Designing a Safe Urban Travelling Environment using a Structural Fear Dimension Model

Rohana Sham*a, Muhammad Zaly Shah Bin Muhamad Husseinb, Hairulnizam Ismai b

*aFaculty of Business Management, UiTM Segamat
bFaculty of Built Environment, UTM Skudai Johor

Abstract

One of the most serious discussions on the contemporary urban travelling environment in Malaysia is that of the design facilities that have failed to meet the demand of women travelers. This has led to a higher level of concern for a much safer travelling environment for many women travelers within the Kuala Lumpur conurbation. The main aim of this research is to determine the extent of the women needs when travelling. This empirical research has used the structural fear dimension model as the underpinning theory. The approach to empirical research adopted for this study was one of the quantitative methodology.

1. Introduction

1.1. The global issue

Realizing the fact that in a new global economy where women increasingly command the employment sector, fear of crime has become the central issue and challenges for many engineers especially in
designing a so-called safe environment during their travelling process. This has led to a higher level of concern for a much safer travelling environment for many women travellers within the Kuala Lumpur Conurbation. There has however been limited research done on the wide range of the women commuting needs on the facilities and infrastructure from the point of origin to the point of destination. The provisions of contemporary urban travelling environment however suffer from several major drawbacks. In addition, there has been only limited research done towards looking at the needs of women travellers from the engineering aspect, has lead to the increment of the fear level that they face while travelling to work. The main aim of this research is to determine the extent of the women needs when travelling through engineering and design aspect that need to be install surround the environment. This is to ensure that all working women, who live and work in major urban area in Malaysia, can travel safe with a minimal level of fear indication towards crime. This empirical research has used the structural fear dimension model as the underpinning theory before it proceeds to the engineering process of the actual design. The central question of this study relates to how much of the structural fear dimension model has been taken into consideration before planning for travellers has taken place, primarily on the infrastructure assistance to them especially when the stage of engineering is concern. The approach to empirical research adopted for this study was one of the quantitative methodologies. Due to practical constraint, this research limits its comprehensive review of every mode of transport used by the women travellers. Only women riding on the stage buses within the Kuala Lumpur Conurbation have been considered as the main respondents. This research has given an account of and the reasons for the widespread use of structural fear dimension model as a basis in the design of public transport provision in achieving a reasonably safe urban travelling sphere, as what is desired by the women travellers. It is believed that, with appropriate design through an engineering production, a reduction in fear level faced by many women travellers while travelling can be achieved.

The design focuses on the walkability area and waiting area through appropriate engineering and production process using a structural fear dimension model as a basis of the design. It is believed that with appropriate engineering technique used in the production of the walkways and waiting area for the public transport, the fear level could be reduced thus attracting the usage of public transport when commuting in city centre is concern.

Among the recent study regarding the road transport infrastructure were being conducted by Amiril et al (2014). They have mentioned that a transportation infrastructure projects often involve considerable land use, long-term investment, and huge resource. However, no discussions are being made on the safety aspect from the feeling of passengers especially a women point of view.

Apart from that within the same year of 2014 a group of researcher Hamdan et al had also focus on the social capital as an element. They concluded that the pattern of social capital is influenced by when the neighborhoods is developed, the diversity composition of its people, locations and the surrounding developments.

Not only that a research by Hamid and Toyong (2014) had also on the rural area and the elderly leaving apart women as a subject thus creating a gap for this study to fulfill. They have highlighted that verification of home security needs from the elderly group of people that reside in the rural area so that an innovative solution in preventing house breaking crime could be proposed.

Another interesting study by a group of Malaysian researcher pertaining the transportation area. The study was done by Bohari and Osman (2014) is The model also assessed the factors that affect the movement of passenger such as interior design attributes, information signage visibility and pedestrian behavior. This study focus on the movement of the crowd while using the interchange. Again this study fail to consider the movement of vulnerable travellers and their problem that create a gaps in this study.

Among other discussion being highlighted by Tan and Subramaniam (2013) on gender study are on the literacy rate among female adult in Malaysia increased to 94.7 percent in 2004 from 64.7 percent in 1980
while the female labour force participation rate (FLFPR) in Malaysia has remained stagnant around 47 percent over the same period. Although their research tap on the labour force participation among female adult, this research had also once again ignore the discussion on the safety aspect of the female travellers while using public transport to commute to work.

The main reason why only city centre is chosen is mainly due to the statistics release by National Physical Plan 2012 had further showed that in year 2020 the central region will experience the highest number of urban population. This was followed by Southern and Northern Region.

![Urban population trend in Malaysia](source: National Physical Plan 2012)

2. Literature review

2.1. Definition of a safe urban travelling environment

The term built environment in this study is merely referring to buildings, streets, parks, and other man-made physical surroundings that affects a person’s choices regarding opportunities for physical activity and the safety of engaging in physical activity.

The decision to walk or bicycle for short trips often depends on time, purpose, or environmental factors. Research shows that features of the built environment such as sidewalks, street lights, traffic, hills, and overall walkability are related to travel behaviors. When the design is concern, many experts had identified the gap between existing policy tools and what can promote health through community design as a major policy opportunity. This discussion commentary represents a consensus of next actions towards creating built environments that support healthy active living.

2.2. Structural fear dimension model

In 2012, a new phenomenon had hit the discussion on the public security by looking into the aspect of social structure and public security. Goan in 2012 had reported that the most common strategy use to
reduce crime would be to increase patrols. He further clarify that many strategy have neglected the impacts of economics policies and social structure towards the public security.

The emergence of a new social structure creates a new challenging environment for Malaysian working women to cope.

In relation to this, how one perceives the likelihood of crime is however affected by few important variables. Among the variables being discuss are how an individual belief about the crime incidence, incivilities, crime consequences, control and worry over crime as well as the perceptions on the community cohesion. Figure 2 below illustrates the above scenario.

It can be seen from the figure that the contributory factors to the perceived likelihood of crime are many and intertwined. One important contributory factor is the perception of community cohesion. Jackson (2005) appraised that any threat that happen would be influenced by both the beliefs about the crime and the subjective perceptions of the physical and social environment surrounding them. He also concludes that many perceptions on the social environment is made up of attitudes towards the community cohesion namely the level of influence that a neighborhood had on the trust and support in the community. These issues on community cohesion and social control then on relates to the issue of social structure.

In the year 1970’s, Blau (1977) had conceptualized social pattern as one of the distributions of a population among different group of social positions. He added that this had affected the interaction among people. Furthermore, this social structure is ingrained in the social choices people make in their social connection. The distinctions in social are expressed by ways of roles and positions, then on influencing social associations. This will then leads to the general public being divided into different
several type of category. In a simplest term, it is known as social structure attribute. A social structure generally refers to how society being categorized into predictable relationships. Since most of the social structure theorists often view the economically disadvantaged groups as being more likely to commit certain crimes, a serious attention is then given to improved the social relationship amongst this group of the society and neighborhood.

The above findings concur with that of the works of Kawachi, Kennedy and Wilkinson (1999) which relate a social structure with crime incidence. Their research had also found that there is a link between the social cohesion at the community level to rates of crime that happen. On the other hand, the works of both researcher like Wilson (1987, 1991) and Anderson (1990) had discovered that among the crucial factor explaining a high incidence of delinquency and crime in urban settings has been the loss of social buffers that normally exist in middle class neighbourhoods. These incidence are made up of both the formal and informal networks of organizations which includes religious groups, business group, and neighbourhood associations.

Kubrin in 2009 on the other hand pointed out that among the fact crime incidence is that it is not randomly distributed across the neighbourhood in the city area. The research try to highlight the fact that the incidence of criminal activities does not occur equally in all areas. Crime instead cluster in certain selected location or areas. He further added that for that purpose, resident living in the neighbourhood can clearly identify the “good” or “bad” area. His discussion also drilled on the issue of the theory of social disorganization which highlight the factual of non random crime distribution as a point of departure in explaining about the occurrence of crime in certain areas. This is important because occurrence of crime in a particular area of resident will affect the fear of crime among the travellers.

3. Discussion

It is generally accepted that adequate, efficient and most importantly a safe public bus services are essential for most urban dwellers especially women commuters who live and work in urban area. However, it cannot be denied that providing these services contributes towards a conflict between the role of a government and the role of a personal operator. As developing countries like Malaysia strive to increase their level of services on public transport provision, safety issues seldom being put into top priority that had constitutes towards a higher feeling of ‘unsafe’ and ‘fear of crime’ to most women commuters. Designing a public transport supply that tailed to the need of men wage earners further contribute to the problem.

This study discuss the theoretical and empirical evidence of women travelling safety issues while identifying factors that affect women level of safety from various point of view. The discussion would highlight the satisfaction level on the current supply of public transport especially buses. Thus from here the level of safety is being examine based on that satisfaction level. Furthermore the study also focus on the satisfaction level being indicated for the infrastructure provision and their level of safety and the last variable being include in the study is the current social structure that create the social environment while travelling. This is especially true for traveling point which normally took place at the residential area.

The following analysis determine the differences on the level of fear indication of women travellers while using the bus service for commuting to work purpose. To further understand the feeling of fear while travelling, the following condition were given to create a travelling scenario for women travellers with a given statement “My fear towards crime increase....”

The results obtained from the analysis for the level of fear indication are shown in Table 1. This is a very important analysis in order to find an answer on how to reduce the fear while travelling with stage bus service into city centre for working purpose.
Most of the women who responded to this question had indicated that they were either ‘strongly agree’ or ‘strongly disagree’ with the statement given regarding their level of fear indication while travelling on the whole journey. It is obvious from the table that the most indication of fear were being spotted on the walking activities during night time with a mean score of 4.76. Second layer of fear indication were being highlight by having someone loiter near my waiting place. The overall means score result had indicated a higher level of fear were being reported by women travellers while travelling from their home to their work place in the city centre.

Table 1. Mean analysis for level of fear indication among women travelers

<table>
<thead>
<tr>
<th>Measuring Indicator</th>
<th>Mean Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>While walking to and from the stop</td>
<td>4.01</td>
</tr>
<tr>
<td>While walking to my work place</td>
<td>4.09</td>
</tr>
<tr>
<td>When a street beggar approach me</td>
<td>4.43</td>
</tr>
<tr>
<td>While walking alone in this area after dark</td>
<td>4.76</td>
</tr>
<tr>
<td>While walking alone in this area during day time</td>
<td>4.36</td>
</tr>
<tr>
<td>When I have to wait too long at the bus stop</td>
<td>4.19</td>
</tr>
<tr>
<td>While waiting at the stop</td>
<td>4.09</td>
</tr>
<tr>
<td>While waiting at the stop during day time</td>
<td>4.17</td>
</tr>
<tr>
<td>While waiting at the current stop during night time</td>
<td>4.53</td>
</tr>
<tr>
<td>While waiting with homeless people around</td>
<td>4.42</td>
</tr>
<tr>
<td>By having someone loiter near my waiting place</td>
<td>4.54</td>
</tr>
<tr>
<td>When I have to travel in the vandalize bus</td>
<td>3.99</td>
</tr>
<tr>
<td>When I have to share seat with male counterpart</td>
<td>4.36</td>
</tr>
<tr>
<td>I am riding alone in the vehicle during off peak</td>
<td>4.49</td>
</tr>
<tr>
<td>I am riding alone during peak hour</td>
<td>4.44</td>
</tr>
</tbody>
</table>

*1-Strongly Disagree
5-Strongly Agree

Question like ‘I feel Safe ...’ were use to tap on the feeling of safety indication. The answer to these questions is very important because it will help to determine on the strategy to be used to reduce the travel fear factor among the women travellers as indicate in the second objective. To be able to design a specific solution to the problem face by women travelers, the analysis on the actual feeling of safety among these riders must first be evaluated. The following analysis drilled out the frequency analysis among the bus riders on the feeling of safety at a given situation or condition while travelling.

Figure 3 illustrates the breakdown of feeling of safe accordingly from ‘agree to strongly agree’ according to situation given to them. It provides detailed analysis on the state of travelling condition experience by daily stage bus users. The result from the finding revealed that more than 76.6 % of the total respondent had indicated ‘a strongly agree’ that they feel safe walking with an ample lighting install on the street.
This was followed by walking with a CCTV monitoring (74%), when no street beggar (53.8%) and walking in a guarded walkways (34.3%). Nevertheless the rest of the respondent had agree on the all the given attribute that make them feel safe while travelling with 65.7% on guarded walkways being indicated as the highest. Overall indication of ‘safe’ by all age group had been obtained when the respondent were asked on ‘safety while walking on a given situation’.

![Fig.3. Feeling of safety indication while walking](image)

Having known the fact that while travelling by bus is concern, most women commuters had to depend on a set of travelling system which consist of the walking, waiting and being in the vehicle before they reach a final destination. Therefore a set of descriptive analysis of current state of waiting was also carried out in order to look at feeling of safety while waiting at the current stop. Figure 4 shows the feeling of safety indication while waiting with a given condition. Around 70.2% of women travellers had indicated that they feel safe waiting at the stop when there is no strangers loitering nearby. This was then followed by feeling of safety indication while waiting with no homeless people around (64.7%).

![Fig.4. Feeling of safety indication while waiting at the stop](image)
Having the second last node of transport while travelling is to be in the vehicle, the feeling of safety at this stage is also important to tap. The results obtained from the analysis are shown in Figure 5. This is also a very important analysis in order to find an answer on how to reduce the feeling of fear among the women travellers who live and work in the urban area.

Most of the women who responded to this question had indicated that they were either ‘agree or ‘strongly agree’ with the travelling condition given that makes them feel safe while travelling. What was interesting in this data was that the most strongly disagree statement were given to the condition where a women feel safe while riding alone during off peak hours (75%). This was followed by an indication disagree on the statement ‘I feel safe when I am riding alone during peak hour’. Apart from that, around 75.3% of total response had indicated the highest level of safety indication when they can travel on women only buses

![Fig.5. Feeling of safety indication while in the vehicle](image)

### 4. Conclusion and recommendation

In order to implement a successful and perceived as safe urban transportation system, a collaboration of all party including the government (central and local), user and operator are much needed. Combination of all party would develop a more holistic service and infrastructure provision that would give a maximum satisfaction not only towards women travellers but also towards all users. Unless the government adopt the improvement on both the service and infrastructure, travelling safe will not be attained.

The main limitation faced in carrying out the research lies mostly on the statistics being obtained from the local government which is not updated accordingly. Adding to it, the available police report failed to specify the location characteristics and the activity of victims when crime happen leads towards the difficulties in getting the actual scenario of crime occurrence in urban centre. Moreover lack of research conducted in this area in Malaysian scenario has further created another limitation especially in terms of supporting evidence from previous research pertaining to the local environment in Malaysia especially on the issues of women as the main travellers.
This research has thrown up many questions in need of further investigation. For future research, a household survey should be conducted in order to achieve a more rigorous finding especially on both users and non-users of bus services in an urban area. Not only that, the inclusion of educational trip by most women living in urban area would also significantly improve the study. Considerably more work would need to be done to determine the impact of crime experience towards the travel behaviour of the household.

More research needs to be undertaken to provide a clear understanding of women’s lives, their domestics and family responsibilities and their preferred work and leisure pattern particularly at local level. Ensuring the ways women use public places especially when a trip by bus is concerned is an important element to consider in order to produce a good planning practice because every transport services and infrastructure supply would affect women level of safety especially on the perception of personal security including concern for crime. In conclusion a normal ‘one-size-fits-all’ approach, cannot be used in any transport provision be it on the facilities or the service provision.

As awareness of the public transport needs of people with restricted mobility is increasing, further research on other group of users such as the safety of restricted mobility group which includes the elderly and disabled group would further add to the improvement of this research. The research would benefit the society as the demographic trends indicate that over the coming decades the number of people with restricted mobility would increase in line with the rises of elderly population.

It would be interesting to assess the effects of all forms of public transport with respect to safety issues. Therefore, future research should also be looking at all forms of public transport supply in Malaysia Major urban area.

Acknowledgements

Alhamdulillah. Many thanks go to family and friends for the completion of this paper. My heartfelt thanks also go to lecturer of Business Management from UiTM Malaysia and UiTM Johor Bahru for their support in completion of this paper. A special thanks is also dedicated to Association of Malaysian Environment-Behavior Researchers for the sponsorship of this paper.

References


