MOSQUE TOURISM IN THE DIGITAL AGE: EXAMINING GENERATION Y'S VIRTUAL REALITY EXPERIENCES

Siti Salwa Md Sawari[1], Sıtı Nuur Hamızah Mat Desa [2], Siti Rahayu Hussin[3], Mohamed Syazwan Ab Talib[4]

[1]*Kulliyyah of Sustainable Tourism and Contemporary Languages,*
INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA
[2] *Kulliyyah of Sustainable Tourism and Contemporary Languages,*
INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA
[1,3] *School of Business & Economics,*
UNIVERSITI PUTRA MALAYSIA
[4] *UBD School of Business and Economics,*
UNIVERSITI BRUNEI DARUSSALAM

Abstract

The rise in Muslim travelers and the swift evolution of virtual reality (VR) technology is fundamentally transforming the global tourism industry. This convergence underscores the immediate need for further academic exploration into the potential uses of virtual reality in the domain of Muslim tourism, creating a promising avenue for future research. In this vein, our study aims to evaluate how Generation Y perceives the concept of participating in virtual reality mosque tourism, considering both cognitive and emotional responses from this demographic's perspective. The primary goal of our research is to uncover Generation Y's genuine experiences in virtual reality mosque tourism. Our quantitative research methodology involved 100 Muslim travelers aged between 29 and 41 years. Data analysis was conducted using the IBM Statistical Package for Social Science (SPSS), encompassing both descriptive and Pearson correlation analyses. The findings of our analysis, which indicate that a significant majority of participants found the 360-degree Virtual Reality Mosque Tour enjoyable and captivating, have significant implications for understanding cognitive and emotional responses related to the intention to visit mosques in the tourism context. These findings could potentially shape the future landscape of mosque tourism, making our research a crucial contribution to the field.

Keywords: Mosque tourism, virtual reality, cognitive response, affective response

[1] Corresponding author Email: salwa_sawari@iium.edu.my

INTRODUCTION

Mosque tourism in Malaysia has witnessed a noteworthy surge, highlighting an emerging trend combining religious and cultural exploration with contemporary travel preferences (Azizan et al. 2023). Malaysia, celebrated for its abundant Islamic heritage and architectural wonders (Sukiman, 2023), has gained increasing popularity among tourists seeking a distinctive fusion of spirituality, history, and tourism. Additionally, Malaysia has witnessed a surge in curated mosque tour packages that provide comprehensive insights into religious sites' cultural and historical significance. These packages often include guided tours, informative sessions, and cultural performances, offering tourists a holistic understanding of Islamic heritage. Such curated experiences contribute to mosque tourism's appeal by providing visitors with a structured and educational context. The Malaysian government's efforts to promote religious tourism have also played a pivotal role in the upward trajectory of mosque tourism. Initiatives to improve infrastructure, enhance accessibility, and facilitate a welcoming environment for visitors have contributed to Malaysia's position as a preferred destination for those seeking spiritual enrichment.

One significant trend is integrating technology, particularly virtual reality (VR), to enhance the mosque tourism experience. Several mosques in Malaysia have begun integrating VR elements, enabling virtual tours that allow individuals to explore these sacred spaces remotely (Xian, 2019). Besides, the global pandemic heightened this innovation and has appealed to tech-savvy travelers, including the younger demographic, who seek immersive and interactive encounters. Digital media management, particularly Virtual Reality (VR), significantly enhances mosque tourism, offering immersive experiences that engage and captivate visitors in novel ways. The progress in digital media has transformed how tourists behave, making it the favored approach for travelers to plan, research, and make bookings for their journeys (Dewi et al., 2023).

In the past year, extensive research has primarily focused on the impact of mosque virtual reality on Generation Z's cognitive and affective responses, particularly regarding behavioral intention, as demonstrated by Sawari, Hussin, and Rahman (2021). This research investigates Generation Y's cognitive and affective responses toward their intention to visit virtual reality mosques for tourism purposes. Additionally, there is a significant focus on the use of virtual reality technology in the context of historical monuments, as exemplified by the development of a virtual reality use case for an interactive and multi-platform visit to the historical monuments of the city of Fez, mentioned by Maach et al. (2018).

Hence, this study aims to identify the characteristics of an authentic virtual mosque experience and analyze Generation Y's cognitive and affective responses concerning their intentions to visit. Furthermore, a recent study has explored the relationship between authentic experience, cognitive response,

affective response, and the intention to travel to the mosque. This academic discourse contributes to the growing body of knowledge regarding the application of virtual reality technology in various contexts and its potential implications for individual well-being and tourism industry practices."

METHODOLOGY

This research employs a quantitative approach involving a larger sample size and a quicker data collection process. It often captures data on a surface level, overlooking a test-taker's emotional and interpretive aspects (Rahman, 2016). Quantitative research focuses on collecting data from individuals during the data-gathering stage, helping establish baseline information and reduce potential elitist bias. During the data analysis stage, quantitative data can aid in assessing the generalizability of qualitative findings and shedding new light on them (Johnson & Onwuegbuzie, 2007).

According to Xu and Felicen (2021), the quantitative approach offers the advantage of providing researchers with complex, objective data, which can be crucial in arriving at definitive conclusions. This method boasts several benefits, contributing to its popularity in research projects. Additionally, this research adopts a cross-sectional study design. As Kesmodel (2018) noted, a cross-sectional study examines a population at a specific time by gathering data from individuals within that population. This approach involves collecting data on various variables of interest from different individuals or groups within the population without following them over time (Hassandra et al., 2015). While cross-sectional studies have limitations in establishing causal relationships between variables, they serve a valuable purpose in research. In this study, the cross-sectional design will determine the influence of various variables on tourist visit intentions in 360-degree virtual reality mosque tourism.

Sample

To ascertain the appropriate sample size, the initial step is to identify the population, focusing here on Malaysian Muslim tourists from Generation Y. The Generation Y population in Malaysia is of paramount interest due to its significant influence on various societal aspects. Unfortunately, specific data on the exact size of Generation Y in Malaysia is limited. Nevertheless, available sources suggest that Generation Y constituted a substantial segment, amounting to 13.44 million people or 42% of Malaysia's total population in 2018 (Memon et al., 2019; Jiang et al., 2022).

For data collection, researchers utilized a non-random sampling strategy, distributing an online questionnaire via Google Forms due to time constraints. This study seeks to assess the adequacy of a sample size of 100 responses for data analysis, aligning with Comrey and Lee's assertion that a sample size of up to 100 respondents, while considered weak, can still offer

valuable insights when analyzing extensive and informative data (Kubicová & Záhumenská, 2017). Determining an appropriate sample size is critical in research studies as it directly influences the validity and generalizability of finding.

FINDINGS
Descriptive Analysis
The data analysis in this part aims to identify Generation Y's authentic experience with virtual reality mosque tourism. The description is based on percentage mean values for each item underlying each specified variable.

Table 1: The percentages for the authentic experience

Items	Mean	Std. Deviation
Using the 360-degree VR Mosque Tour provided me with an authentic experience.	5.04	.909
Using the 360-degree VR Mosque Tour provided me with a genuine experience	5.02	1.004
Using the 360-degree VR Mosque Tour provided me with an exceptional experience	4.79	.945
Using the 360-degree VR Mosque Tour provided me with a unique experience	5.06	.972
Using the 360-degree VR Mosque Tour provided me with an interactive experience	5.07	1.056

In accordance with the data presented in Table 1 shows the mean value and standard deviation for each item under authentic experience. The item "using the 360-degree VR Mosque Tour provides me with interactive experience" was recorded as the highest with a mean of 5.07.

Subsequently, the item pertaining to "using the 360-degree VR Mosque Tour provide me with unique experience" ranks second, with a mean score of 5.06. Additionally, both items signifying "using the 360-degree VR Mosque Tour provide me with genuine experience" and "using the 360-degree VR Mosque Tour provide me with authentic experience" have garnered mean scores of 5.02 and 5.04, respectively. Lastly, it is discernible from the table that the item "using the 360-degree VR Mosque Tour provides me with exceptional experience" exhibits the lowest mean score of 4.79. Using the 360-degree VR Mosque Tour can provide tourists with an interactive experience.

Table 2: Cognitive response of Generation Y toward virtual reality mosque tourism

Items	Mean	Std. Deviation
I gain knowledge from using the 360-degree VR Mosque Tour	4.98	.974
Using the 360-degree VR Mosque Tour is useful for collecting information	4.86	.910
Using the 360-degree VR Mosque Tour sparked my imagination	4.80	1.005
Using the 360-degree VR Mosque Tour allows me to explore new Mosque destination	5.04	.983

Based on Table 2, "Using the 360-degree VR Mosque Tour allows me to explore new Mosque destination," shows the highest mean of 5.04. Next, the item "I gain knowledge from using the 360-degree VR Mosque Tour" recorded 4.98. Moreover, the items "Using the 360-degree VR Mosque Tour is useful to collect information" and "Using the 360-degree VR Mosque Tour spark my imagination" with mean scores of 4.86 and 4.80 respectively. This shows that the 360-degree VR Mosque Tour allows tourists to explore new mosque destinations and gain knowledge.

Table 3: Affective response of Generation Y toward virtual reality mosque tourism

Items	Mean	Std. Deviation
I am completely involved in the 360-degree VR Mosque Tour	4.66	1.224
I am deeply impressed by the 360-degree VR Mosque Tour	4.96	.886
I feel spiritually connected with the 360-degree VR Mosque Tour	4.96	1.145
I am closely related to the content when using the 360-degree VR Mosque Tour	4.79	1.056
I am attached to using the 360-degree VR Mosque Tour	4.63	1.069
Using the 360-degree VR Mosque Tour is part of my life	4.63	1.268
Using the 360-degree VR Mosque Tour is essential to me	4.57	1.174
Using the 360-degree VR Mosque Tour makes me forget where I am	4.42	1.182
Using the 360-degree VR Mosque Tour is enjoyable for me	5.00	1.063
Using the 360-degree VR Mosque Tour is pleasurable for me	5.06	1.135
Using the 360-degree VR Mosque Tour keeps me relaxing	4.69	1.021

Items	Mean	Std. Deviation
Using the 360-degree VR Mosque Tour keeps me happy	4.88	1.165
When I am using the 360-degree VR Mosque Tour, I feel totally captivated	5.00	1.005
When I was using the 360-degree VR Mosque Tour, I forgot all the concern	4.77	1.013
When I am using the 360-degree VR Mosque Tour, time seems to pass very quickly	4.68	1.171

Table 3, "Using the 360-degree VR Mosque Tour is pleasurable for me where I am," shows the highest mean of 5.06. Then, with a mean of 5.00, it was recorded for "Using the 360-degree VR Mosque Tour is enjoyable for me," followed by "When I am using the 360-degree VR Mosque Tour, I feel totally captivated" with a mean of 5.00. Furthermore, "When I am using the 360-degree VR Mosque Tour, I forgot all concern" and "When I am using the 360-degree VR Mosque Tour, time seems to pass very quickly" recorded the mean of 4.77 and 4.68, respectively. Moreover, "I am attached to using the 360-degree VR Mosque Tour" and "Using the 360-degree VR Mosque Tour is part of my life" share the same mean of 4.63. Lastly, "Using the 360-degree VR Mosque Tour makes me forget where I am" recorded the least mean with 4.42. Based on the result, using the 360-degree VR Mosque Tour is more pleasurable and enjoyable.

Pearson Correlation

Table 4: Pearson Correlations between mosque tourism

Variable	n	M	SD	1	2	3
Intention to travel to Mosque	100	4.996	.892	-		
Authentic experience	100	4.920	.889	.868**	-	
Cognitive response	100	4.780	.956	.784**	812**	-
Affective response	100	4.774	.996	.893**	868**	818**

A Pearson correlation coefficient was calculated to assess the relationship between authentic experience and the intention to travel to the mosque. There was a significant strong positive relationship between the authentic experience and the intention to travel to the mosque, r (98) = .889**, *p* = 0.000. A Pearson correlation coefficient was computed to assess the linear relationship between cognitive response and the intention to travel to the mosque. This study reveals a strong positive correlation between cognitive response and the intention to travel to the mosque, r (98) > .956**, *p* = 0.00. A Pearson correlation coefficient was computed to assess the linear relationship between

affective response and the intention to travel to the mosque. This study indicates a robust positive correlation between affective response and the intention to travel to the mosque, with a correlation coefficient of r (98) > .996** and $p = 0.00$. This study's results show a relationship between authentic experience, cognitive response, affective response, and the intention to travel to the mosque.

DISCUSSION

The results obtained from the survey concerning the VR Mosque Tour indicate that most respondents have expressed agreement with using the 360-degree VR Mosque Tour to offer them an interactive experience. Additionally, these findings carry significant implications for the application of VR technology in the realm of tourism and its potential applications in various therapeutic and immersive contexts. These results are consistent with earlier research efforts that have demonstrated the potential of VR technology in providing vivid and immersive experiences (Fan et al., 2022), exemplified by using 360-degree tours in healthcare settings to alleviate preoperative anxiety (Surducan, 2023). These findings strongly suggest that integrating virtual reality technology into mosque tours can enhance visitor experiences and facilitate the dissemination of knowledge about religious sites.

Furthermore, this study shows that the 360-degree VR Mosque Tour allows tourists to explore new mosque destinations and gain knowledge. Incorporating the 360-degree VR Mosque Tour signifies a transformative avenue for tourists, offering the opportunity to explore previously inaccessible mosque destinations while acquiring fresh knowledge. This immersive experience transcends traditional boundaries, allowing visitors to engage with diverse cultural and historical aspects (Škola et al., 2020). Visually navigating these sacred spaces, tourists gain a deeper understanding of religious architecture, rituals, and the rich heritage associated with mosques. This novel approach enriches the tourism experience by providing unique insights and serves as an educational tool (Bell & Fogler, 1995), fostering cross-cultural understanding (Shadiev et al., 2021) and appreciation. Ultimately, the 360-degree VR Mosque Tour emerges as a catalyst for immersive and enlightening travel experiences.

Moreover, the study's findings suggest that employing the 360-degree VR Mosque Tour elicits a more pleasurable and enjoyable experience for participants. This positive response underscores virtual reality's immersive nature, enhancing users' engagement and satisfaction (Sann et al., 2023). The technology's ability to simulate a comprehensive exploration of mosque environments contributes to a heightened sense of enjoyment, surpassing traditional modes of engagement. As a result, the 360-degree VR Mosque Tour emerges as a compelling tool for its educational value and its capacity to elevate the overall tourism experience, providing users with a more gratifying and immersive encounter with mosque destinations.

The study's outcomes reveal a compelling interconnection between authentic experience, cognitive response, affective response, and the travel intentions of Generation Y toward mosques. This implies that the younger demographic's inclination to visit mosques is influenced by both genuine experiences and cognitive (Côté & Bouchard, 2009) and emotional responses (Gorini et al., 2009). The findings underscore the importance of creating authentic and meaningful encounters for Generation Y in mosque tourism initiatives. It is imperative that policymakers incorporate sustainable social elements into the planning procedure to ensure that these initiatives align with broader societal goals and values Taiwo, Samsudin, & Ayodele, 2021). Ultimately, these results contribute to a nuanced comprehension of the multifaceted factors shaping the travel intentions of Generation Y in the context of religious and cultural exploration.

CONCLUSION

In summary, the confluence of rising Muslim travelers and the swift evolution of virtual reality (VR) technology are reshaping global tourism. This convergence emphasizes the imperative need for extensive scholarly exploration into the potential applications of VR in Muslim tourism, opening avenues for future research. This study, targeting Generation Y, scrutinizes their cognitive and affective responses to virtual reality mosque tourism. The quantitative methodology involving 100 Muslim participants reveals a noteworthy consensus, expressing admiration for the 360-degree Virtual Reality Mosque Tour as an enjoyable and captivating experience. These findings have substantial implications for understanding the cognitive and affective aspects influencing mosque tourism intentions, potentially shaping the future of this tourism domain.

REFERENCES

Azizan, M., Zulkeflli, A., Khadar, Z., Noor, S., & Roslan, E. S. (2023). Mosque tourism satisfaction: A comparative study of Malaysia, Thailand, and Indonesia. *Information Management and Business Review, 15*(4 (SI) I), 369-380.

Bell, J. T., & Fogler, H. S. (1995). The investigation and application of virtual reality as an educational tool. In *Proceedings of the American Society for Engineering Education Annual Conference* (Vol. 2513).

Côté, S., & Bouchard, S. (2009). Cognitive mechanisms underlying virtual reality exposure. *CyberPsychology & Behavior, 12*(2), 121-129. https://doi.org/10.1089/cpb.2008.0008

Dewi, Y., Liyushiana, Y., Femmy, I. D., Budi, P., & Wan Nor Azilawanie, T. I. (2023). The effectiveness of digital media management by local governments in tourism marketing. *Planning Malaysia Journal, 21*(6). https://doi.org/10.21837/pm.v21i30.1382

Fan, X., Jiang, X., & Deng, N. (2022). Immersive technology: A meta-analysis of augmented/virtual reality applications and their impact on tourism experience.

Tourism Management, 91, 104534. https://doi.org/10.1016/j.tourman.2022.104534

Gorini, A., Mosso, J. L., Mosso, D., Pineda, E., Ruíz, N. L., Ramíez, M., ... & Riva, G. (2009). Emotional response to virtual reality exposure across different cultures: The role of the attribution process. *Cyberpsychology & Behavior, 12*(6), 699-705. https://doi.org/10.1089/cpb.2009.0192

Hassandra, M., Goudas, M., & Theodorakis, Y. (2015). Exercise and smoking: A literature overview. *Health, 07*(11), 1477-1491. https://doi.org/10.4236/health.2015.711162

Jiang, N., Kaur, M., Adnan, M. M. B. M., Turner, J. J., & Goh, S. K. (2022). An antecedent study of mobile social game addiction vs. virtual goods purchase. *International Journal of Technology and Human Interaction, 18*(1), 1-20. https://doi.org/10.4018/ijthi.2022010105

Kesmodel, U. S. (2018). Cross-sectional studies–what are they good for? *Acta Obstetricia et Gynecologica Scandinavica, 97*(4), 388-393.

Kubicová, J., & Záhumenská, M. (2017). Survey research on whether taxes affect decisions of Slovak managers on cross-border financial restructuring operations. *Journal of International Studies, 10*(2), 74-89. https://doi.org/10.14254/2071-8330.2017/10-2/5

Maach, I., Azough, A., & Meknassi, M. (2018). Development of a use case for virtual reality to visit a historical monument. In *2018 International Conference on Intelligent Systems and Computer Vision (ISCV)*. https://doi.org/10.1109/isacv.2018.8354052

Memon, R. H., Kazi, A. G., Zubedi, M. Y., & Ansari, A. (2019). Factors affecting impulse purchase behavior in Hyderabad: Marketing perspective. *International Journal of Entrepreneurial Research, 2*(1), 20-24. https://doi.org/10.31580/ijer.v1i2.506

Onwuegbuzie, A. J., Johnson, B. R., & Turner, L. A. (2007). Toward a definition of mixed methods research. Journal of mixed methods research, 1(2), 112-133.

Rahman, M. S. (2016). The advantages and disadvantages of using qualitative and quantitative approaches and methods in language "testing and assessment" research: A literature review. *Journal of Education and Learning, 6*(1), 102. https://doi.org/10.5539/jel.v6n1p102

Sawari, Siti Salwa MD ,Hussin, Siti Rahayu & Rahman, Nur Hidayah Abd (2021) Exploring Tourist Behavior Intention in Virtual Reality Mosque Tourism Using an Extended Stimulus-Organism-Response Model:Business Law, and Management (BLM2): International Conference on Advanced Marketing (ICAM4) http://repository.kln.ac.lk/handle/123456789/23576

Sann, R., Luecha, P., & Rueangchaithanakun, R. (2023). The effects of virtual reality travel on satisfaction and visiting intention utilizing an extended stimulus-organism-response theory: Perspectives from Thai tourists. *Journal of Hospitality and Tourism Insights*. Advance online publication. https://doi.org/10.1108/JHTI-05-2023-0321

Shadiev, R., Wang, X., & Huang, Y. M. (2021). Cross-cultural learning in virtual reality environment: Facilitating cross-cultural understanding, trait emotional intelligence, and sense of presence. *Education Tech Research Dev, 69*, 2917-2936. https://doi.org/10.1007/s11423-021-10044-1

Škola, F., Rizvić, S., Cozza, M., Barbieri, L., Bruno, F., Skarlatos, D., & Liarokapis, F. (2020). Virtual reality with 360-video storytelling in cultural heritage: Study of presence, engagement, and immersion. *Sensors, 20*(20), 5851. https://doi.org/10.3390/s20205851

Sukiman, M. A. M., & Alias, N. U. A. U. (2023). Establishment of Tamu welcoming hub: A look-out platform, entrance archway and bridge railings at the KAED Malay Heritage Living LAB. *Design Ideals Journal, 5*(2).

Surducan, L. (2023). Music assisted progressive muscle relaxation and virtual reality exposure therapy for specific phobia: Two case studies [University of Miami]. https://scholarship.miami.edu/esploro/outputs/graduate/Music-Assisted-Progressive-Muscle-Relaxation-and/991031825004902976

Taiwo, O. M., Samsudin, S., & Ayodele, O. M. (2021). Integration of Sustainability Indicators in Urban Formation: A Gap Analysis. Planning Malaysia, 19. DOI: https://doi.org/10.21837/pm.v19i18.1040

Xu, J., & Felicen, S. S. (2021). Hotel employee commitment and satisfaction in Anhui, province of China. *International Journal of Research Studies in Management, 9*(4). https://doi.org/10.5861/ijrsm.2021.m7739

Xian, L. J. (2019). Mosque ventures into virtual reality. *The Star*. https://www.thestar.com.my/metro/metro-news/2019/04/22/mosque-ventures-into-virtual-reality