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“Optimizing Innovation in Knowledge, Education and Design”

EXTENDED ABSTRACT



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Azni Syafena Andin Salamat
Nurfaznim Shuib

Cover design : Syahrini Shawalludin
Layout : Syahrini Shawalludin

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Assalamualaikum warahmatullahi wabarakatuh,



First and foremost, I would like to express my gratitude to the organizing committee of i-Spike 2023 for their tremendous efforts in bringing this online competition a reality. I must extend my congratulations to the committee for successfully delivering on their promise to make i-Spike 2023 a meaningful event for academics worldwide.

The theme for this event, 'Optimizing Innovation in Knowledge, Education, and Design,' is both timely and highly relevant in today's world, especially at the tertiary level. Innovation plays a central role in our daily lives, offering new solutions for products, processes, and services. By adopting a strategic approach to 'Optimizing Innovation in Knowledge, Education, and Design,' we have the potential to enhance support for learners and educators, while also expanding opportunities for learner engagement, interactivity, and access to education.

I am awed by the magnitude and multitude of participants in this competition. I am also confident that all the innovations presented have provided valuable insights into the significance of innovative and advanced teaching materials in promoting sustainable development for the betterment of teaching and learning. Hopefully, this will mark the beginning of a long series of i-Spike events in the future.

It is also my hope that you find i-Spike 2023 to be an excellent platform for learning, sharing, and collaboration. Once again, I want to thank all the committee members of i-Spike 2023 for their hard work in making this event a reality. I would also like to extend my congratulations to all the winners, and I hope that each of you will successfully achieve your intended goals through your participation in this competition.

Professor Dr. Roshima Haji Said
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UiTM KEDAH BRANCH



WELCOME MESSAGE (i-SPIKE 2023 CHAIR)



We are looking forward to welcoming you to the 3rd International Exhibition & Symposium on Productivity, Innovation, Knowledge, and Education 2023 (i-SPIKE 2023). Your presence here is a clear, crystal-clear testimony to the importance you place on the research and innovation arena. The theme of this year's Innovation is "*Optimizing Innovation in Knowledge, Education, & Design*". We believe that the presentations by the distinguished innovators will contribute immensely to a deeper understanding of the current issues in relation to the theme.

i-SPIKE 2023 offers a platform for nurturing the next generation of innovators and fostering cutting-edge innovations at the crossroads of collaboration, creativity, and enthusiasm. We enthusiastically welcome junior and young inventors from schools and universities, as well as local and foreign academicians and industry professionals, to showcase their innovative products and engage in knowledge sharing. All submissions have been rigorously evaluated by expert juries comprising professionals from both industry and academia.

On behalf of the conference organisers, I would like to extend our sincere thanks for your participation, and we hope you enjoy the event. A special note of appreciation goes out to all the committee members of i-SPIKE 2023; your dedication and hard work are greatly appreciated.

Dr. Junaida Ismail

Chair

3rd International Exhibition & Symposium Productivity, Innovation, Knowledge, and Education 2023 (i-SPIKE 2023)

ACCESS AUDIT & SCORING COMPLIANCE ASSESSMENT FOR THE ELDERLY- FRIENDLY MOSQUE. CASE STUDY: HERITAGE MOSQUE - MASJID DIRAJA SULTAN SULEIMAN & NATIONAL MOSQUE OF MALAYSIA

Che Muhamad Hanif Che Wil @ Ismail
Centre of Studies for Property Investment, College of Built
Environment, Universiti Teknologi MARA (UiTM)

Hafiszah Ismail
Senior Lecturer, College of Built
Environment, Universiti Teknologi
MARA (UiTM)

ABSTRACT

The tremendous growth in the senior population makes Malaysia's ageing phenomenon inevitable. Additionally, Malaysia is seeing a tremendous rise in the urban population. It is becoming more and more important to examine how urbanisation affects the elderly because of how quickly it is occurring and how it affects the population. To effectively prepare nations for the opportunities and problems that an ageing population will present, a detailed assessment of their requirements is necessary. For the current policy and related elderly care provision framework to be changed, it is essential to comprehend the primary concerns surrounding the needs of the Malaysian elderly community. Thus, this study aims to produce an access audit by scoring for elderly- friendly heritage building focusing on mosque with reference to Malaysian Standards and related Acts/By-Laws. This study uses methodology (i) interview to validate draft access audit from literature and (ii) observation on scoring of access audit was used to obtain the data. Access audit is an examination of an existing building, its facilities and services, against pre-determine criteria to access its usability. The selected heritage building for this study is Masjid DiRaja Sultan Suleiman and National Mosque of Malaysia. In conclusion, this research to study the access audit by scoring for the elderly- friendly heritage building (mosque) to provided comfortably and safe to elderly.

Keywords: *Elderly, Universal Design, Heritage Building, Mosque, Malaysian Standard.*

INTRODUCTION

The present and future of nations are deeply influenced by their pasts, and this applies to the architectural world as well. Heritage buildings, which possess historical, architectural, cultural, aesthetic, or ecological significance, play a crucial role in conveying a city's architectural history. These structures, including mosques, are safeguarded by authorities and are listed as World Heritage Sites by UNESCO.

Mosques, known as "masjids," hold great religious and spiritual importance for Muslims. They serve as places of worship, religious education, and community gatherings, promoting a sense of submission to Allah. Islamic city planning highlights the relationship between religion and the city, with mosques serving as focal points regulating human activities (Ismail, 2003).

To maintain the legacy of cultural heritage and prevent deterioration, specific climatic conditions must be preserved for these historic structures. As an example, Selangor, a state in Malaysia, has an old city called Klang, which is gazetted as Bandar DiRaja under the National Heritage Act. The preservation and modernization of heritage buildings, including mosques, are vital to maintain their functions and ensure accessibility for all, especially the elderly.

Statistics show a significant elderly population in Malaysia, emphasizing the need for facilities and accessibility measures in heritage buildings like mosques. By embracing Universal Design principles, these structures can be made comfortable and convenient for all visitors, ensuring the continuity of their cultural significance and heritage.

Elderly Muslims have frequently expressed their frustration and dilemma when visiting the main mosques in Malaysia. According to Firmanshah (2020), elderly people also have the intention and desire to visit mosques to pray in congregation with other Muslims, but when the mosque or other facility they are visiting lacks of good infrastructure or more or less an accessible setting for elderly people, it makes their trip there challenging and depressing. Thus, constructing user friendly and barrier-free architecture-interior design is necessary in the built environment. (Zen et al 2014; Rahim, 2013; Firmanshah, 2020).

A Number of studies have found the cases of facilities in public buildings which are inaccessible by users & visitors with different abilities (Rahim et al., 2014). A study on the mosque accessibility is of the utmost significance because it serves as the Islamic planning concept's focal point. The purpose of this paper is to demonstrate the work done by the Department of Standards Malaysia in producing MS 1184, which should be studied in conjunction with the following codes of practice:

- i. MS 1184, Universal Design and Accessibility in The Built Environment - Code of Practice (Second Revision)
- ii. MS 2015-1, Public Toilets - Minimum Design Criteria
- iii. MS 2426, Planning and Designing for Basement Parking - Code of Practice
- iv. UBBL 1984 (Amend 2021) - Uniform Building By-Law

These codes of practice provide comprehensive guidelines on mosque related matters. They have taken into account the needs of the elderly in using and enjoying the facilities concern. Based on the above presented problem statements, it is important to conducted a study on The Heritage Access Audit & Scoring Compliance Assessment for The Elderly- Friendly Mosque. Case Study: Herritage Mosque - Masjid Diraja Sultan Suleiman & National Mosque of Malaysia.

LITERATURE REVIEW

The Definition of Elderly

Elderly individuals are often categorized based on different criteria to gain insights into their characteristics and requirements. One common categorization approach focuses on chronological age. According to Lim (2012) there are categories of elderly (Table 1), the elderly population can be divided into three groups which are pre-elderly (ages 60-65), mid-elderly (ages 65-75), and post- elderly (ages 75 and above). These age-based categories help researchers and healthcare professionals better understand the unique needs and challenges faced by individuals in each group. It's important to note that other categorization factors, such as functional status, health conditions, and socio-economic status, may also be considered alongside age to gain a comprehensive understanding of the elderly population.

Table 1: Categorized of Elderly

Categorized of Elderly	Age
Pre-Elderly	Age 60-65
Mid Elderly	Age 65-75
Post Elderly	Age 75 above

Heritage and Conservation in Malaysia

The National Heritage Act of 2005, which applies to Malaysia, defined heritage as any site, item, or living person designated as National Heritage (under section 67). Heritage can be divided into two groups under Section 2, which are Cultural Heritage and Natural Heritage. Cultural heritage can take the form of a tangible or intangible object, item, artefact, formation structure, performance, dance, song, or musical work that is significant to Malaysians' historical or modern way of life. Cultural heritage can also take the form of an underwater or on-land natural treasure. Meanwhile, Natural features of any place in Malaysia may include geological or physiographic features, mountains, rivers, streams, rock formations, seashores, or any other outstanding natural sites from the perspectives of nature, science, history preservation, or natural beauty, including Malaysia's flora and fauna. They may also include earthly physical or biological formations or groups of such formations.

The Universal Design (UD)

The process of creating an environment that is as accessible, understandable, and usable as feasible for everyone, regardless of their age, size, aptitude, or disability, is known as universal design. Every person who wants to use an environment should have their needs taken into consideration while designing it (or any buildings, products, or services in that environment). This is not a unique requirement that just benefits a small portion of the populace. It is a prerequisite for good design. Everyone wins when a space is usable, convenient, accessible, and enjoyable to use. With universal design, people's needs are met by producing goods, services, and environments that take into account everyone's unique needs and abilities. Simply put, good design is universal design.

Access Audit

An access audit aims to "determine how well a specific facility performs in terms of access and ease of use by a wide range of potential users, including those with mobility and sensory impairments," according to the Centre for Accessible Environments (Centre for Accessible Environments, 2020). Furthermore, it's crucial to understand that an access audit should cover considerably more ground than a built environment audit. Only through removing obstacles of physical, psychological, and procedural, that may otherwise prevent the full involvement of the entire community will inclusive access be achieved. This means that when organisations access audit the accessibility of their services, they must think about how they will handle issues like adequate modifications for employees with disabilities, excellent customer service to guarantee that employees are friendly, ensuring that accessibility is covered by all policies, in order to ensure that buildings are maintained properly, daily management of the structures takes accessibility into account.

Malaysian Standard (MS)

The Malaysian Standard (MS) offers a variety of specifications and recommendations for many of the building's structural parts, assemblies, parts, and fittings. requirements concern the physical characteristics of building entrance, internal building circulation, exit from buildings during normal operations, and evacuation in the event of an emergency.

MATERIALS AND METHODS

This study used a qualitative and quantitative methodology. Methodology of this study is qualitative with access audit approach. It involves two main data collection, those are, (i) interview the expertise to validate the access audit and (ii) observation on scoring of access audit. Access audit is an examination of an existing building, its facilities and services, against pre-determine criteria to access its usability. Furthermore, the main objectives of access audit are to study the accessibility level of a place (in this study, place refers to mosque) in order to aid the planning, design and undertaking of its improvements so that the objective of inclusive and universal use of it may be achieved. The study concentrates on the audit assessment according to Malaysian Standard. In meeting the objectives, the information gathering was directed supporting to the literature review. In carrying out this research, primary data and secondary data used. The formulation of MS 1184 is a concerted effort towards universal design of masjid. The former becomes a source of reference to access audit while the latter facilitates the development of mosque in Malaysia. The paper reports a result of access audit to Masjid DiRaja Sultan Suleiman and National Mosque of Malaysia. Using a case study method, a set of criteria for access audit was used against the selected mosque to identify the state of their accessibility and connectivity.

Scoring Method using Access Audit

The scoring method for the access audit will be based on a scale of 0 to 2, with 0 indicating not compliance and 2 indicating compliance to guideline (Table 2). The audit will be conducted by researcher who will evaluate the accessibility features of the mosques and assign scores based on the criteria set out in the standard to calculate the rating percentage (Table 3). Four tiers of auditing scores have been used to calculate the compliance rate in order to find the case study that has the highest Malaysian Standard compliance, which is physical accessibility, toilets accessibility, information accessibility, information accessibility and emergency accessibility. In order to estimate the rate of compliance for each case study, the scores are finally transformed into percentages using Table 3 indications, which Friedman (1999) and Kamarudin (2013) describes as a balanced rating scale.

Table 2: Access Audit Scoring Rate.

Audit Compliance	Rate
Not Comply	0
Partly Comply	1
Fully Comply	2

Table 3: Rating Percentage.

Percentage	Indicator
80-100	Very good
60-79	Good
40-59	Average
20-39	A Poor
0-19	Very poor

The items specified to be audited for inside and outside of the both mosques have formed the basis for the series of access audits that have been completed. Through the checklist, the MS needs for access and amenities inside and outside of buildings have been clarified. Only those elements that are listed in those tables are audited for purposes of this study.

RESULTS AND DISCUSSION

The access audit conducted at the National Mosque revealed significant findings related to the accessibility of the mosque for elderly visitors which is 62.5% for overall result, can defined as good rating (Table 4). Meanwhile, the access audit conducted at Masjid Diraja Sultan Suleiman revealed positive results regarding the accessibility of the mosque for elderly visitors which is 66.25% for overall result (Table 4). The evaluation of physical accessibility demonstrated the presence of ramps and handrails, facilitating the mobility of elderly individuals within the mosque. Elevated lift with grab bars and ample space were also available, ensuring comfort and convenience. However, there were areas identified for improvement during the audit.

Table 4: Summary of Access Audit Results.

Accessibility Feature	National Mosque	Masjid DiRaja Sultan Suleiman
1. Building entrance and exits	7	9
2. Circulation routes	7	6
3. Lifts and escalators	8	10
4. Stairs	9	3
5. Toilets and changing rooms	2	8
6. Communication systems	1	2
7. Public spaces	6	5
8. Parking	6	5
9. Emergency preparedness	4	5
Total score (Overall 80)	50 (62.5%-Good)	53 (66.25% - Good)

The access audit conducted at the National Mosque revealed significant findings related to the accessibility of the mosque for elderly visitors. The evaluation of physical accessibility demonstrated the presence of ramps and handrails, facilitating the mobility of elderly individuals within the mosque. Accessible lift from ground floor (parking area) to 1st floor (prayer area), ensuring comfort and convenience. However, there were areas identified for improvement during the audit. The need for clearer signage within the mosque to aid navigation, particularly for elderly visitors who may require assistance. Additionally, the lack of seating areas within the mosque posed challenges for elderly individuals who required breaks during their visits. From observation also show concerns were raised about heavy doors that posed challenges for individuals with limited physical strength. Also, there are need to provide more facilities to other main entrance not only for 1 entrance.

The access audit conducted at Masjid Diraja Sultan Suleiman revealed positive results regarding the accessibility of the mosque for elderly visitors. The physical accessibility assessment indicated the presence of ramps and handrails, allowing for easier mobility within the mosque premises. Accessible toilets equipped with grab bars and sufficient space were also available, ensuring convenience for elderly individuals. However, there were areas for improvement identified during the audit. The need for clearer signage to aid navigation within the mosque, particularly for the elderly who may require visual cues. Additionally, lack of communication equipment and

requirements for fire safety (such as dry powder, sprinklers, hose reels, and so on) are other accessibility issues at the Masjid DiRaja Sultan Suleiman. Addressing these issues by improving signage, communications system and fire safety requirement would further enhance the accessibility of Masjid Diraja Sultan Suleiman for elderly visitors.

These results and findings from the access audit provide valuable insights into the strengths and areas for improvement in terms of accessibility for elderly visitors at Masjid Diraja Sultan Suleiman and the National Mosque. By addressing the identified issues, mosque management can create a more inclusive and welcoming environment for elderly individuals, ensuring that they can fully participate in religious activities and navigate the premises comfortable.

CONCLUSION

In conclusion, this research study aimed to assess the accessibility of Masjid Diraja Sultan Suleiman and the National Mosque of Malaysia for the elderly. The study utilized the access audit method to evaluate the mosques' physical accessibility, and data were collected through observations and interviews with the elderly.

The findings showed that both mosques have several accessibility issues that need to be addressed to improve the experience of the elderly. The study recommends that both mosques implement a comprehensive access audit regularly, provide better signage and wayfinding systems, improve their facilities, and provide training to their staff.

It is hoped that this research study can provide useful insights and recommendations for mosque management and stakeholders to create a more inclusive and welcoming environment for the elderly and people with disabilities. Further studies can be conducted to evaluate the effectiveness of the recommended interventions and to explore other aspects of mosque accessibility.

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