indicators.htm>
- Viguié, V., Hallegatte, S., & Rozenberg, J. (2014). Downscaling long term socio-economic scenarios at city scale: A case study on Paris. *Technological Forecasting and Social Change*, 87, 305–324.

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