ASSESSMENT OF PEDESTRIAN FACILITIES IN KANDY WORLD HERITAGE CITY FROM THE PERSPECTIVE OF TOURISTS

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ABSTRACT: Tourists attract more towards world heritage cities recently. Kandy, Sri Lanka is one such heritage tourist destination. Sri Dalada Maligawa, where the Tooth Relic of Lord Buddha is placed in the heart of Kandy City. Besides, many historical other shrines of different religions and Royal Botanical garden is located in the vicinity of Kandy. Tourists are more cautious about the pedestrian facilities in downtown areas. It is observed that pedestrian facilities are in poor condition in some of streets in Kandy CBD. Properly designed walkaways attract more tourists and indirectly increase the image of the city. Continuous walkways with guard rails, waiting areas with seating facilities, walkways with free of obstacles, proper widths of walkways improve the pedestrian facilities. Conjoint Analysis (CA) is a multivariate technique used to understand how respondents develop preferences for products or services. Current research exemplifies the effectiveness of conjoint analysis in evaluating the most influencing attributes in classification of sidewalks. Sidewalk width, guard rails covering the sidewalks, obstacles, and seating facilities are recognized as highly contributed attributes for pedestrian facilities. Total Utility Value is calculated for selected places by using part-worth utility values of each level of attributes according to results of CA. Pedestrian Preference Score also will be used to achieve better outcomes from this research. Results of CA and PPS results are used to develop a Pedestrian Condition Index (PCI) to assist the pedestrian facilities in this research.

Keywords: Conjoint Analysis; Total Utility Value; Pedestrian Preference Score

1. INTRODUCTION

Heritage tourism is one of the most significant and fastest-growing segment of tourism in the world. Tourists attract to world heritage cities like Kandy and they mostly walk on streets in the downtown areas. Properly designed walk ways attract more people and indirectly increase the image of the city.

Pedestrian facilities are an important aspect in the design of traffic management systems because it also has implications on the overall traffic system, especially in the Kandy Central Business District (CBD) area. Assessment of pedestrian facilities is important to determine how well a facility is fulfilling its intended objectives. The principal objective of this research to develop a methodology to evaluate the main factors affecting to pedestrian sidewalks.

2. METHODOLOGY

'Conjoint Analysis' is a survey-based statistical technique used in market research that helps determine how people value different attributes that make up an individual product or service. The objective of conjoint analysis is to determine what combination of a limited number of attributes is most influential on respondent choice or decision-maker.

Total Utility Values (TUV) and Pedestrians Preference Score (PPS) calculate from the below equations.

$$TUV\ U(Xij) = Constant + \sum m(i = 1) \sum k(j = 1)\ Uij\ Xij$$

$U(Xij)$ = Total utility of an alternative

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m = Number of attributes

k = Number of levels in i^{th} attribute

U_{ij} = Utility associated with j^{th} level of the ith attribute

X_{ij} = Dummy variable that take on 1 if the jth level of the ith attribute is present or 0
Otherwise

Relative importance of an attribute (RI) and Part-worth utility value (PUV) of an attribute level are important to calculate TUV. Both RI and PUV are generated from the SPSS software.

$$PSS_i = \frac{1}{n} \sum_{i=1}^{n} y_{ij}$$

y_{ij} = Prefer to walk at the jth location by i^{th} respondent

n = Number of respondents

PPS values collect from the important locations in the Kandy CBD. Backpackers want to select their preference about pedestrian facilities in the online question sheet.

3. RESULTS & DISCUSSION

A survey is a data gathering method that is utilized to collect, analyze and interpret the views of a group of people from a target population. So, data was collected using a self-administered questionnaire which was developed mainly based on a conjoint analysis method in this study.
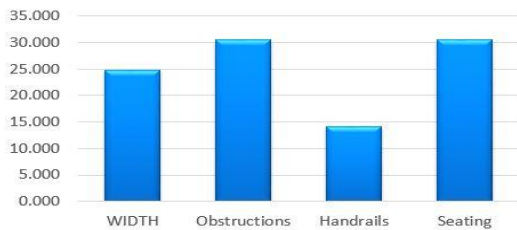
3.1. Conjoint Analysis Outcomes

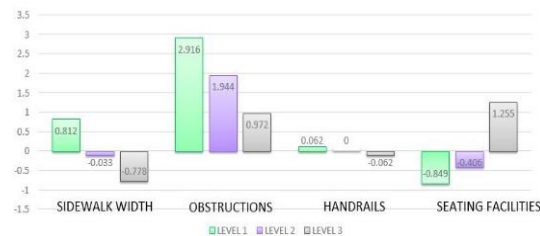**Figure 1.** Relative Importance of selected attributes

Figure 2. Part-Worth Utility Values of each attribute levels

3.2. TUV of Each Location in Kandy City

First it is needed to match each attribute level with the actual location condition and then adding the part-worth utility values of each attribute level, the TUV of each location can be calculated.
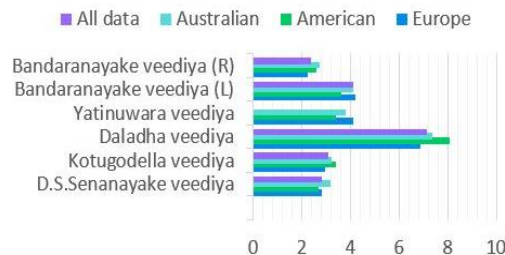

Figure 3. TUV of each location

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3.3. PPS of Each Location in Kandy City

In this part pedestrian has to mark their preference on given scale to have pedestrian facilities at that specific location.
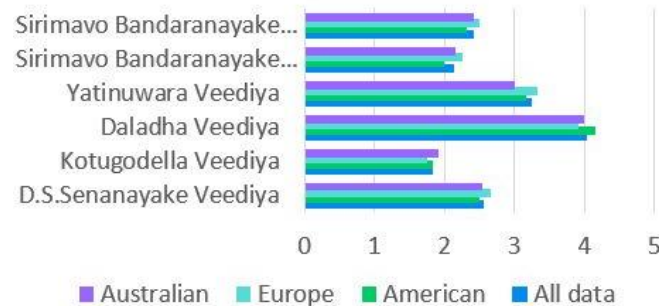

Figure 4. PPS of each location

4. CONCLUSION

The data was collected for both Total Utility Value (TUV) and Pedestrian Preference Score (PPS). By means of SPSS conjoint analysis, the relative importance values of attributes and part-worth utility value of each attribute level were calculated. Conjoint Analysis outcome indicated that the most influential physical condition of the sidewalks.

Obtained results from the conjoint model was represented that number of obstructions on the sidewalk and number of seating areas had high potential.

Preference Score value was depended on prefer of backpackers in Kandy city on selected sidewalk sections . A linear relationship was observed between TUV and PPS. Based on TUV, locations were clustered in to three main categories and each location has different level of preference. This depend on their site conditions and how pedestrian think about those site conditions.

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