THE EVALUATION OF UNIVERSAL DESIGN AND ACCESSIBILITY FOR PEOPLE WITH DISABILITIES IN MASJID PUTRA BY USING MALAYSIAN STANDARD OF MS 1184:2014, "UNIVERSAL DESIGN AND ACCESSIBILITY IN THE BUILT ENVIRONMENT - CODE OF PRACTICE"

Nangkula Utaberta,
Azmal Sabil
Mahsa Dabbagh Niya.

ABSTRACT

Malaysia to become seeks to become a fully developed country by 2020. Among nine central challenges demonstrated in the body of the "Vision 2020" is "the challenge of establishing a fully caring society" (WAWASAN 2020). Along with developed societies overcoming such dysfunctional built environments has become under consideration in Malaysia as well to remove barriers and provide equal access of people with disabilities (PWDS) to all public services. Notwithstanding practical steps taken, there are still dissatisfactions from the members of public toward public buildings which cause restriction in PWDS daily life. Numbers of studies highlighted the inaccessibility issues in common public building design. One of the key public buildings that should be considered is mosque. This research aimed to investigate accessibility and usability of Malaysian mosques for PWDS. Masjid Putra was selected for the purpose of this study. The most recent revision of available Malaysian Standard of MS 1184:2014, "Universal Design and Accessibility in the Built Environment - Code of Practice", became the reference in this study. A comprehensive evaluation checklist was constructed for the purpose of a systematic observation including 162 checkpoints under 22 items of accessibility. The finding of this research will contribute in developing the framework of 'Universal Design Mosque' in future.

Key words: People with Disabilities, Accessibility, Masjid Putra

INTRODUCTION

The aim of this paper is to examine the accessibility level of the Putra Mosque, as one of the key public building for PWDS. The issues in unequal accessibilities for PWDS to the public facilities and public building have been raised years back then. It is known that people with impairments have been restricted to access to social, cultural, economic and civic affairs because of architectural and design barriers (Thapar et al., 2004). Barriers in architecture cause problems for PWDS in going into and out of buildings and also using available facilities in these buildings. Henry (2009) suggests that having problems in access to buildings is one of the main barriers which avoid PWDS to take part in the society. In order to increase their presence in public places and improve the quality of their lives, the built environments should be easily accessible for these people. According to some investigators, the unreachable environments can negatively influence the welfare and health of disabled people (Putnam, Greenen, Powers, Saxton, Finney and Dautel, 2003; Darcy and Harris, 2003). Having problems in an accessible environment inside and outside of buildings will limit these people to have an enjoyable life (Tan, 2008). The environment which is inaccessible for the disabled people can lead to unprotected stress, poor self-esteem and their embarrassment while they are in the public places (Nosek, Foley, Hughes, and Howland, 2001; O'Hara, 2004; Iwasaki and Mactavish, 2005).

In response to this issue, Malaysian government in local scale has tried to enact laws in order to defend the disabled people's rights. The parliament of Malaysia approved the "Persons with Disabilities Act" in 2008 that includes the first right-based legislation (Abd Shukor and Othman, 2010). It is an act:

> *"to provide for the registration, protection, rehabilitation, development and wellbeing of persons with disabilities, the establishment of the National Council for Persons with Disabilities, and for matters connected therewith" (Persons with Disabilities Act, 2008, p. 7).*

Since PWDS are increasing during these years, the Malaysian government legislated the PWDS Act in 2008 and supported its application all over the country by providing suitable access to public transportation, public buildings, other public facilities and basic things (Persons with Disabilities Act, 2008). Based on this act, in Malaysia, public facilities, services, basic things, buildings, facilities related to public transportation, information and communication technology, education, cultural life, employment, relaxing activities and sport should be available for PWDS. Therefore, since 2008, different groups including authorities, government agencies, nongovernmental organizations (NGOs), architects and environmental designers have paid special attention to the worries and important affairs regarding access of PWDS to different facilities (Mardzi, 2010). Apart from that present accessible standards in this country comprise some codes and standards. Among them is the most updated standard that was enacted in 2014 includes MS 1184, Universal Design and Accessibility in the Built Environment - Code of Practice (Second Revision). These standards are the only valid and updated rules in Malaysia that were enacted to increase accessibility of the built environment, particularly public buildings.

Even though they are certain laws and code of practice have been established, there are still dissatisfaction voice from public in regards of PWDS accessibility to the public building. Most of the cases highlighted that the public building have been built and designed by not following the enacted law and code of practice. As one of the way to investigate this, it is necessary to evaluate the performance of public building based on the established law and code of practice. As a first step of investigation, this study will be focusing specifically on the key public building. One of the most significant key public buildings is mosque buildings. Particularly in Muslim communities, this type of built environment has special importance. Spiritual sanctuary of these congregational community centres in Malaysia multiplies as the majority of its population are Muslims. In addition to encouraging Muslims to attend their five-time praying in mosques, several important prayers all over a year are held in mosques. Moreover, complimentary religious events in addition to different ceremonies all together imply the importance of these places for the members of Muslim communities (Rasdi 1998, Mohamad Rasdi and Utaberta, 2010, Awang, et al, 2011). Moreover, the government's insistence on providing a public pray hall in Malaysian buildings increases their popularity and attention to public needs in these places. Similar to any other public built environments, the importance of accessibility in Malaysian mosques is strictly emphasized. In a recent study by Abdul Rahim, Abd Samad, Che Rahib, and Badhrulhisham (2014) universal design of mosque buildings is stressed "to give the PWDS an equal opportunity for performing their congregational prayers together with other devoted Muslims" (p. 3).

According to JAKIM, (a.c.f. Najafi (2012), all mosques in Malaysia are classified into five general groups, including principal, state, district, qaryah, and private mosques. The most significant mosques among all are principal mosques and 14 state mosques in each of 13 states and one federal territory of Malaysia. Masjid Putra (1999) is considered as one of the three principal mosques in Malaysia. This paper will focus on evaluating the current condition of Masjid Putra based on MS1184:2014 Universal Design and Accessibility in the Built Environment - Code of Practice". In the next section, the methodologies that been applied in executing this research will be describe. It follows by the result of the evaluation on current condition of Masjid Putra in providing an appropriate accessibility to PWDS. At the end of the paper, the discussion on the mosque performance and the necessary recommendation in future mosque design will be highlight.

LITERATURE REVIEW

There are numbers of terminology in defining accessibilities of People with Disabilities (PWDS), including Universal Design, Inclusive Design, Barrier-free Environment, Assistive Technology, Adaptive Environments, Design-for-ALL, Assistive Technology, Lifespan Design and Trans generational Design. According to Abdul Rahim and Abdullah (2009), Universal Design, Accessible Design and Barrier-free Design are among the most frequently used terminologies in architecture discipline.

In some senses, there are various theoretical distinctions between universal design and barrier-free design or accessibility. First distinction is as follows: while barrier-free design and accessibility are mainly related to the subjects of access concentrating on disability, universal design as a logical result doesn't concentrate only on PWDS. To a degree, universal design extensively explains about targeted users and the diversity nature. It doesn't only concentrate on disabled people but also participation of all kinds of people in different aspects of a society (Iwarsson and Stahl, 2003; Ostroff, 2001). It has also protested against the virtual separation of disabled people from other social groups by special design interferences (Connell and Sanford, 1999). The second distinction is that political and legal manipulation have brought about barrier-free design and accessibility (Ostroff, 2001; Salmen, 2001; Welch and Palames, 1995) while, universal design embraces the power of market that causes cheaper, common and interesting products and environments (Mace, 1998). The third distinction is that standardization as the main method of barrier-free design and accessibility (Imrie, 1998), while increasing flexibility and adaptability to the greatest amount could be the achievement of universal design.

In spite of accessibility codes that explain outlook, standardized shapes of physical environments for average disabled people with minimum level of disabilities (Iwarsson and Ståhl, 2003; Salmen, 2001), universal design doesn't consider any particular shape but shows seven principles which are performance based that oblige designers to apply their own innovativeness to increase its applicability in low variety of positions and requirements (Story, 2001; The Center for Universal Design, 1997). Finally, while barrier-free and accessible designs in a conceptual manner consider accessibility as an addition to design and inherently stimulate Band-Aid methods to delete the present obstacles, universal design proactive integration of accessibility as an essential construct of design (Connell and Sanford, 1999; Iwarsson and Ståhl, 2003). Therefore, accessible design will always emerge from universal design but every accessible design cannot be considered as universal design.

It is crucial in considering PWDS need in designing a public spaces or building. In this paper, one of the important type of public building will be deeply studied, which is mosque as discussed at the earlier part of the paper. In discussing the mosque, it is a symbol of religious faithfulness and proof of unity and consensus of Muslims. Religious places are regarded as the physical environments which are connected to religious or holy happenings that can improve essential human values and human spirit (Daniel, Wheeler, Boster, and Best, 1973). These places are often founded with regard to architectural constructions and art (Mazumdar, 2004). In Islamic culture mosque is regarded as a place for worshiping, therefore it is identified as the main construct in the Islamic world.

In the general point of view, mosque considered as a place that which activities related to the society and religion should be planned and performed. One of the places that plays very important and essential role in shaping character of Islamic communities and helps its followers to act according to rules of Islam is mosque. These places have been acting as centres of activity for their political, social, religious, and institutional activities. Qasmi (2012) emphasized on the following main socio-religious role of mosques as a religious place in community: a religious foundation, a political centre, a legal institution, and

foundation of peace and secure location, an administrative institution, a unit to obtain information, a social organization, and an educational institute.

METHODOLOGY

The overall research process includes two main steps. Firstly, an initial observation of all study cases was done. Through this observation, spatial organization of Masjid Putra in addition to their number of levels and publicly accessible spaces and facilities were identified in detail. A roughly plan of each floor was sketched while depicting the boundary of building, entrances, vertical accessibilities, praying areas, and ablution areas. The results from this primitive observation in line with the spatial requirements of Masjid Putra from literature led to the identification of the principal dimensions of an accessible mosque.

In the next step, Malaysian Standard of MS 1184:2014 "Universal Design and Accessibility in the Built Environment - Code of Practice (Second Revision)" placed as a source of reliance and a comprehensive evaluation checklists were constructed in its basis. The structure of these checklists was based on the principal dimensions identified in the first step in one hand and the relevant regulations legislated in MS 1184 on the other hand. These checklists included of 23 items of accessibility with 162 evaluative checkpoints in total. Among them, 3 items with 26 checkpoints were related to the windows, conference rooms, and guest houses. Window related checkpoints were put aside since in public buildings like mosque, either they are not available or are not adjustable by ordinary people. Moreover, due to the presence of conference rooms and guest houses in some of the study cases, they were evaluated but are not reported here. This exclusion is due to the fact that, not all mosque buildings all around the country included of these adjunct facilities and therefore the results would not be representative in this sense. All 20 remained items with 136 checkpoints were adjusted into these four divisions of accessibility dimensions (Table 1). Through this stage, data were collected by using evaluation checklists and using related observation equipment by applying suitable techniques and tools which are related to the research

Table 1: Accessibility evaluation dimensions, items and checkpoints

No	Accessibility dimension	no	Items included	Number of Checkpoints	Total Checkpoints
1	*Access to building*	1	Arrival by Motor Vehicle	1	31
		2	Parking	9	
		3	Path to Building	11	
		4	Entrance and Final Fire Exit	10	
2	*Horizontal circulation*	1	Reception	1	25
		2	Horizontal circulation	8	
		3	Guarding Along Paths and Ramps	1	
		4	Terrace, Verandas and Balconies	1	
		5	Doors	12	
		6	Floor and Wall Surface	1	
		7	Signage and Graphic Symbols	1	
3	*Vertical circulation*	1	Ramp	10	55
		2	Stair	11	
		3	Lift	18	
		4	Vertical and Inclined Lifting Platform	4	
		5	Escalator and Moving Walks	12	
4	*Toilet and wet areas*	1	Toilet	3	25
		2	Toilet for Ambulant Disabled People	1	
		3	Wheelchair Accessible Toilet	20	
		4	Individual Shower Room	1	
	Total				136

RESULT AND ANALYSIS

As an iconic mosque in Putra Jaya, this building with a total accessibility level of 45%. 25% of the accessibility requirements were completely neglected in this mosque, while 30% of them was provided but has not been matched accurately with the standards of MS 1184.

It is inferable from the table 2 that, access to building with 70% full compliance was the most accessible dimension in this mosque than others. However, there were still 8% incomplete and 22% neglected requirements for an accessible rout to the building. Toilet and wet areas in contrast with only 24% compatibility with standards and 57% incompatibility were the least accessible dimension in this mosque. Even 20% of the requirements were totally excluded here.

Table 2: Accessibility evaluation dimensions, items and checkpoints in Masjid Putra

		Situation		
Putra Mosque				
Dimension	**Item**	**Met**	**Not Meet**	**Not Available**
Access to Building	Arrival by Motor Vehicle	100%	0%	0%
	Parking	50%	0%	50%
	Path to building	46%	27%	27%
	Entrances and Final Fire Exit	83%	6%	11%
	Total Average	**70%**	**8%**	**22%**
Horizontal Circulation	Reception	67%	13%	20%
	Horizontal Circulation	69%	31%	0%
	Guarding Along Paths and Ramps	100%	0%	0%
	Terrace, Verandas and Balconies	88%	12%	0%
	Doors	66%	19%	15%
	Floor & Wall Surface	0%	100%	0%
	Signage and Graphic symbols	0%	100%	0%
	Total Average	**56%**	**39%**	**5%**
Vertical Circulation	Ramp	67%	11%	22%
	Stair	62%	19%	19%
	Lift	41%	41%	18%
	Vertical Lifting Platform	0%	0%	100%
	Escalator and Moving Walk	0%	0%	100%
	Total Average	**34%**	**14%**	**52%**
Toilet and Wet Area	Toilet	57%	10%	33%
	Toilet for Ambulant Disabled People	0%	100%	0%
	Wheelchair Accessible Toilet	37%	18%	45%
	Individual Shower Room	0%	100%	0%
	Total Average	**24%**	**57%**	**20%**
	Total average of accessibility	**46%**	**30%**	**25%**

Horizontal circulation met the requirement by 56% complete and 39% incomplete situation, while a mere of 5% were neglected. Finally, vertical circulations with 34% were fully in accordance with accessibility standards for PWDS. As a big neglect, 52% of the requirements for this dimension were totally forgotten and 15% of them was provided, but not in correct circumstance.

Table 3: Accessibility level measured for Masjid Putra
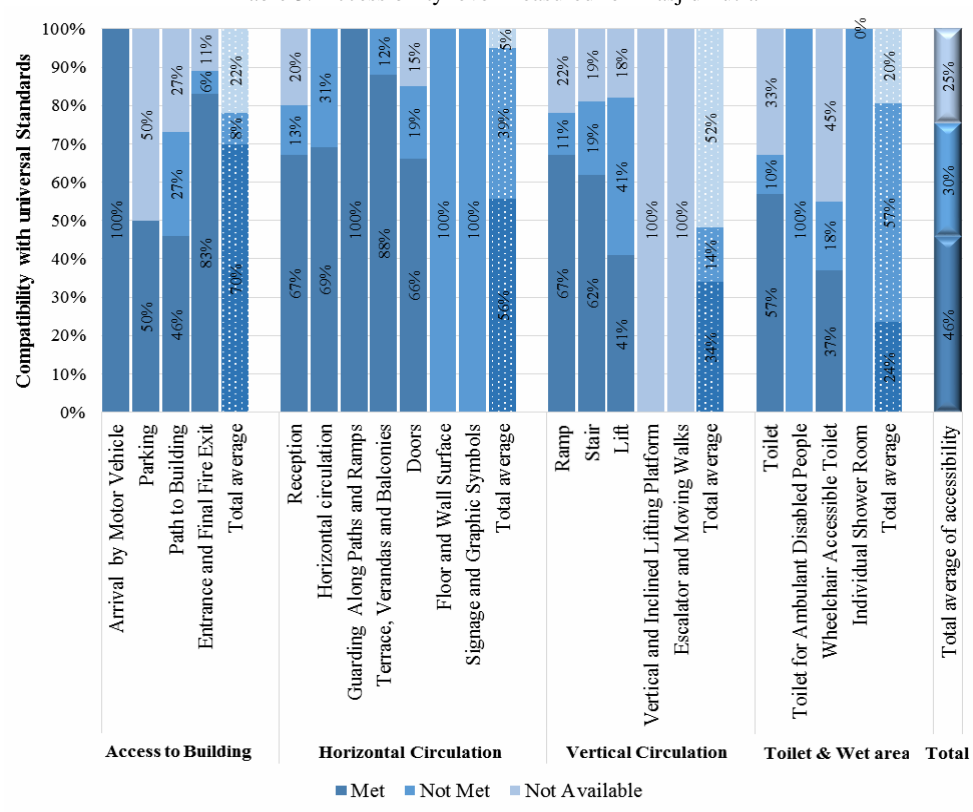
CONCLUSION

In reflect to the aim of this research, the result of Putra Mosque accessibility evaluation has been shown in detail in previous part of the paper. This accessibility level was evaluated based on the latest Malaysian Standards. In overall, Masjid Putra has been designed by not considering the people with disabilities in as one of their design priorities. It's clearly shown in the result as this mosque does not meet the requirement up to 50% in the overall. The most highlight part was in the toilet and wet area. Apart from that is the vertical circulation. There may a lot of the reason behind this, as this mosque constructed in 1999, where the issues for people with disabilities was not been rising and debated in Malaysia back then. As one of the iconic mosque in Malaysia, and as the first mosque constructed in Malaysia center of administration, Putrajaya, this mosque should give a good example in design by considering people with disabilities to reflect back "the challenge of establishing a fully caring society" as inline in WAWASAN 2020.

As this is a preliminary study, the limit of the research is focusing only on the single mosque. In developing a framework universal design mosque, it is necessary to conduct the similar study to the different mosque, by looking at the specific timeline of the mosque construction. From that, the comparison studies will be obtained and this will be reducing the gap in establishing the framework of universal mosque design in future.

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Nangkula Utaberta
Department of Architecture,
Faculty of Design and Architecture,
University Putra Malaysia

Azmal Sabil
Department of Architectural & Design Engineering,
Faculty of Civil and Environmental Engineering,
Universiti Tun Hussein Onn Malaysia

Mahsa Dabbagh Niya
Department of Architecture,
Faculty of Design and Architecture,
University Putra Malaysia