Assessing Essential Facilities for Daily Walking in a Tropical Campus

Bijan Afsar, Mohd Yazid Mohd Yunos and Mohd Johari Mohd Yusof

Faculty of Design and Architecture, Universiti Putra Malaysia

A R T I C L E  I N F O
Article history:
Received 12 October 2014
Received in revised form 26 December 2014
Accepted 1 January 2015
Available online 17 February 2015

Keywords:
Pedestrian environment, facility, university campus, pedestrian activity.

A B S T R A C T
New urban life puts emphasis on developing environmental-friendly transportation which, walking and cycling have been promoted as broadly accessible mode of sustainable transportation. Recently, campus planners in University Putra Malaysia (UPM) have been tried to provide cycling and walking access and mobility without destroying campus qualities. This paper presents the influential physical-environmental determinants on encouraging walking and cycling, based on the users’ perceptions. Users’ perceptions data was obtained through a questionnaire survey which was completed by pedestrians and cyclists using the study site. Canopy was on the top of the list as an extremely important facility that should be developed and improved. Moreover, bus stop shelter has sorted in the top priority of pedestrians in terms of facility item. To design a pedestrian environment user’s community survey can help to improve planners’ perspective in providing a user friendly environment.

INTRODUCTION

The interest to field causal relationship between built environment and active commuting has been grown in the last decade. Walking and cycling are widely known as the main modes of sustainable transportation [1], and more it is important to understand how encourage people to do walking and cycling activities [2]. Physical and environmental factors play a significant role on choosing the mode of transportation [3]. It is extensively accepted that the main aim to encourage people to do pedestrian and cycling activities is to improve the quality of the associated environment.

Pedestrian environment constitutes neighborhood livability, physical activity, safety and quality of the connected area. Pedestrian environment is not just about accessibility and route connections; in fact it should also be attractive in terms of aesthetics and view. Consequently, physical factors of the pedestrian environment are the main crucial factors in encouraging walking and physical activities that reflect inhabitants’ lifestyle. As with any society, fast growing transportation systems need to move towards a more comprehensive and practical solution. Fortunately, sustainable policies are now being applied in almost all Malaysian societies including smaller societies such as university campuses.

Facilities usually bring about comfort by improving pedestrian environment quality [5]. Sidewalks should be carefully designed in order to provide adequate space for utility facilities, and it is important to consider the appropriate type and location for pedestrian utilities. Most streets should be targeted to have “basic” facilities in terms of utilities and recreational elements. When the utility of walking increases, the willingness to walk a longer distance also increases [3]. Footpath is the main location for street furniture. Some furniture’s are designed in a way that benefits pedestrians by enhancing the walking environment, while other types of furniture’s are provided mainly for other road user. Furniture can create a visually interesting environment for pedestrians from travel lanes greatly increases their comfort as they use the Sidewalk Corridor.

University Putra Malaysia (UPM) is the leading organization in sustainable development among Malaysian universities. UPM started creating bikeway network when the Road Safety Research Centre (RSRC) was established in 1992 at the Faculty of Engineering. Promoting pedestrian and cycling activities is one of the current plans of UPM in developing sustainable master plan and green campus. Due to the large number of
travels in UPM campus, improving walking and cycling paths are a key factor to develop sustainable transportation. Self-administered questionnaire has designed to indicate users’ perceptions. The results showed that mostly users are looking for the facilities to protect them from the harsh weather condition. Findings in this study contributes with campus planners and policy makers to consider pedestrian planning and that more could be done for future studies related to sustainable transportation in tropical climate. In order to create more pedestrian friendly campuses, efforts need to focus on the pedestrian behavior and preferences.

**Methodology:**

Probability sampling has been approved as the primary method of selecting large, representative sample for social science research. The sample size was based on the accuracy required for the sample as well as the extent of the variation that existed in the selected population. The unit of analysis for this study is individual and the sample group was randomly selected based on the number of students from different faculties of UPM. Consequently, 387 number of sample group were required. A sample unit is an element or set of elements considered for selection in a stage of sampling [6]. In this study approximately all range of UPM students were targeted as sample unit. Sample population is available through everyday campus life with most of them being relevant to the questionnaire due to the subject of study (most of the students walk during their time spent on campus), and subsequently, single stage sampling was the design for this population.

The study was adopted by the cross-sectional survey method approach whereby quantitative methods were employed as data collection strategies. The survey was considered self-administered structure, and respondents were asked to complete the questionnaire by themselves. This method includes question and shows particular attitudes or perspective. In this study Likert’s scale [7] was used to investigate the users’ evaluations of the effectiveness of the facility factor on encouraging students to walk on UPM campus. After the data collection process, data analysis was done to investigate the influence of facility factor on encouraging pedestrians to walk on UPM Campus. The analysis of data was carried out by means of content analysis and the percentage of the perceived importance rank for each facility item.

**Analysis and Discussion:**

Facilities in a pedestrian environment are usually considered as factors for improving convenience for pedestrians [5]. Results showed there are two items which are significantly perceived more important than the others. Bus stop shelter and canopy obtained 95% and 93% for either as important or extremely important respectively. Both of the items share a common facility, shelter to protect users from the sun, rain, and other harsh weather conditions. These high percentages showed that UPM pedestrian environment has a high demand for canopy.

The reason could be due to the Malaysian climate. Malaysia’s climate is categorized as tropical with the temperature remaining relatively constant throughout the year (27° delicious on average) and an average of 250cm of rain fall per year [8]. This weather condition is not convenient for pedestrians and can be decreased though the installation of certain facilities. In addition, a high number of respondents complained that an absence of canopy is one of the main challenges of UPM sidewalks.

Pole light was another considerable facility which rated 91% as either important or extremely important factor. As it was discussed in the safety section, lighting is one of the extremely important items that an adequate number is not provided. Providing adequate lighting in the pedestrian network for improving safety and users convenience has been given significant importance in other researches [5]. Table 1 shows that sign and directions with 93% percent of either important or extremely important rate as another influential item. This means signs and directions on the UPM Serdang Campus are not well managed or understandable. The reason could be perhaps the language used. Indeed, most of the signs and directions on UPM are written solely in Bahasa Malay, which therefore is not understandable for international students particular fresh students.

Indeed, all of the facility items ranked a mean value above 4 except cycle rack and stand, drinking fountain, and public telephone. The least important item from the users’ perspective goes to public telephone. More than half of the respondents (52%) categorized public telephones into the unimportant category. In fact, with the high speed advancing of the telecommunication and the vast availability of cellphones, public telephones are no longer useful. The rest of the results are shown in table 1.

**Summary:**

Findings in this research showed that priority should be focused on the installing canopy. Canopy is the main absent facility, which has significantly been pin pointed by the survey respondents as well. According to the high mean value of the canopy item, students are undoubtedly concern about their convenience in the harsh weather condition. Furthermore, bus stop shelter has been ranked as very important and this shows that shelter to protect the pedestrians has high value for the users. Consequently, Bus stops should be redesigned and shaped into appropriate size for the users. Another considerable item could be mentioned as sign & directions.
Pedestrians are usually follow the directions to reach their destinations, consequently, if directions are not written appropriately or clearly can confuse pedestrians and challenge their decision to find their way.

Table 1: Percentage of the perceived importance of the facility factor and its related items.

<table>
<thead>
<tr>
<th>Item</th>
<th>Extremely Unimportant</th>
<th>Unimportant</th>
<th>Uncertain</th>
<th>Important</th>
<th>Extremely Important</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canopy</td>
<td>0.0</td>
<td>1.0</td>
<td>6.5</td>
<td>30.3</td>
<td>62.2</td>
<td>4.53</td>
</tr>
<tr>
<td>Bench &amp; Seat</td>
<td>0.0</td>
<td>2.0</td>
<td>8.8</td>
<td>46.1</td>
<td>43.0</td>
<td>4.28</td>
</tr>
<tr>
<td>Bus stop shelter</td>
<td>0.0</td>
<td>1.0</td>
<td>4.1</td>
<td>32.0</td>
<td>62.9</td>
<td>4.56</td>
</tr>
<tr>
<td>Electronic bus timetable</td>
<td>0.0</td>
<td>5.1</td>
<td>15.0</td>
<td>42.5</td>
<td>37.4</td>
<td>4.10</td>
</tr>
<tr>
<td>Cycle rack &amp; Stand</td>
<td>1.4</td>
<td>2.8</td>
<td>17.3</td>
<td>56.7</td>
<td>21.8</td>
<td>3.94</td>
</tr>
<tr>
<td>Drinking fountain</td>
<td>0.7</td>
<td>3.7</td>
<td>22.0</td>
<td>49.2</td>
<td>24.4</td>
<td>3.92</td>
</tr>
<tr>
<td>Litter bin</td>
<td>0.0</td>
<td>1.4</td>
<td>7.1</td>
<td>45.9</td>
<td>45.6</td>
<td>4.35</td>
</tr>
<tr>
<td>Sign &amp; Direction</td>
<td>0.0</td>
<td>0.0</td>
<td>6.8</td>
<td>44.4</td>
<td>48.8</td>
<td>4.41</td>
</tr>
<tr>
<td>Bollards</td>
<td>0.0</td>
<td>1.0</td>
<td>10.6</td>
<td>45.4</td>
<td>43.0</td>
<td>4.30</td>
</tr>
<tr>
<td>Public telephone</td>
<td>6.8</td>
<td>18.8</td>
<td>27.6</td>
<td>33.1</td>
<td>13.7</td>
<td>3.27</td>
</tr>
<tr>
<td>Pole lights</td>
<td>0.0</td>
<td>0.0</td>
<td>8.8</td>
<td>38.3</td>
<td>52.9</td>
<td>4.38</td>
</tr>
</tbody>
</table>

Note: Minimum value has been 1 and maximum value has been 5.

REFERENCES


