

Research Article

Factors Affecting Students' Satisfaction towards Bus Services in University

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Abstract: This study describes a statistical study of students' satisfaction towards bus services in university. The objective of this study is to explore factors that influence student satisfaction on bus services in Universiti Utara Malaysia (UUM). Primary data were collected by distributing direct questionnaire to four hundred students in UUM. A factor analysis yielded three factors which are attitude of bus driver, reliability of the buses and facilities of buses.

Keywords: Factor analysis, questionnaire, satisfaction

INTRODUCTION

Transportation is the movement of goods or people from one location to another. It is mainly about complex relationships among networks, space and demand. Shared public services such as transportation not only can bring efficiency in mobility of passengers but also will bring benefits to economy as well as environment.

As the efficiency issue is important in service of transportation (Frankena, 1983; Costa and Markellos, 1998; Hirschhausen and Cullmann, 2010; Dell'Olio *et al.*, 2011), it is only natural to extend the understanding on the service quality of the transportation problem. A service quality is defined as comparison between customer expectation and perception of service (Parasuraman *et al.*, 1988). Service quality in general consists of five different dimensions: tangibles (physical facilities, equipment and appearance of personnel), reliability (ability to perform the promised service dependably and accurately), responsiveness (willingness to help customer and provide punctual service), assurance (knowledge and courteousness of employees and their ability to inspire trust and confidence) and understanding (caring, individualized attention the firm provide its customer). Therefore, it may be stated that unreliability in public transport drives away existing and potential passengers.

As Universiti Utara Malaysia (UUM) is a public university in Malaysia that implemented the policy of 100% accommodation in campus, public transportation around campus become an essential issue to cater. Thus, bus services in university are highly recommended as it would solve congestion issues during peak hours. It is fairly seen that the bus services

provided by UUM has improved during these few years. More new state-of-the-art buses are brought in UUM. A complimentary shuttle buses scheduled for students to-from Changloon, the nearest town area from UUM from Sunday to Thursday are also made available for students' perusal. Furthermore, these free shuttle buses are more frequent compared to the year 2012. In late October 2013, there are new types of buses similar to normal rapid buses in big cities such as Kuala Lumpur and Penang are now operating in UUM. These buses provide more standing capacity for students and they are able to occupy more students than the current ones.

At students' convenience, UUM also has provides a daily routine bus services around university compound. As university can be regarded as a 'mini' city (Alshuwaikhat and Abubakar, 2008), it is important to provide facilities and amenities that will promote conducive environment in campus. Bus service is one of the most important facilities required from students since most of the UUM students do not own any transportation in university. Arrangement of bus transportation fees are paid in the beginning of every semester. A good and efficient bus/shuttle services among campus has been of current practices in many universities around the world. Some works that concerns on designing and investigating the shuttle service system around campus include (Edelman, 2009; Palomo *et al.*, 2011; Scott *et al.*, 2011).

Though efforts have been continuously taken by the University, there are rooms for improvement on the quality of bus services in UUM. Some complaints from students include bad ventilation due to spoilt air conditioning parts. Another complaints is in regards to an insufficient of buses operating during peak hour, this

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will eventually cause students to arrive late for their classes. The reliability of the buses, the facilities of buses and also the attitudes of the bus drivers are also of concerns. To ensure the conducive environment in campus, these issues must be addressed thoroughly in order to obtain an optimal solution.

In response to this problem, this research will explore the factors that may affect the students' satisfaction of bus services in UUM campus. By knowing the criteria of what students considered most, UUM will be able to establish strategies to improve their bus services to better accommodate the people reside in campus.

MATERIALS AND METHODS

There are about 22,000 students registered in UUM. The estimated sample size that suitable for this population is around 400 respondents. Because of this big sample size, we decided to use multi-stage cluster sampling method. From this number, we decided to take, for example, students who stay in Trade winds Residential Hall and TNB Residential Hall in route A, Sime Darby Residential Hall and Eon Residential Hall in route B, Muamalat Residential Hall and YAB Residential Hall in route C and SME Bank Residential Hall and Kachi Residential Hall in route D as targeted sample in this study. We will have a total of 8 student residential halls that covers every route as sample population. To collect the data, we use a questionnaires method. We randomly pick one block from each

Table 1: Results of Cronbach's alpha estimates

| Factors | Alpha value |
|-------------------------|-------------|
| Facilities of buses | 0.879 |
| Attitude of bus drivers | 0.858 |
| Reliability of buses | 0.821 |

Table 2: Details of factor analysis showing the loadings of each item
Rotated component matrix^a

| | Component | | |
|--|-----------|-------|-------|
| | 1 | 2 | 3 |
| Waiting time at bus stop of respective residential hall | | | 0.744 |
| Readily stand-by buses at bus stop during peak hours in order to occupy as many students as possible | | | 0.753 |
| Time taken for buses to reach lecture hall | | | 0.690 |
| Time taken for buses to depart during off-peak hours | | | 0.714 |
| More shuttle buses travel from DKG 1 to 6 and vice versa | 0.517 | | |
| Well-functioning air conditioner in buses | 0.782 | | |
| Clean seats in buses | 0.837 | | |
| Clean curtains in buses | 0.786 | | |
| Sufficient grip to hold on for standing passengers in buses | 0.566 | | |
| Increase number of buses for residential hall which consist of more students | 0.507 | | |
| Include further places such as DKG 6 in to the bus routine | 0.500 | | |
| Detailed bus schedule pasted on every bus stop | | 0.588 | |
| Driving speed of drivers | | 0.650 | |
| Attitude of drivers towards students during peak hours | | 0.657 | |
| Cautiousness of drivers while driving during rainy days | | 0.608 | |
| Emotion of drivers while driving | | 0.667 | |
| Awareness of drivers while driving | | 0.638 | |
| Ability of the bus drivers speak in English in order to communicate with international students | | 0.691 | |
| Awareness of drivers about the condition of buses | 0.513 | 0.558 | |

Extraction method: Principal component analysis; Rotation method: Varimax with Kaiser normalization; ^a: Rotation converged in 5 iterations

student residential hall. These items were measured using a semantic scale with the following anchors: 1 = not important/very dissatisfied to 7 = extremely important/very satisfied.

RESULTS

Internal consistency of reliability: By using SPSS, we estimated internal consistency of the scores (Cronbach alpha coefficient). Items in the questionnaire underwent the reliability analysis in accordance with the extracted three factors. The reliability coefficient tells the consistency of the questionnaire. The widely used Cronbach's alpha calculates the average of all possible split-half reliability coefficients. In this study, the Cronbach's alpha yielded acceptable ranges of reliability coefficients. The scale on students' beliefs about the facilities of buses had the highest alpha (0.879). The scale on attitude of bus drivers had a high alpha (0.858). The scale on reliability of buses had the lowest alpha (0.821). Taking all these factors altogether, this instrument is highly reliable in measuring students' satisfaction towards bus services in university and the related components. Results of the internal consistency of reliability for three factors are shown in Table 1.

Factor analysis: Factor analysis is a statistical technique used to reduce many variables to a few dimensions (Seiler, 2004). Responses were subjected to a factor analysis using the maximum likelihood method of extraction and varimax, orthogonal rotation. Based on Seiler (2004), both Kaiser-Guttman criterion of retaining factors with eigenvalues greater than 1.0 and Catell's scree test were considered. From the results in Table 2, three factors were retained, which accounted for 47.24% of the variance. Bartlett's test of Sphericity



Fig. 1: Scree plot diagram showing the eigenvalues of the items

to measure the applicability of factor analysis. The value of Kaiser-Meyer-Olkin Measure of Sampling Adequacy is recorded at 0.933 (<0.01) provided an acceptable adequacy of using factor analysis.

Scree plot: The purpose of factor analysis is to reduce the number of variables to a smaller number. In this study, factor analysis is used to derive the new variables which are called factors in order to give better understanding about the data. The graphical scree plot proposed by Cattell (1966) was used to reduce the number of factors from items in the instrument. Cattell's scree test are plotting the eigenvalues and looking to see where the graph tails to shallow scree. From the result in Fig. 1, an analysis of the scree plot revealed that four items should be extracted. These items have the point at which the eigenvalues seem to level off.

Varimax with Kaiser normalization: Items with loadings of more than 0.5 are considered valid contributors. Table 2 presents the factor loading under three different categories. Factor 1 = Facilities of buses, Factor 2 = attitude of bus drivers and Factor 3 = Reliability of buses. Items 5, 6, 7, 8, 9, 10 and 11, respectively were loaded under Factor 1. Items 12, 13, 14, 15, 16, 17, 18 and 19, respectively were loaded under Factor 2. Items 1, 2, 3 and 4, respectively were loaded under Factor 3.

For Factor 1, item 'Clean seats in buses' loaded highest with factor loading of 0.837. Factor 2 loaded highest on item 'Ability of the bus drivers to speak in English in order to communicate with international students' with factor loading of 0.691 while Factor 3 loaded highest on item 'Readily stand-by buses at the bus stop during peak hours in order to occupy as many students as possible' with factor loading of 0.753.

DISCUSSION AND CONCLUSION

This study was carried out to explore the factors affecting students' satisfaction towards bus services in

UUM. Results suggest that all the items were retained and were categorized under three different categories which are Facilities of Buses, Attitude of the Bus Drivers and Reliability of the Buses. The first factor (Facilities of Buses) comprised of seven items and eight items were categorized under Factor 2 (Attitude of the Bus Drivers). These items 1, 2, 3 and 4, respectively were categorized under Factor 3 (Reliability of the Buses).

Generally, these three factors will become a very helpful indicator in discussing the important element of students' satisfaction on bus services. In the future, it will increase the performance of bus services especially in university. The findings in this study to be beneficial for UUM in order to provide a model to be used as a yardstick to solve problems/complain from the university students. It will also give in depth understanding to the underlying problem in bus services and consequently will improve the bus performance (facilities, drivers' attitude and buses reliability) in the near future, not only for UUM, but for higher institutions in general.

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REFERENCES

- Alshuwaikhat, H.M. and I. Abubakar, 2008. An integrated approach to achieving campus sustainability: Assessment of the current campus environmental management practices. *J. Clean. Prod.*, 16(16): 1777-1785.
- Cattell, R.B., 1966. The Meaning and the Strategic Use of Factor Analysis. In: Cattell, R.B. (Ed.), *Handbook of Multivariate Experimental Psychology*. RandMcNally, Chicago.
- Costa, A. and R.N. Markellos, 1998. Evaluating public transport efficiency with neural network models. *Transport. Res. C-Emer.*, 5(5): 301-312.
- Dell'Olio, L., A. Ibeas and P. Cecin, 2011. The quality of service desired by public transport users. *Transp. Policy*, 18(1): 217-227.
- Edelman, B., 2009. Personal rapid transport at Vectus, Ltd. HBS Case 910-010.
- Frankena, M.W., 1983. The efficiency of public transport objectives and subsidy formulas. *J. Transp. Econ. Policy*, 17(1): 67-76.
- Hirschhausen, C.V. and A. Cullmann, 2010. A nonparametric efficiency analysis of German public transport companies. *Transport. Res. E-Log.*, 46(3): 436-446.

- Palomo, B.P., E. Kaiser and P.D. Scarlatos, 2011. Shuttle efficiency study: The owl express. Proceeding of the 9th LACCEI Latin American and Caribbean Conference on Engineering for a Smart Planet, Innovation, Information Technology and Computational Tools for Sustainable Development. Medellin, Colombia, August 3-5.
- Parasuraman, A., A.Z. Valarie and L.B. Leonard, 1988. SERVQUAL: A multiple-item scale for measuring consumer perceptions of service quality. *J. Retailing*, 64(1): 12-40.
- Scott, M., M. Sarker, D. Peterson and J. Hough, 2011. University of North Dakota campus shuttle study. Final Report, Small Urban and Rural Transit Center, North Dakota State University, Fargo, ND.
- Seiler, M.J., 2004. *Performing Financial Studies: A Methodological Cookbook*. Prentice Hall, Upper Saddle River, NJ.