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Key Accessibilities Issues (KAIs) for People with Disabilities (PwDs) at Electric Train Service (ETS) Station

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Abstract: The establishment of various acts and legislation for PwDs rights signify a strong ethical value and positive support from the government to ensure equal rights for all citizens. It also serves as guidelines for the professional to plan and design their projects. The Malaysian Standard (MS) 1184:2014 for instance contains six KAIs to be considered by the project team during the early planning stage to ensure continuous movement of the PwDs. On the contrary, many researchers reported that Malaysia is still lacking in considering and providing equal accessibility and facilities for this group. This paper aims to investigate whether the provision of KAIs for the PwDs provided at ETS station complies with the MS1184:2014. Three ETS stations in Perak were chosen for the case study. Document analysis of the MS1184:2014 was conducted to identify the KAIs dimensions to be provided for the PwDs at the stations. From the document analysis conducted, an observation checklist was developed to assess the availability and compliance of the KAIs dimensions with the MS1184:2014. The observation was recorded in a tabular method. From the tabulated information, the types and frequency of the availability and compliance of the facilities were determined. The research revealed that although majority of the sub-dimensions/facilities were available at the stations, they do not all comply with the MS. Some of the sub-dimensions/facilities do not function properly and cannot be used by PwDs. The physical barrier or incompliance facilities that were identified throughout the observations could be minimized to give the PwDs accessibility to use the ETS services. Besides, the ETS stations need to provide a more inclusive environment so that the PwDs can be independent and are capable to actively participate with the community. The research also suggested that when it comes to developing or creating better public transportation stations, customer feedback is crucial. The designer or the local authority should be more inventive in designing a barrier-free environment and infrastructure.

Keywords: Key Accessibility Issues, people with disabilities, Electric Train Service, MS1184:2014, compliance

1. Introduction

According to a 2018 WHO report, 1 billion people, or nearly 15% of the global population, have some form of impairment. In Malaysia, Person with Disabilities (PwDs) contributes about 15% of their population and the number is still increasing until now (Department of Social Welfare, 2016). However, in spite of their physical limitations, they pursue inclusion within communities and actively participate both locally and internationally (Osman et al., 2015). Even though they are a minority, they are members of a society that has have the same right as everyone else to live a

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better life (Ismail, Abdullah and Ghani, 2021). This demands for the accessibility of their facilities both within and outside structures, particularly for public buildings are smooth and user friendly there is thus the demand for providing accessibility and supporting facilities for PWDs particularly in public buildings. Indeed, this should be a crucial element to be considered by the society and the respected authorities in reducing the mobility constraints of PwDs. With regard to public transportation, N. Ainaa (2021) mentioned that among the most frequent means of public transport used by all including PwDs in Malaysia is Electric Train Services (ETS). The Ministry of Transport Malaysia (2017) stated that from 2010 until 2017, the use of ETS service had increased from 215 to 4148 passengers. Ramli (2017) and Hassan et al., (2011) stated that the simplest way of increasing the use of public transportation facilities is by establishing a safe, convenient, and comfortable environment to ensure that there is full participation of citizens even among the PwDs. Therefore, research on the nature and extent of providing an accessible facility to ETS users is required. However, several researchers revealed that the present provisions are inadequate and not disabled friendly particularly for PwDs (Kamaruddin et al., 2014; Hikmah et al., 2012; Soltani et al., 2012). Agreeing with this, Danso et al. (2017) added that the most significant physical restrictions are limitations in access to public areas and transportation networks. Some people with disabilities who are eager and able to work are unable to do so due to insufficient accessible transportation. This highlights serious action should be taken by the government as they are the public facility provider for its citizen.

Among the global efforts to secure issues on PwDs accessibility is the Sustainable Development Goals (SDGs) under SDG10: Reduced Inequalities and SDG11: Sustainable Cities and Communities. As aptly put by Ismail et al., (2021) on one of the SDG's key items that is to "leaving no one behind". This is to ensure that everyone including PwDs is involved in the advanced inclusive development. Similarly, there are several initiatives taken by various ministries in Malaysia such as the Economic Planning Unit (EPU), Prime Minister's Department, Ministry of Housing and Local Governance and Ministry of Women, Family and Community Development to facilitate and assist PwDs. Shared Prosperity Vision 2030 which was introduced by EPU aims to provide a decent standard of living to all Malaysians by 2030. One of the enablers highlighted in this vision is inclusivity, where no group will be marginalised throughout the Malaysian economic transition. Besides that, the Fourth National Physical Plan (FNPP) 2020-2040 is also another blueprint that was developed under the Universal Planning and Development Policy by the Ministry of Housing and Local Governance. Its aim is to create a balance between physical development and the surrounding environment with human development. Among the main thrust emphasised by FNPP is on strategic and integrated transport link network and it aligns with SDG3: Good Health and Well-being, SDG8: Decent Work and Economic Growth, SDG9: Industry, Innovation and Infrastructure, SDG10: Reduced Inequalities and SDG11: Sustainable Cities and Communities. Additionally, the Ministry of Women, Family and Community (MWFC) had established the Malaysian Plan of Action for People with Disabilities 2016-2022. The main aim of this establishment was to safeguard PwDs issues. Ten strategic thrusts were identified in this plan to empower PwDs' quality of life including their equal access to and use of public amenities, services, buildings, and facilities. This is highlighted continuously in the MWFC Strategic Plan 2021-2025.

Despite the above initiatives, there are also various acts and legislation initiated for PWDs in Malaysia namely The Malaysian Standards MS 1184:2014, the Uniform Building By-Laws (Act 685) and the Persons with Disabilities Act 2008 (Act 685). The adoption of such uniform laws and regulations demonstrates high ethical value and the government's enthusiastic support for securing the equal rights of all individuals. It also functions guidelines for the professional to plan and design their tasks. All public buildings in Malaysia are required to provide access and facilities for PwDs in accordance with the guidelines set forth by the MS1184:2014 (Islam, 2015). The MS has identified six key accessibility issues namely station approach, main entrance, vertical circulation, horizontal circulation, toilet and sanitary appliances and equipment and facilities. These KAIs had to be taken into consideration by the project team in the initial planning stage and were established to ensure as one of the efforts to ensure the continuous movement flow of the PwDs is established. However, this is insufficient without further enforcement and a lack of good technical codes by the authorities (Kamarudin et al., 2012). Many researchers revealed that PwDs experienced a lack and restricted access to the social environment, which results in a higher unemployment rate, difficulties obtaining products and services, stigmatisation as PwDs, lack of proper training and frequent struggle to maintain long-term employment (N. Ainaa, 2021; Zahari et al., 2020; Vornholt et al., 2018; Haryati et al, 2016; Islam, 2015). Zahari et al. (2020) and Kamaruddin et al. (2012) argued that one of the primary reasons that PwDs are unable to participate socially is a lack of accessible amenities, particularly in public spaces. Jeekel (2017) also raised the problem of lack of mobility and transportation equity as a key societal concern.

This suggests for serious action to be taken by the government as they are the main provider of public facilities. Echoing into this, research was mooted to investigate whether KAIs for PwDs provided at ETS station complies with the MS1184:2014. Two research objectives were established: (1) to determine the provision KAIs for PwDs to be provided at the ETS station and (2) to investigate the compliance of KAIs for PwDs provided at the ETS with the MS1184:2014. It is hoped that the establishment of both objectives help to achieve the main purpose of this research.

2. PwDs and Accessibility Issues

PwDs are people who, when paired with other disabilities, has long-term physical, mental, intellectual, or sensory limitations that may prohibit them from completely and effectively participating in society have long-term physical, mental, intellectual, or sensory impairments, as well as other hurdles that may prevent them from participating fully and effectively in society on an equal basis with others (Disabled World 2018(a); Vornholt et al., 2018; Yuhainis et al., 2016: Kaur et al., 2015; Ismail et al., 2015). According to Malaysia's Act 685 on Persons with Disabilities, a disability is any condition that impairs one's ability to express oneself. This includes individual functioning, physical impairment, sensory impairment, cognitive impairment, intellectual impairment, mental illness and other chronic diseases. The Persons with Disabilities Act 2008 (Act 685) (PWDA) defines PwDs as those who have long-term physical, mental, intellectual, or sensory impairments in combination with different barriers that have prevented them from doing certain things and from fully participating with the community or public.

The Department of Social Welfare (2016) reported that people with mobility impairments (34.8%) and those with cognitive/learning disability impairments (35.0%) make up the majority of PwDs in Malaysia. The least populous PwDs population in Malaysia are people with cognitive/learning disability impairments (35.0%), and mobility impairments (34.8%). The least population in the disabled category identified is people with diversities in age and stature (0.5%). Meanwhile, the visually impaired (9.0%), hearing impaired (7.8%), hidden impaired (8.2%) and others (4.7%) have moderate populations. Most public buildings include ramps and moving pathways, such as an escalator or travelator for PwDs, however, most do not adhere to the criteria. (N. Ainaa, 2021). For instance, the Auditor General reported in reports of 2010 and 2013 and 2013 highlighted that most mosques' disabled access routes are inconvenient for those with disabilities, particularly wheelchair users and are blind. Furthermore, since it overlooks the drain, the built-in ramps are incompatible and would danger the PwDs. Ismail et al. (2021) mentioned that students with physical and sensory impairments face great challenges and obstacles in higher education, which have impaired their capacity to study. Zahari et al. (2020) also argued that the current conservation guidelines and requirements are not comprehensive enough to address the disabled facilities and accessibility aspects. They are not being highlighted as important criteria in conserving heritage buildings. As a result, it hinders travellers to bring their elderly and disabled relatives to visit the historic buildings. in Malaysia.

In relation to the accessibility issues at public transportation, the most affected PwDs group are persons with a physical disability (Nazli and Kesici, 2018; Kumar et al., 2018). Owing to the limited access to transportation, they are unable to fully participate in their communities (Zahari et al, 2020; Bascom, 2017; Denso et al., 2017; Haryati et al., 2016; Ishak and MadSah (2016); Ismail et al., 2015; Soltani, et al., 2012). Indeed, this has contributed to greater poverty rates among them. With this understanding, various respective parties such as the Social Welfare Department and a group of society are fighting for the PwDs' rights to have equal opportunities in sustainable transportation and public buildings with other normal people.

2.1 ETS in Malaysia

The ETS is an intercity train network operated by *Keretapi Tanah Melayu Berhad* (KTMB), Malaysia's national railway company. The train travels up to 140 km/h (87 mph) on an electrified metre gauge rail line. Therefore, the ETS can be classified as a Higher Speed Rail train service that currently operates along the electrified and double-tracked stretch of the West Coast Line between Gemas and Padang Besar on the Malaysia-Thai border. KTMB had introduced ETS service from Kuala Lumpur to Ipoh, Perak in August 2010 and later extended to Padang Besar in July 2015. With the ongoing expansion projects, the ETS service is expected to provide even greater coverage for passengers in the future (Refer to Fig. 1).

Fig. 1 - Overall ETS network
(Source: KTMB, 2018)

ETS route is the most popular train route in Malaysia due to its connectivity to significant locations that offers various attractions for travellers nationwide such as Kuala Lumpur, Perak, Penang, and Perlis (Figure 1). It can carry more than 10900 passengers daily. They can travel in comfort with three different concession classes available ranging from Platinum, Gold and Silver.

2.2 MS1184:2014 and Key Accessibility Issues

A continuous unobstructed path of travel for a person using a wheelchair or other limited mobility to or within a facility can be characterized as accessibility for PwDs (Rahim and Samad, 2010). Accessibility in the built environment is becoming increasingly important in Malaysia in the built environment in Malaysia is becoming increasingly important, as it affects not only the elderly or those with disabilities, but the whole population.

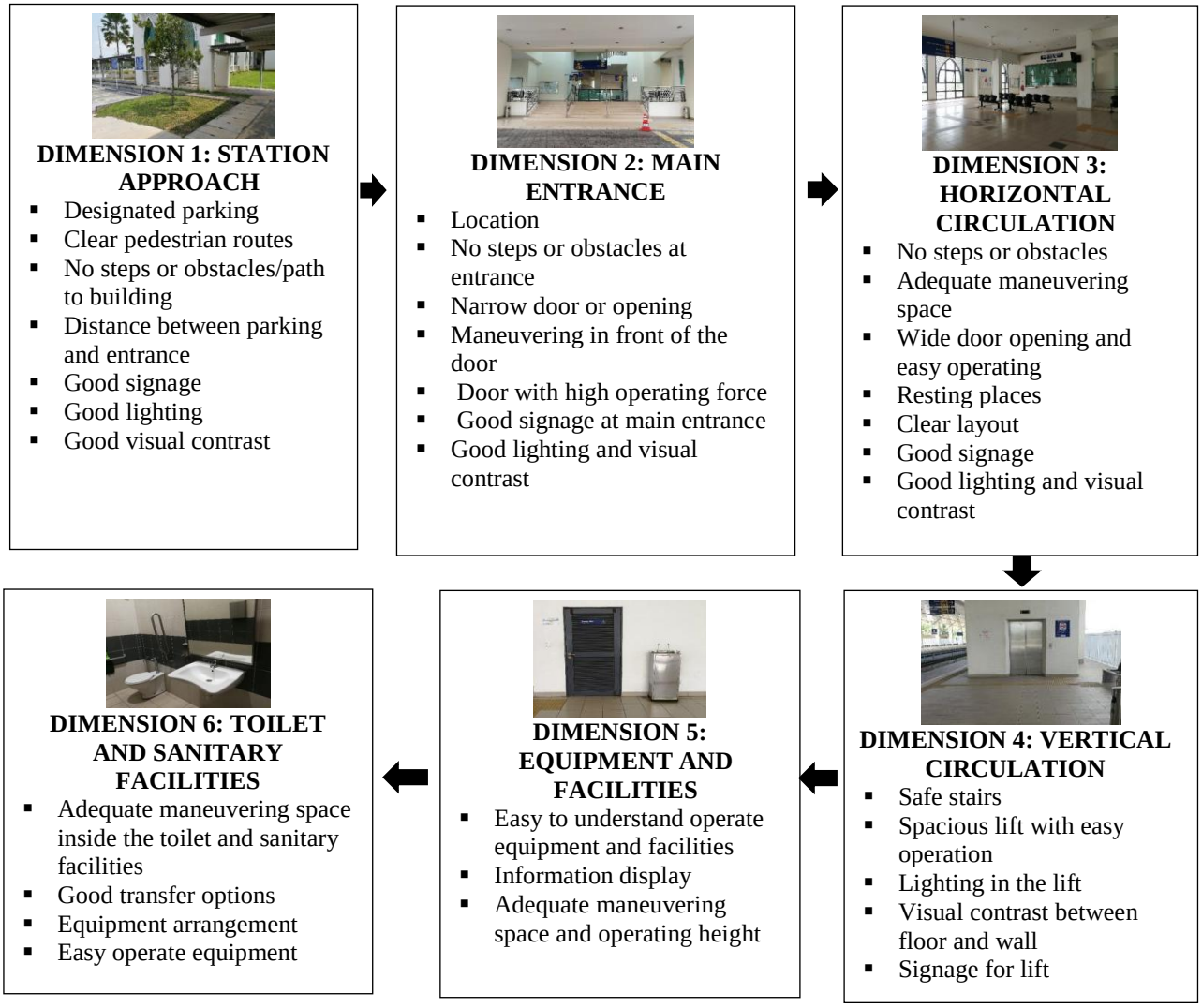

Fig. 2 - Dimensions and sub-dimensions/facilities of KAIs

MS1184:2014 outlines many standards to measure accessibility in public buildings measuring accessibility in public buildings. It delivers variety of specifications and suggestions for many of the building's structural parts, fittings, assemblies, and components. These requirements include the constructional aspects of accessing to buildings, circulation within the buildings, to egress from the buildings in the normal course of events and evacuation in the event of an emergency. The MS1184:2014 also highlight Key Accessibility Issues (KAIs). KAIs is a plan to ensure PwDs, the elderly and children have uninterrupted movement flow destination in the building. Each KAI is closely related, if one of the KAIs is not accessible by the PwDs, indirectly they cannot proceed to the next KAI. In each of the listed KAI, there are several requirements or essential facilities included to assist PwDs for easy access to movement and mobility.

Fig. 2 highlights the six dimensions and 33 sub-dimensions/facilities of KAIs to be considered during the early planning stage for the ETS station. It begins from the parking area to the departure hall starting from the station approach, main entrance, horizontal circulation, vertical circulation, equipment, and facilities, as well as toilet and sanitary facilities.

3. Research Methodology

Three ETS stations in Perak were chosen as the case study. These stations were chosen because it was constructed in 2015 and adhere to the MS1184:2014. In addition, these stations have the most daily ETS carriage, which will result in an increase in the number of ETS users, including PwDs. The research adopted a purely qualitative method using document analysis and observation. Document analysis of the MS1184:2014 was conducted to identify the provision of KAIs for PwDs to be provided at the ETS station. From the document analysis conducted, an observation checklist was then developed. This checklist was utilised during the observation in assessing the compliance and accessibility of the six KAIs dimensions using the standards outlined in the MS1184:2014.

The observation was conducted to give a more realistic image of the facilities themselves. It was carried out on different days as the distance between each station is quite far. The time taken to perform observation for each station was approximately four hours. Besides the observation checklist, various tools were also utilised during the observation such as measuring tape, laser measurement, stainless-steel L-square angle ruler and lux meter. To maintain the trustworthiness of the data, the observation was conducted with the presence of a KTMB representative officer from each of the ETS stations. The observation on the availability and adherence of KAIs to the MS was documented using a tabular technique. It presented a more accurate picture of the facilities themselves. The types and frequency of the facilities' availability and compliance can be inferred from the tabulated data.

4. Analysis and Findings

The analysis and findings are explained in this section. Generally, the section is divided into two parts: (a) the provision of KAIs for PwDs at the ETS stations and (b) the compliance of KAIs with MS1184:2014.

4.1 Analysis on the Provision of KAIs for PwDs Provided at the ETS Stations

Table I illustrates the availability of each dimension for PwDs at the three ETS stations. Although most of the sub-dimension/facilities for PwDs are available at all stations, some of the sub-dimensions/facilities fail to comply in terms of facilities for PwDs. This can be observed in Table 1.

Table 1 - Provision of KAIs for PwDs at the ETS stations

Dimension		Sub-dimension/Facilities	Availabilities		
			ETS 1	ETS 2	ETS 3
1	Station approach	Designated accessible parking	√	√	√
		Clear pedestrian routes	√	√	√
		No steps or obstacles	√	√	√
		Short distance between parking and entrance	√	√	√
		Good signage	√	√	√
		Good lighting	X	X	X
		Good visual contrast	√	√	√
2	Main entrance	Location	√	√	√
		No steps or obstacles at entrance	X	X	X
		Wide door or opening	√	√	√
		Adequate manoeuvring space in front of door	√	√	√
		Door with high operating forces	√	√	√
		Good signage at main entrance	√	√	√
		Good lighting and visual contrast	X	X	X
3	Horizontal Circulation	No steps or obstacles	√	√	√
		Adequate manoeuvring space	√	√	√
		Wide door opening	√	√	√
		Easy to operate doors	√	√	√
		Resting places	X	X	X
		Clear layout	X	X	X
		Good signage	√	√	√
		Good lighting	√	√	√
		Good visual contrast	X	X	X
4	Vertical circulation	Safe stairs	√	√	√
		Spacious lift with easy operation	√	√	√
		Good lighting in the lift	√	√	√
		Good visual contrast between floor and wall	√	√	√

		Good signage for lift	√	√	√
5	Equipment and facilities	Hard operate equipment and facilities	√	√	√
		Manoeuvring space and operating height	√	√	√
		Information display	X	X	X
6	Toilet and sanitary facilities	Adequate manoeuvring space inside the toilet and sanitary facilities	√	√	√
		Good transfer options	√	√	√
		Well equipment arrangement	√	√	√
		Easy operate equipment	√	√	√
		Good signage	√	√	√

#Notes: √ - Available X - Not available

There are seven sub-dimensions/facilities to be observed for station approach and main entrance. Except for a few, the KAIs are aligned with most of the sub-dimensions and facilities for this dimension. For example, the station approach. The pathway leading up to the structure is not illuminated. PwDs may be at danger because of this, especially at night. For instance, there are steps or impediments at the entrance, but there is poor lighting and visual contrast at the main entrance. PwDs will be unable to access the station safely and easily due to these steps or impediments. Furthermore, PwDs, particularly those who are visually challenged, are at risk due to low lighting and visual contrast. The PwDs will navigate the horizontal circulation to reach their next destination after securely entering the main entrance.There are nine sub-dimensions/facilities to be observed for this dimension. It is observed that there are a few items that do not adhere to the provision of KAIs for PwDs. There are no rest areas offered, the layout is muddled, and the lighting is inadequate for this space. Rest areas are crucial for PwDs to use when they need to rest. The PwDs may become confused by a confusing layout or even get lost at the station.

In addition, equipment and facilities are other sub-dimensions/facilities with three sub-dimensions/facilities to be observed at all stations. This dimension is important for the PwDs to help them to encourage PwDs' increased independence. It is discovered that the station's equipment does not include an information display to help PwDs with access to the most recent information.

However, it is found that there are two dimensions that comply with the KAIs set as outlined in the MS1184:2014. These are vertical circulation and toilets and sanitary facilities. Both dimensions have four and five sub-dimensions/facilities respectively. This aspect is equally crucial to horizontal circulation. The PwDs will be able to access other floors thanks to this connectivity. Meanwhile, toilets and sanitary facilities are also among the essential facilities to be provided. It was also observed that PwDs referred to this place as a sensitive place. They stressed that they only go to places that provide better sanitary facilities for PwDs.

4.2 Analysis on the Compliance of the Facilities for PwDs Provided at the ETS Stations with the MS

Table 2 highlights the details of incompliances of sub-dimensions/facilities for each dimension at the three stations. There are a few sub-dimensions and facilities in KAI that are compliant with the MS and can meet the needs of PwDs.

Table 2 - The incompliances of the provision of sub-dimensions/facilities at all stations

Dimension	Sub-dimensions/ facilities	Incompliances
1. Approach to building	Designated accessible parking	• The size of the parking space at all stations are smaller than the required size at all stations • The distance between cars parked next to each other is excessively limited at every station
	Pedestrian routes	• No kerb cut provided at the parking lot at each station • ETS 3's pedestrian walkway is so congested with motorbikes that it is difficult for the PwDs to utilise it
2. Main entrance	Narrow door opening (entrance and final exits building)	• ETS 2 used shutter door at the building entrance • No door provided at ETS 1 or ETS 3, except a large opening area provided. There is only shutter door provided at ETS • Only ETS 1 provides information on fire safety and evacuation procedures, however, the font is small print with no audio or Braille
	Signages	• Only ETS 2 provides sign that placed at the latch side • None of the ETS stations have a communication system for signs outside the building

		• Only ETS 1 provides information display, however, there is no shading for display or screen
3. Horizontal circulation	Passage or path (Steps or obstacles at the horizontal circulation)	• No raised threshold at any station door opening
	Door (Lighting and visual contrast)	• The glazed door at ETS 2 is not marked with visual indicator
4. Vertical circulation	Stair (Safe stair)	• The visual warning line are wider than as stated in the MS
	Lift (Visual contrast between floor and wall)	• The inside of the car lift's wall used colour contrast with the floor, but the wall material is reflective • Control panel with Braille does not contrast with the wall
	Lift (Hard operate lift)	• No sound system and intercom in the lift
5. Equipment and facilities	Equipment, controls and switches	• No security access systems and drinking fountains available at ETS 3 • The drinking fountains at ETS 1 and ETS 2 exceed the standard height as stated in the MS • PwDs must comprehend the instructions given at the ETS station
6. Toilet and sanitary facilities	Easy operate equipment	• No emergency assistance alarm, backrest for the toilet seat, toilet for children, shelf, small washbasin, coat hooks and visual emergency alarm provided at the toilet at any station

	Equipment arrangement	• There are toilets for PwDs provided at all station. However, the toilets do not comply with the MS. Among them are
		  • The lighting in the toilet is dim
		  • The light switches are placed outside, and the light is not automatic
		  • Restricted maneuvering space in front of the toilet seat and wash basin
		  • No clearance space beside the toilet seat
		  • The toilet paper is high and cannot be reached from the toilet seat
		  • The reaching distance for tap control for washbasin and taps and bidet is not reachable by the PwDs
		  • The doorknob for the toilet is hard to use
		  • The horizontal pull handle on outward, is higher than the dimension stated in the MS

A) Dimension 1: Approach to Building

There are two incompliances of sub-dimensions/facilities to approach access to building namely designated accessible parking and pedestrian routes. From the observation, it is found that the car park is smaller in size and the space between cars for all stations is too narrow. This has affected the PwDs' to maneuver himself or herself in the designated parking space.

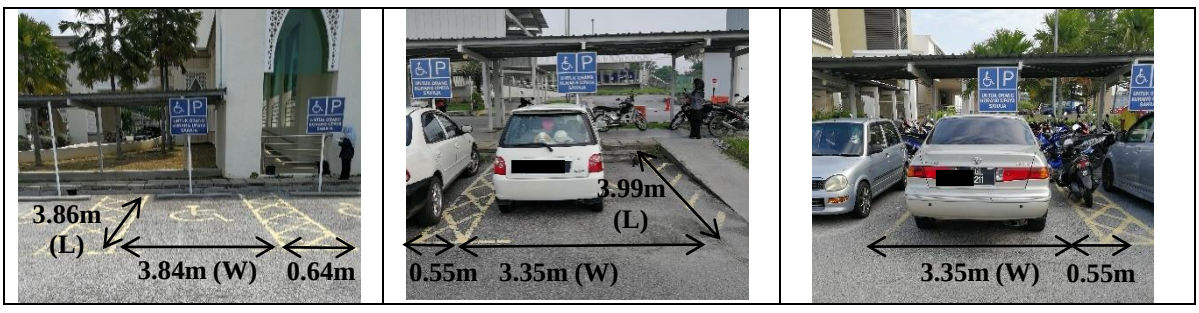

Fig. 3 - The incompliance on size of the PwDs designated parking

Fig. 4 - The incompliance on the pedestrian route condition

Meanwhile, for the pedestrian routes, there is no kerb cut provided at any stations. It is also observed that the pedestrian route at ETS 3 is full of motorcycles parked along the way.

B) Dimension 2: Main Entrance

Narrow door openings (building entrance and final exits) and signages are the two incompliances observed for main entrance. All three stations apart from knowledge regarding fire safety and evacuation procedures, has the facilities required and complies with the MS. It was observed that ETS 2 used a shutter door at the building entrance. Whilst there is no door provided at ETS 1 and ETS 3; only a large opening area is provided instead. This is more convenient to the PwDs as they do not require any physical help to enter the station, nor do they need to use their hands. Fire safety and evacuation procedure is only provided at ETS 1, however there is no audio or Braille, and the type is small. This incompliance will affect the visual impairment most as they need it to save themselves in any emergency that may arise.

Fig. 5 - The incompliance on the main entrance and fire safety evacuation procedure

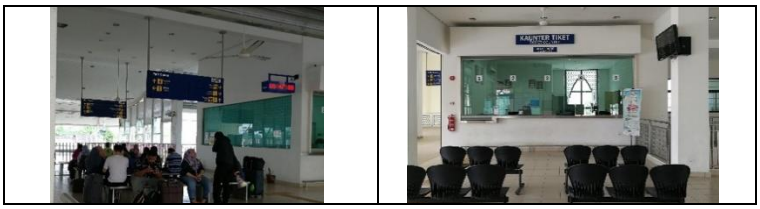

Fig. 6 - The incompliance on the signages

Except for ETS 2, there is no signage posted on the latch side. Some of the PwDs cannot look too high, thus they need the latch side signages. It was also observed that there is no communication system provided at all three stations. Although there is an information display provided at ETS 1, it has no shading on the screen. It is important to have a communication system and information display to give the right direction or the right information for PwDs. The display screen also should have shading so that it is easier to view and free from glare.

C) Dimension 3: Horizontal Circulation

Horizontal circulation involved many elements such as queueing to buy tickets, sitting area and corridors. There are two incompliances for this dimension namely passage or path horizontal circulation, lighting, and visual contrast steps or obstructions. The MS complies with most of the criteria, but none of the stations have elevated thresholds at the door openings. It was also discovered that the glazed door provided at the ETS 2 do not mark with visual indicator. They may harm the PwDs. For instance, the visual impairment will easily get confused whether there is a door or not; they might harm themselves if they consequently hit the glazed door.

D) Dimension 4: Vertical Circulation

Vertical circulation, such as stairs and lifts, are necessary for the PwDs to access the top floors. need to be provided at the station. During the observation, three incompliances were identified such as stair (safe stair), lift (visual contrast between floor and wall) and lift (hard operate lift). For stairs (safe stair), lift (hard to operate), and lift (visual contrast between floor and wall) it is observed that the visual warning provided at all the three stations is wider than the standard set in the MS1184 2014. the MS. It will be unclear to the PwDs whether this is a warning line or not. They'll consequently take the incorrect step and trip over. The PwDs will get confused about whether it is a warning line or not. As a result, they will take the wrong step and fall.

Fig. 7 - The incompliance of lift

For lift (visual contrast between floor and wall), the material used for internal wall is different with the floor, but it is reflective. The PwDs will be perplexed as to whether or not it is a warning line. They will consequently take the wrong step and trip and fall. This makes the visual impaired person gets confused and difficult to distinguish between the floor and wall. They will either slip or fall. In addition, the control panel in the lift at all stations are provided with Braille. However, the material used is not contrast with the wall. Both situations may make the PwDs with visual impairment confused and could not see it at the first sight. For lifts (hard operate lift), there is no sound system and intercom in the lift at all three stations. This is very important for visual impaired people especially when they use the lift alone. They may have difficulty going to the next floor or other places because they cannot identify which floor will the lift stop.

E) Dimension 5: Equipment and Facilities

The equipment, controls, and switches are the sole sub-dimension that can be detected for this dimension. Drinking fountains are only provided at ETS 1 and ETS 2, however, the height is 1070 mm, which is greater than the typical guidelines for PwDs. This makes wheelchair users or other physical impairment such as dwarfs will have difficulty to reach it. It is also found that the equipment user instruction for controls and switches at all three stations are easily understood by the PwDs. Thus, this may assist the PwDs to be more independent and comfortable to use it.

Fig. 8 - The incompliance of the device control and drinking fountain

Moreover, it was discovered that ETS 3 lacks a drinking fountain and a security access mechanism. For PwDs to receive aid in an emergency, the secure access mechanism is crucial. The security access system is important for the PwDs to get help during an emergency. Thus, it is important for the security access system to be made available.

F) Dimension 6: Toilet and Sanitary Facilities

Except for a few, most of the sub-dimensions for toilet and sanitary facilities have followed the MS1184:2014. The incompliances are the same for all three stations such as there is no emergency alarm provided at the toilet. This very important for the PwDs to seek help when the need arises. It was also observed that the toilet seat has no backrest, and there is no special toilet for kid's at all three stations. In addition, there the lack of shelf, tiny sink, coat hooks and visual emergency alarm provided at any of the three stations. All the accessories that are needed at the toilet for PwDs are important for the PwDS to move smoothly as it shorten the time used and made it easier for them to use the toilet.

Besides, the visual emergency alarm in the toilet helps those who have an impaired hearing to get information in case something happens at the station.

Fig. 9 - The incompliance of toilet and sanitary facilities

For equipment arrangement, the lighting in the toilet is dim, switches are placed outside, and the light is not automatic for all the stations. Lighting in the toilet is important to help PwDs identify the position of each of the facilities provided. It can also prevent accidents in the toilet. Besides, the maneuvering in front of toilet seat and washbasin is small for all the three stations, where their movements in the toilet will be disrupted, especially for wheelchair users. Additionally, there is no clearing area adjacent to the toilet seat. Transferring from the wheelchair to the toilet seat will be challenging for the wheelchair user. They must request that their caretaker assist them onto the toilet seat, which is difficult, especially in the toilet. Meanwhile for toilet room doors, it was observed that only ETS 1 toilet door is open inwards which will make it difficult and surely will take up space for wheelchair users to get into the toilet. Additionally, it should be open outwards so that the space in the toilet is not disturbed. Furthermore, the equipment such as toilet paper, tap control for washbasin and tap for bidet at all stations is not reachable for the PwDs especially for wheelchair users and dwarfs. Another unfriendly equipment in the PwDs toilet for all the three stations is doorknob. The doorknob is placed higher than the standards stated in MS. Moreover, PwDs that do not have fingers will have difficulty using the doorknob.

5. Discussion of Findings

Six KAIs have been mentioned in the MS 1184:2014 for the project teams to consider during the preliminary planning phase. As a result, the neighbourhood will start to care more about making sure the PwD facilities are accessible. Ismail et al. (2015), who highlighted on the low level of concerns by the community and administration in relation to this issue. According to Kamaruddin et al. (2012) and Zahari et al. (2020), the main reasons why people with disabilities are unable to participate in social activities inadequate accessibility features, especially in public spaces. They believed that the PwDs are being ignored and prevented from participating in society. Affordable mobility and transport equity were highlighted by Jeekel (2017) as a key problem for the social dimension. This study discovered that while all the three stations have attempted to accommodate the needs of PwDs, there are a few sub-dimensions and facilities in KAI that are in comply with the MS that can meet the needs of PwDs. This supports the claim made by Isa et al. (2016) and A. Samad et al. (2018) that most Malaysian public buildings still don't provide a user-friendly built environment for PwDs. Danso et al. (2017) argued that in terms of the built environment, it should be barrier-free and equally accessible to everyone unfortunately most are not.

For Dimension 1: Station Approach, it was observed that the minimum space between parking spaces prevents PwDs from using the designated parking that is available. The parking space is small and less spacious than what is specified in the MS. As a result, it is more difficult for PwDs, particularly wheelchair users, to enter and depart cars. To move around the trucks easily, they want more room. According to Osman et al. (2015) and Shobri et al. (2018), one of the physical obstacles wheelchair users encounter at the accessible parking is a lack of space for unloading and removing them from the vehicle. Osman et al. (2015) and Shobri et al. (2018) asserted that among the physical barriers faced by wheelchair users at the accessible parking is insufficient space for unloading and manoeuvring them off from the car. Rahim (2021) stated that the PwD-specific parking space must be close to the main entrance, lift or toilet. Furthermore, N. Ainaa (2021) indicated that to prevent dangers, the pedestrian routes offered at the stations ought to be segregated from the driving or cycling routes. Both Participant 3's Quotation 10 (3:10) and Participant 3's Quotation 9 (3:9) stated that parking lot accidents frequently occur because drivers have trouble noticing PwDs, particularly wheelchair users. Rahim (2021) argued that the pedestrian routes have dropped off and they are inaccessible to wheelchair users. The pedestrian paths use mild steel grating, which will trap the wheelchair user. Additionally, the pedestrian lacks a link and end path. The PwDs will access the station through the main road. Because the driver frequently has trouble seeing wheelchair users clearly, this could result in an accident involving PwDs. Danso et al. (2017) asserted that the quality of the pedestrian routes is important in facilitating PwDs to have equal access the public transportation as there is bound to have obstacles encountered along the routes for the PwDs. In addition, there is no lighting provided. This may be dangerous to PwDs, particularly at night.

For Dimension 2: Main Entrance, the incompliance of signage provided at the station makes the PwDs often lose their direction and the information desk staff won't be aware of the presence of PwDs (Bashiti and Rahim, 2016). They emphasised the need for appropriate signs to be placed in an appropriate location with large text size, high colour contrast between the font and the background; it also should be raised or embossed and with Braille sign. This is also supported by Rahim (2021) and Ying et al. (2013) stating that public buildings should have building layout signages. The signage should be in embossed texture to assist the visually impaired users before they enter the building. The PwDs will have trouble finding their route if there is insufficient user signage at the main gate. If there is no sufficient signage for users provided at the main entrance, the PwDs will find difficulties finding their way in the building (Shobri et al., 2018; Rahim et al., 2015). The display screen provided should not have shading and glare that make the screen unclear. Wider door openings and simple-to-operate doors will make it simpler and more independent to enter the station.

The incompliance of clear steps from obstacles and poor lighting for Dimension 3: Horizontal Circulation has resorted the PwDs locate a different route or path that would slow down or restrict their movement at the station. Additionally, a barrier like the steel plate of the drainage cover could put persons who are blind or visually impaired in danger since it would snag their walking stick (Bashiti and Rahim, 2016). At ETS 2 and ETS 3, there is a visual indicator at the glass door. Therefore, those who are blind would be perplexed and may mistakenly knock on the door and suffer injuries. Bashiti and Rahim (2016) also stressed that the glazed main door should not only have a visual indicator, but also should be marked with a coloured band and be placed at eye level specially to cater the wheelchair users.

The safe stair, difficult to operate lift, and visible between the floor and wall are found to be in accordance with the MS for Dimension 4: Vertical Circulation. A visually challenged person cannot be warned by a visual indicator at any station's stair tread. It might put them in risk. They might trip and hurt themselves. This was also highlighted by Bashiti and Rahim (2016). For PwDs, particularly the visually impaired person, difficulty identifying the nosing may represent risks. In addition, the incompliance of the braille signages provided at the lift at all stations makes the visually impaired person difficult to identify where the braille is located. Braille with embossed characters should be employed, say Bashiti and Rahim (2016) and Isa et al. (2016), to make it easier for those who are blind or deaf to find their way, especially if they are travelling alone. Braille with embossed characters should be employed, say Bashiti and Rahim (2016) and Isa et al. (2016), to make it easier for those who are blind or deaf to find their way, especially if they are travelling alone. Awang et al. (2017) stated that for PwDs to use the lift securely and get to the proper floor/destination, the lift sound system and intercom system are crucial. Wheelchair users encounter challenges because the lift supplied at the public building is insufficient (Osman et al. 2016). Thus, this limits the number of wheelchair users to enter the lift.

It is found that the incompliance of control and switches for Dimension 5: Equipment and Facilities at all stations make PwDs, especially wheelchair users difficult to reach. The accessibility of the building's amenities for all users, including kids, parents pushing strollers, expectant women, library staff tending to tall stacks of books, and others, was emphasised by Rahim (2021) and Isa et al. (2016).

For the incompliance of good lighting for Dimension 6: Toilet and Sanitary Facilities, this makes it difficult for the blind person to comfortably use the toilet and see clearly. Vision impairment can potentially result in an accident. Awang et al. (2017) emphasised how crucial toilet illumination was for those with disabilities. He also emphasised the necessity of routine maintenance to make sure that the lightings are functioning well.

Additionally, there is no clearing area adjacent to the toilet seat. Transferring from the wheelchair to the toilet seat will be challenging for the wheelchair user. It is difficult, especially in the toilet, therefore they must ask their carer to lift them onto the toilet seat. Rahim (2021) suggested that it is difficult to raise or carry a person since the carrier will feel the PwD's bodily weight on their back. It is discovered that the toilet door opens inward, creating a space in the toilet become more limited and hindered the PwDs accessibility (Bashiti and Rahim, 2016). Osman et al. (2015) also observed that wheelchair users encountered physical obstacles in the toilet, including a high mirror, a constricted entrance and a lack of grab rails. Rahim (2021) noted that when designing a building, the architect or designer may occasionally forget about the PwDs. Before approving the design or development, the local government must be aware of this and have established a checklist. Thus, the local authority must be aware of this and prepared a checklist before they approve the design or building. Furthermore, Bashiti and Rahim (2016) also added that the building must be outfitted with smoke alarms and other helpful assistive devices to notify those with hearing impairments. These are the incompliances observed at the three stations. This show that necessary steps should be considered specially to assist PwDS in their daily activities.

6. Conclusion

It can be concluded that the KAIs sub-dimension/facilities at all the three ETS stations are available and do comply with the KAIs but of different degree of compliances and not all comply to MS. Due to the incompliances of KAIs, the elements of social sustainability of the PwDs were also affected. These include their working life, their dignity in front of the public, social exclusion and prevent a smooth relationship with the community. ETS stations

should provide a more inclusive environment so that the PwDs can build a quality and harmony relationship with the community. As a result, they will become more independent and be given equal opportunity in their life. It is vital for the government or the respective parties to obtain customer feedback on the facilities provided in creating a more inventive design towards barrier-free environment and infrastructure. By providing all the necessary facilities that adhere to the MS will eventually assist our country to achieve two of the 17 goals of SDGs. For future research, a further investigation on the correlation between the KAIs dimension and social sustainability is deemed necessary as to have a better understanding on the issues and how the well-being of the PwDs on using the sub-dimension/facilities provided can further be assisted.

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