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Mohamed, Yusof Liyana and Jones, David 2013, Universal housing : Malaysian architect's perception on its implementation, in *APNHR 2013 : Proceedings of the Asia Pacific Network for Housing Research Conference*, [The Conference], [Kuala Lumpur, Malaysia], pp. 1-7.

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# Universal Housing: Malaysian Architect's Perceptions on its Implementation

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**Abstract:** Implementation of Universal Design (UD) in Malaysian built and natural environments is facing some barriers especially in housing. Irrespective of any age and ability, UD is a concept that seeks to positively respond to the needs of access to the physical environment which includes the right to live contentedly in one's house. The aim of this paper is to investigate the perceptions of Malaysian architects toward UD with an emphasis upon housing as a means in identifying the barriers of its implementation. The interview questions focus on perceptions, knowledge and understanding of architects in terms of terminology, legislation and standards, government and professional institute's initiatives and policies on UD. Findings show that among the barriers are confusion in terminology, biased knowledge, and misconceptions of the concept. The ongoing results of the study are presented in the paper together with suggestions for improvements and other implications.

**Key words:** Architect's Perceptions, Barriers, Housing, Malaysia, Universal Design (UD).

## 1. INTRODUCTION

Accessibility in the built environment is one of many important aspects in our life that we take for granted. When discussing about accessibility, often it is only associated with people with disabilities. Often we think the subject is unrelated to us. Often we think it is unrelated to our kids, who are playing actively in the playground; unrelated to our mother, who is busy filling up the trolley for the week supplies at the supermarket, and unrelated to our grandparents who are getting older day by day. In reality, accessibility in the built environment is important for everybody regardless of our age and abilities, irrespective of whether we are disabled or able-bodied. It is not in dispute that better accessibility will benefit the people with disabilities the most but as a consequence it also increase the safety of kids playing in the playground, ease the burden upon mothers carrying those heavy groceries in the trolleys from the supermarket to the car as well as allowing our grandparents the ability to still enjoy what the built environment offered them perhaps 50 years ago.

However, the efforts to improve accessibility by implementing Universal Design (UD), especially for housing, constantly receive negative feedback from professionals. This is due to the frequency of misinterpreting the concept. The majority of people has biased knowledge about UD and creates their own idea about what it means, and the applicability of UD as being just for people with disabilities and not for people who do not even consider themselves disabled (Skinner 2008).

Consequently, this paper aims to discuss the perceptions of Malaysian architects towards UD with an emphasis upon housing as a means to identifying the barriers of its implementation.

## 2. UNIVERSAL DESIGN (UD)

The concept of UD was first used and promoted in the United States by Mace. Mace (1998) defines UD as the design of products, environments, programmes and services to be useable by all people to the greatest extent possible without requiring adaptation or specialized design. 'All people' in this context refers to everybody regardless of their age and level of ability or disability.

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The concept promotes solutions that enhance accessibility and usability for all ages and abilities by using standard products and practices instead of proposing special features for people with disabilities or elderly people (Palmer and Ward 2010).

In order to advance the concept in a more comprehensive way, the Center for Universal Design at North Carolina State University that involves a group of architects, product designers, engineers and environmentalist under the leadership of Mace, formulated the Seven Principles of Universal Design (Table 1). These principles are applied by the Center to assist and educate both professionals and public about the characteristics of more usable design solutions, products and environments.

**Table 1:Seven Principles of Universal Design**

### **Principle 1: Equitable Use**

The design is useful and marketable to people with diverse abilities.

### **Principle 2: Flexibility in Use**

The design accommodates a wide range of individual preferences and abilities.

### **Principle 3: Simple and Intuitive Use**

Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level.

### **Principle 4: Perceptible Information**

The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.

### **Principle 5: Tolerance for Error**

The design minimizes hazards and the adverse consequences of accidental or unintended actions.

### **Principle 6: Low Physical Effort**

The design can be used efficiently and comfortably and with a minimum of fatigue.

### **Principle 7: Size and Space for Approach and Use**

Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture, or mobility.

## 3. UNIVERSAL HOUSING (UH)

Universal Housing (UH) is housing designed to be used by all people to the greatest extent possible that can accommodate whatever comes along over time easily and inexpensively (Victorian Council of Social Service 2008). According to the Australian Network for Universal Housing Design (ANUHD), the house: must meet the needs of home occupants regardless of age or ability; are capable of adapting to meet the changing needs of home occupants; can be economically adapted to respond to the current and future needs of homes occupants; and are well integrated within the community. ANUHD also affirmed the seven principles of UD that can be applied to housing in the following ways:

**Table 2: Seven Principles of Universal Housing**

<b>Principle 1: Equitable to Use</b>
Housing design should be useful, appealing and marketable to all potential home occupants with diverse abilities.
<b>Principle 2: Flexible in Use</b>
Housing design and product selection should accommodate a wide range of individual preferences and abilities.
<b>Principle 3: Simple and Intuitive to Use</b>
Housing design and layout should accommodate all home occupants regardless of their past experience, familiarity or cognitive ability.
<b>Principle 4: Easy to Interpret</b>
Housing design should communicate environmental information to the home occupant, regardless of ambient conditions and ability.
<b>Principle 5: Safe and Sensible to Use</b>
Housing design minimises hazards and adverse consequences of unintended actions.
<b>Principle 6: Requires Low Physical Effort</b>
Housing design and product selection should be easy, comfortable and efficient to use to accommodate a wide range of individual preferences and abilities.
<b>Principle 7: Promotes Ease on Approach to Housing Features and Elements</b>
Living spaces designed to ensure sufficient area is provided for the home occupant to easily approach, reach and manipulate the elements within their home environment.

Australia is one of many countries that have already incorporated UD in their housing standards. Apart from the requirements for accessible, adaptable and visitable housing which are included in *Australian Standards 1428* and *4299*, there are also a few guidelines that can be referred to by public and professionals such as the *Livable Housing Design Guidelines*. Interestingly, the *Livable Housing Design Guidelines* is a nationally-agreed set of guidelines that resulted from a partnership between community and consumer groups, government and industry (National Dialogue on Universal Housing Design 2009). The *Guidelines* aim to assist, promote and deliver universal designed homes and provide technical advice and guidance on the key easy living features that make a home easier and safer to live in for people of all ages and abilities. Further, the National Dialogue on Universal Housing Design (2009) believes that by adopting the *Guidelines*, houses will be easier to enter; safer to move in and around; more capable of easy and cost-effective adaptation; and designed to better anticipate and respond to the changing needs and abilities of the people who live in the home. Other countries that have already incorporated UD standards in housing cost-effectively are United Kingdom, the United States, Japan and The Netherlands (Victorian Council of Social Service 2008).

In contrast, Malaysia has not incorporated UD in their housing standard. There is a lack of guidelines on UH in Malaysia,

indicating that further research is required. Consequently, the research intent to investigate the issue by exploring the perceptions of Malaysian architects towards the implementation of UH.

#### 4. METHODOLOGY

Perception, according to Efron (1969) is the human's primary form of cognitive contact with the world around oneself and the conceptual knowledge derived from it is the primary form of awareness. Perception is also defined as understanding or idea and is synonymous with words such as insight, awareness, knowledge, opinion and observation. This research sought to investigate the perceptions of Malaysian architects towards UD with an emphasis upon domestic housing using a qualitative approach. There are many factors that influence the decision in choosing suitable methodology. However if the aim of the research is to understand a phenomenon rather than to search for an external course, the qualitative approach is the appropriate approach (Remenyi, William, Money and Swartz, 1998).

This paper is based on a preliminary study of an ongoing research that aims to investigate the perceptions of Malaysian and Australian architects towards Universal Design with an emphasis upon housing as a means to identifying the barriers of its implementation. In the overall research project, data was collected by conducting face-to-face semi-structured interviews with 30 Malaysian and 20 Australian architects who are currently practicing in private architectural firms. Semi-structured interviews were employed because according to Bryman (2008), the qualitative method of semi-structured interview allows the researcher to focus more on the participants voice and thought. However, this paper only discusses the perceptions of Malaysian architects. Five participants each from Terengganu, Pahang, Melaka, Negeri Sembilan, Kuala Lumpur and Selangor were interviewed. Potential participants were recruited through existing contact lists and thereupon via introductions. Initial contacts were made by phone call or email and enclosed with the email was a copy of an ethics Plain Language Statement (PLS) and a copy of the research summary for the potential participants to read. The potential participants were not screened, thus the selection of participants was random. 30 participants were successfully recruited and willing to cooperate in the interviews. All interviews were recorded using a digital voice recorder except for six participants who refused to be recorded. Notes were also taken during the interview with all the participants for further documentation.

The questions were designed into five sections. Section A is the participant's background which includes: years of working experience; registration with Pertubuhan Akitek Malaysia (PAM); architectural educational background and the participant's involvement in any project on UD, people with disabilities or elderly people. Section B explores the participant's understanding of the terminology, language and concept related to UD. Section C investigates the participant's awareness and practice of the legislation and standards related to UD. Section D investigates the initiatives of governments and professional institutes and efforts in promoting UD or in promoting the rights of people with disabilities and elderly people, and Section E explores the issues, facilitators and barriers of UD.

Data processing and analysis of the questions was undertaken using Nvivo qualitative data analysis (QDA) computer software.

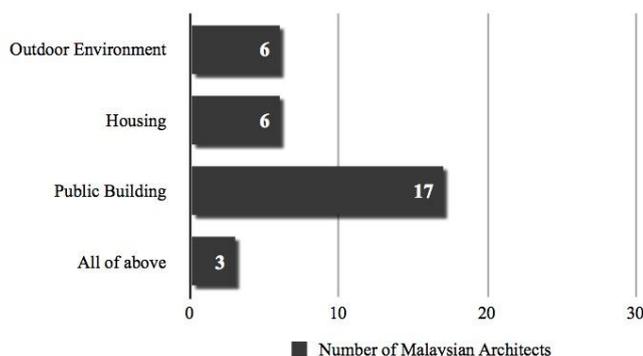
#### 5. FINDINGS AND DISCUSSIONS

The paper discusses the findings of a preliminary study as part of ongoing research. Discussions are based on the results of interviewing 30 architects in Malaysia. Henceforth, 'Malaysian architects' or 'architects' are 'participants' used throughout the discussions in this paper.

### 5.1 Universal Housing in Malaysia

A house built today is expected to be occupied over the time as we age. The majority Malaysians prefer to age in their current house rather than moving to a new environment or public institution (Mansor 2008). By all respects, there is a need to change the way our houses are designed. The current approach normally involves a design for the use by an 'average' physical type of people whom are young fit and adult (Imrie 2006). In reality, the occupants of a house range from baby, toddler, growing teenager, adult, elderly and may be occupied by able and disabled bodied people as well.

Mansor (2008) found that existing design features have a tendency to create problems as the occupants age and suggested that there is a need for a new approach to housing. As response, UH was proposed in Malaysia as a new approach that could meet the current and future needs of occupants (Ali, Dom and Sahrum 2012). However, inquisitively, how aware and sensitive are Malaysian architects towards these problems? How broad is the acceptance by Malaysian architects to the concept especially in terms of housing?



**Figure 1: Realm requiring further research on accessibility from the perceptions of Malaysian architects**

In term of accessibility, the research found that more Malaysian architects consider public building crucially needs more research rather more of the same. This conclusion was not based on the understanding that research on housing realm is sufficient but was based on the misconception that accessibility in housing is not important. The majority of architects believed that an afterthought design could solve the problem of providing access to a house in the future if necessary. Apart from this afterthought, it was also believed that the need to provide accessibly in housing depends on the occupants solely. Thus if not requested, it is not an important aspect to be taken into consideration. These misconceptions are assumed as contributing to the small acceptance numbers by architects surveyed towards UH.

On the other hand, as shown in Figure 1, six architects sensed that research on the accessibility in housing is more vital than in public buildings. The argument was that for public buildings, local authorities have already made it compulsory to provide for people with disabilities as a requirement for building approval but there was no such requirement on housing. There was also an argument that consideration of providing accessibility should only emphasise public housing as distinct from private housing, as the latter should

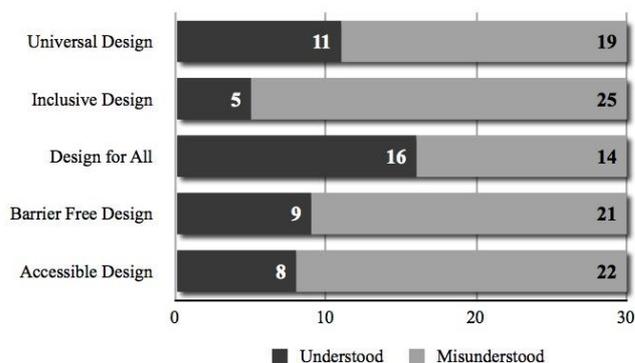
be dependent upon requests by the occupants or clients. The graph also shows that three architects consider housing as equally important as outdoor environments and public buildings. Notwithstanding the other two realms, they however suggest that more research should be undertaken in the housing realm because there is a dearth of knowledge in this topic.

The existence of these misconceptions, and lacking of understanding, contributes to barriers in implementing UH in Malaysia. Despite that the emphasis of this research project is on housing, the misconceptions are greatly related to perceptions towards the concept of UD in a broader context including terminology; legislation and standards; and government and professional institute initiatives.

### 5.2 Terminology

Internationally there are various terms and definitions of the UD concept. The concept is sometimes known by other names in different parts of the world (Vavik and Gheerawo 2009). There is an argument among various authors on whether the existence of the variety of terms also benefits the architects or otherwise or simply confuses the situation. Story (2011) asserts that it is an indication of healthy engagement that architects seek wording that is useful for a variety of specific purposes while Kose (2010) in contrast, argues that the terms are sometimes interchangeable, often misunderstood, and the subtleness of the differences, the lack of clear distinctions and understandings between these terms may lead to more confusion than progress.

In order to distinguish whether similarities or dissimilarities of these terms can be differentiated, the architects interviewed were also asked on their understanding of the terms: *Inclusive Design*; *Design for All*; *Barrier Free Design* and *Accessible Design*. These terms are normally associated with UD (Ostroff 2011; Story 2011; Vavik and Gheerawo 2009). *Inclusive Design* and *Design for All* share the same historical background and aims with UD while *Barrier Free Design* and *Accessible Design* on the other hand, do not share the same definition and aims of UD. *Barrier Free Design* is defined as a design that removes the barriers that hinder the social participation of people with disabilities (Akiyama 2005) while *Accessible Design* is a specialised design that is regulated by some design standards, regulations and building codes to accommodate people with disabilities (Erkiliç 2011).



**Figure 2: Understanding of terminology amongst Malaysian architects**

Figure 2 also indicates that *Design for All* is the term that is most understood by Malaysian architects. *Design for All* shares the

same definition with UD, thus it can be suggested that *Design for All* should be the term promoted in Malaysia in order to accomplish the concept of UD. However, disregarding that *Design for All* is more understandable among Malaysian architects, the term UD has already been used in the Malaysian national legislation document, the *Persons with Disabilities Act 2008*. Hence instead of promoting a new term, it is concluded that it would be more practical to standardise the terms employed in the legislation with the practicing world so that the same language can be spoken regardless of whether you are people with disabilities, local authorities or the architects given that the misinterpretation of the term UD amongst Malaysian architects should be clarified first.

### 5.3 Governments and Professional Institute's Initiatives



**Figure 3: Malaysian government's initiatives for people with disabilities**

The government of Malaysia's initiatives and supports of the rights for people with disabilities demonstrating in providing accessibility to the built environment can be seen in several efforts. On the international level, Malaysia has signed the *Proclamation on the Full Participation and Equality of People with Disabilities in the Asian-Pacific Regions* in 1994 (Hussein and Yaacob 2012) together with the *United Nations Convention on the Rights of Persons with Disabilities* in 2008 that was ratified by Malaysia in 2010 (United Nations 2012). At the national level, the efforts can be seen through legislation and standards such as the *Persons with Disabilities Act 2008*, *Building By-Laws (Amendment) 1991 (UBBL)* and the *Malaysian Standards (MS)*.

Another important event was in 2006, when the Deputy Prime Minister, affirmed during National Council on Local Government meeting that all buildings and public amenities, both new and existing, must be friendly to people with disabilities and needed to cater for their needs, including requiring that local authorities provide guidelines to enable it to occur (Malaysian Information Network and Disabilities 2010). Although there are increasing efforts from the national and local governments on issues of people with disabilities, in contrast the efforts in promoting UD both in public building and housing are still absent.

The Pertubuhan Akitek Malaysia (PAM) has also played its part in promoting accessibility by means of organizing seminars and conferences. Nonetheless, several architects believed that the

efforts were still not holistic and consistent, and suggested that promotion should be extended to public as well rather than just to PAM committees and its architects.

### 5.4 Legislation and Standards

There is no legislation or standards specifically for UD in Malaysia. However, information on this can be sourced from Malaysian legislation and standards on people with disabilities. For this reason, architects were questioned on their awareness and understanding of the current legislation and standards regulated to people with disabilities instead of UD. The current legislation in Malaysia includes The *Persons with Disabilities Act 2008*, the first rights-based legislation for people with disabilities and *Building By-Laws (Amendment) 1991 (UBBL)*. UBBL makes it statutory for buildings to provide access to enable people with disabilities to get into, out of and within the buildings positioning the owner as first defendant and the local authority as the second defendant both of whom can be fined if they do not comply with the UBBL (Kamarudinet al. 2012). The *Malaysian Standards* for people with disabilities are *MS 1184:2002 Code of Practice on Access for Disabled Persons to Public Buildings*, *MS 1331:2003 Code of Practice for Access of Disabled Persons outside Buildings*, *MS 1183Part8: 1990 Specification for Fire Precautions in the Design and Construction of Building-Part 8: Code of Practice for Means of Escape for Disabled People* and *MS2015: 2006 (Part1-4)* being standards for public toilets.

However, some issues arise concerning the current legislation and standards. Hussein and Yaacob (2012) argue that the *Persons with Disabilities Act 2008* is just an administrative and enabling *Act* rather than serving as a discrimination *Act* that allows penalizing. While for the UBBL, even though supported by Kamarudinet al. (2012) that currently requires that all new building plans submitted to the local authority in each state in Malaysia must comply with the UBBL and MS and as for existing buildings, it still has to be compliant within three years of and after the date of gazette with an exemption depending on considerations by local authority, this research learned that the requirements to provide for people with disabilities are only complied within public buildings in order to get building approval from the local authority, and in contrast those for housing and other realms are not stated.

In regard to the *Malaysian Standards (MS)*, only one among 30 of the Malaysian architects interviewed was aware of its existence. As a comparison, 17 among 20 Australian architects interviewed were aware and referred to the *Australian Standards (AS)* when designing for accessibility. This could be considered an alarming sign nationally because the *MS* is supposed to be referred to as guidelines when designing for accessibility. Although several architects referred to UBBL and their local authorities' checklist, neither the UBBL nor from the local authorities were contained guidelines provided. The unavailability of the *Guidelines* is considered as unparalleled given the declaration from the meeting of National Council on Local Government in 2006 that states that local authorities would provide guidelines to enable better accessibility. Even if provided, the guidelines are mostly limited to the provision of ramps, toilets and parking.

These issues indicate that there is a potential gap in bringing the legislation and standards to practice. Consequently, there is a need for consistent, standardised and holistic guidelines that are based on the *MS* and applied through local authorities, and that such should be delivered and infused to architects.

## 5.5. Barriers

Generally there are many barriers and challenges in implementing UD. Many of these barriers and challenges are muddled in the misconceptions of the concept and confusion of UD terminology amongst professionals and the public as well as possessing a divergence of thought because of Malaysian social and cultural contexts.

According to Bringolf (2011) and Rosseti (2010), the common misconceptions raise three key barriers: first, UD is interpreted as design for people with disabilities, which is considered as ugly and portrayed in a clinical or different look. Second, people with disabilities and older people are considered a separate market needing separate products. Last the design industry presumes that any changes to design templates will result in a greater increase in costs even though no evidence has been provided. Bringolf (2011) also believes that the assumption that UD is a design template for people with disabilities also contributes to the concept being given little consideration. The concept of UD may also lose its foundations due to social aspects of different cultures such as the concepts of independence and self-determination that do arise in countries like Malaysia (Kose 1998). Thus, the perceptions of Malaysian architects regarding these common misconceptions were explored in this research and barriers were identified in implementing UD in general as well as in the Malaysian housing realm are discussed accordingly in this section.

### 5.5.1 Attitude

Architects presumed that attitudes towards the concept are one of the biggest and most difficult barriers to tackle amongst the public, professionals and developers in Malaysia. It is normal that a new concept will usually receive resistance from citizens and will be rejected without really understanding it first. Therefore, there is a need to shift the way society think. However the mentality is expected to change gradually as new mindsets will take time to grow. The attitudes presumed by architects researched are:

- Amongst the architects themselves, it is perceived that providing better access will only benefit the people with disabilities and since the people with disabilities are seen as in the minority, it is presumed that the facilities will not be fully utilised thus becoming a waste.
- Generally, the construction industries in Malaysia are based more on profit-agendas and the assumption of a greater cost associated with UD implementation is discouraged by industry.
- Architects also believed that there is also a need for people with disabilities to change their way of life and state of mind such as engaging more actively with society as well as actively promoting their needs for independent lifestyles from society.
- Ignorance is another key barrier identified as habitual; the society will not consider UD unless we ourselves or our families have the same difficulties or are directly affected by the circumstance.
- Acceptance of the public, professional and developer towards any related issues, new legislations or standards are also considered barriers.

### 5.5.2. Issues of the People with Disabilities

The architects interviewed distinguished that people with disabilities in Malaysia rarely engaged with the built environment for the reason that the facilities for them are insufficient and not user-friendly. However, if provided, they doubted that they would be used because people with disabilities in Malaysia are not self-independent and rarely engaged with society. Because of this perception, their existence was not considered visible and thus they were seen as a minority in society. The architects perceived that awareness regarding people with disabilities has not successfully reached them because:

- Of the lack of information or guidelines provided by PAM regarding accessibility;
- People with disabilities in Malaysia are not aware of their rights, and thus never demand them;
- People with disabilities and families in Malaysia are passive and never complain; thus their difficulties are taken for granted;
- Resulting from the small number people with disabilities registered with the Social Welfare Department of Malaysia (JKM), there are seen as minority; and
- The voices of people with disabilities in Malaysia and principally expressed through NGOs that lack the strength of conviction and personal circumstances in which to forcefully articulate the issues.

### 5.5.3. Lack of Awareness and Understanding

There is a lack of awareness and a poor level of consciousness both among architects and public towards the UD concept and the importance accessibility. The biggest problem in this issue is the lack of knowledge and understanding among architects. Thus comprehensive guidelines, knowledgeable expertise and early education are important.

According to the architects interviewed, issues regarding guidelines are:

- There are no comprehensive guidelines from local authorities;
- Because architects usually work with graphics, guidelines should be illustrate and contain technical material rather than being just textual to avoid confusion that eventually leads to a variety of interpretations;
- Promotion by PAM or local authorities should not only occur through talks, conferences or seminars but also by means of providing guidelines; and
- The current guidelines on accessibility are only for public buildings and merely emphasis ramps, parking and toilets.

The architects also suggested that local authorities should appoint knowledgeable experts whom can provide consultancy services if required. The expertise should include a range of professionals including architects. In addition, architects also consider that all levels of society, from laymen to professionals should be educated about the importance of accessibility. They also suggested that subjects or courses on accessibility should be infused with architecture students particularly as early as possible.

### 5.5.4. Lack of Promotion

According to the architects, there is a considerable promotion activities by the government, professional institutes and NGOs. However, the efforts are not sufficient, not continuous and do not

reach all levels of society. Promotion and efforts by government are generally seen through legislation and standards. Government places efforts upon the shoulder of local authorities to implement and local authorities seek to do this by conducting seminars or workshops for architects. But these promotions are not comprehensive enough and the legislation and standards do not work effectively amongst architects, was a conclusion expressed by the architects interviewed.

In terms of the professional institutes, the effort is increasing. Promotion by PAM is considered to be important by the architects as it is responsible for convincing people such as architects who will then become the middle person to convince the public. However, this promotion is not at a larger scale but is limited to seminars, conferences and talks only open to closed committees. From the perspective of the majority of the architects interviewed, some of these seminars and talks should be open to public and include exhibitions. JKM and NGOs on the other hand have been important in promoting the rights and need of people with disabilities. While they have provided seminars to the local authorities, they need to have a louder voice to represent and insist on the rights of the people with disabilities.

Nevertheless, architects considered promotion alone is not enough, improved enforcement is necessary in order to implement UD.

### 5.5.5. Enforcement

There are two issues regarding enforcement. First, there is a lack of enforcement and secondly it is believed that enforcement in Malaysia is the only effective way of implementing any new concepts including the concept of UD.

As discussed by the architects when considering legislation and standards, they concluded that there is a need for a better enforcement on accessibility in Malaysia as the current enforcement is lacking. Enforcement is believed to be the key solution to improve accessibility as well as in implementing UD in any realm in Malaysia including housing. Issues faced by the existing enforcement practices identified by the architects are:

- Some parts in the UBBL are difficult to understand and may lead to misinterpretation;
- In the UBBL the requirement that providing for people with disabilities can be exempted depending on considerations by local authorities leading to a dilution of its strength and foundation;
- No comprehensive guidelines are provided ahead of the checklist given by the local authorities and the available guidelines are usually focused on ramps, toilets, parking and lifts; and
- Specifications of MS are not stated clearly in the requirements.

There were also a few additional questions arising from the architects interviewed including:

- How knowledgeable is the person in charge of the plan approval process in the authority's regarding accessibility?
- Are the considerations on people with disabilities normally included with the elderly as well?
- Can legislation and standards for people with disabilities enhance the concept of UD?

On the second issue, in view of the fact that enforcement is concluded to be the only effective way forward by the architects interviewed, it is considered important for the policy to be enforced first. In this context, local authorities are considered to be responsible in increasing their role as they have the authority in

approving or disapproving of any building plan submitted and therefore by enforcing the policy, the architect will be obliged to implement it into practice.

### 5.5.6. Cost

In any development, cost plays a significant role. Several architects interviewed firmly concluded that providing accessibility for people with disabilities is associated with a greater increase of cost and because UD is interpreted as concept that concerning only on the people with disabilities, the concept faced the same problem. On the other hand, several other architects interviewed presumed that even though there is no doubt that there will be some increase in cost, it is not critical enough to be treated as a major issue. In fact, was argued by few architects that if accessibility issues are considered in the early stage of a design process, there will be no increase of cost. Another issue associated with costs faced by the architects is embedded in the challenge of convincing the clients because normally in any development, funding and requirements are provided by the client. With the same misconceptions and lack of understanding of the importance of the concept among clients, the concept if proposed by the architects, received negative responses from the clients as reported in the interviews.

## 6. CONCLUSION

The perceptions of the Malaysian architects discussed in this paper do not represent the whole of the architectural profession in Malaysia. However, the findings are still considered important because as noted by Bryman (2008), the findings of qualitative research are to generalize the theory rather than population.

The perceptions among the Malaysian architects that accessibility in housing is not as important as other realms such as public building is considered a crucial problem for UH. In reality, the home is a place where we grow old in and is usually occupied by a range of ages and abilities, from toddler to elderly. Thus the accessibility aspect is more important than imagined. Apart from this point, the barriers in implementing UH in Malaysia are embedded in misconceptions about the terminology and concept of UD in a broader context. This assumption appears to be about what the concept of UD claims to achieve; accessibility for all levels of society regardless any abilities. Other barriers include; attitudes among professionals and public and the level of ignorance and acceptance towards the concept proposed as well as towards the existence of related legislation and standards; lack of awareness and understanding of the importance of the concept due to a lack of promotion and availability of knowledge; lack of enforcement and availability of guidelines by local authorities; and the assumption that a greater increase of cost will be associated with implementing the concept resulting in less consideration especially by the profit-oriented industry

With the aim of diminishing the barriers of implementing UH in Malaysia, several suggestions are proposed in this paper. First, the most important approach is to clarify the misinterpretation of the term UD amongst Malaysian architects as well as amongst the public. The misconceptions can be clarified by promoting the importance of accessibility in general and the benefits of UD in particular. Notwithstanding the needs of people with disabilities, it is necessary to stress to architects that the accessibility issues involve not just people with disabilities but their position in a bigger context, looking at it through the UD perspective, that it includes everybody. As response, increasing level of awareness

and understanding among public generally and architects specifically on the UD concept is crucially important. There is also terms of promoting the availability of the legislation and standards and providing comprehensive guidelines. All firms should have standardised guidelines that are based on the MS that can be attained from local authorities. Additional guidelines, especially on UH should be formulated and included involvement for all parties such as government, professionals and industry. In addition, enforcement of the legislation and standards is considered as vital and should be better applied especially by the local authorities.

Ahead of these barriers faced in implementing UH as well as in the acceptance of the concept UD in general in Malaysia, with continuous and persistence efforts from all level of society especially from the architects, it is hoped that the implementation of the concept will become a norm in the Malaysian practice and culture in the future.

## ACKNOWLEDGMENTS

The authors would like to thank the participants for their time and positive support in this study.

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