

Factors Affecting for the Service Quality of Three-Wheeler Transportation in Kurunegala City

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Abstract - Public Transport service is vital to the wellbeing of any country. Three-wheeler transportation service in Sri Lanka has become poor in quality and unreliable due to the expectations of passengers. Therefore, the scope of this study was limited three-wheeler transportation in Kurunegala city. Quality service is a procedure of total evaluation of service or product. If the service provider is separate from the service it offers, then the passengers regularly get attached to the service quality. Transportation service in Sri Lanka is in poor quality because it does not meet the passenger expectations and needs. Quality three-wheeler service implementation in urban areas is a main concern to regulators as well as to the passengers.

Quantitative research approach has been conducted to analyse data in the study. Therefore, 306 passengers have been used as sample population and then exploratory factor analysis has been used to identify the major quality factors. SPSS version 16.0 has been used to analyse data.

There were 19 independent variables taken by referring to past studies. Next, research objectives were identified, nature of service quality dimensions and overall service quality, relationship between individual factors and service quality and significant factors influencing on service quality of three-wheeler transportation in Kurunegala City.

Finally, researcher evaluated the overall service quality level of three-wheeler service in Kurunegala city and proposed several solutions to increase the service quality related to three-wheeler transportation. This research also provides some recommendations to develop three-wheeler service in near future and recommendations to make a good quality service to the passengers in order to fulfill the passenger satisfaction about service quality of three-wheeler transportation.

Key Words - Kurunegala City, Service Quality, Three-Wheeler Transportation, Transportation,

I. INTRODUCTION

Transportation is known as undertaking of societies or possessions from origin to destination in separate land, air or water. Transportation has been defined as an essential thing when transporting merchandises, determination of living. Hence that, road transportation has become an imperative transport mode in the world. In early days people used non-motorized transport modes like walking, riding on animals and cycling. Things have changed because of globalization and a huge development can be seen in conveyance. Nowadays motorized automobiles like motorcycles, three-wheelers, cars, vans, buses are often used by people. In the present world people have achieved their daily fulfilments by road, rail and air as well.

Nowadays, competition for transportation has grown rapidly because of the increasing urban development in Sri Lanka. That's where three-wheeler services have the importance in transportation sector. The demand has increased because of work, education, shopping, entertainment and many other places related to important activities. So, passengers do not need to own a vehicle because the passengers can travel to a place where needed by using a three-wheeler. So, at present, people have a habit of using three-wheeler transportation very often.

Personal travel can be identified as an important need of the people and the government is obligated to step up their people's (society) basic needs. As a solution, a public transport system is existing in Sri Lanka and the government also tries to provide an efficient, cost effective and environment friendly transport service. In addition to that the private transport also exists due to the fact that public transport itself cannot fulfil all the travel needs of people in society and also due to different travel desires of them. However, in the present context, both public and private transport have failed to cater to the growing passenger demand of transport especially in urban areas. As a solution, the three-wheeler transportation is raised as

an alternative private transport mode and it has become a much common sight in Sri Lankan transport system.

Three-wheeler taxis are a key part of Sri Lankan public transport network especially after dark when buses stop operating due to state mandated fares which do not permit night fares. Once the travellers are satisfied then three-wheeler transport is credited with delivering effective facility opportunities therefore the major function of three-wheeler transport sector could be structured around satisfying the passenger. There is one type of three-wheeler service providers in Sri Lanka, which have different colours and most of them in Sri Lanka use Indian Bajaj model. But there are few brands of three-wheelers such as Piaggio Ape, TVS King.

Evaluation of service quality of urban transportation system is vital to improve productivity, gain profits and increase customer satisfaction. All transportation organizations carry evaluation of their service quality on a regular basis. This involves assessment of various parameters related to service quality for example, efficiency, reliability, safety, etc. the goal of all organizations is to achieve high customer satisfaction by providing high quality service at all times to all customers (Awasthi, et al., 2011)

A. Research Question and Objectives

Question 01:

What is the nature of service quality of dimensions and overall service quality?

Question 02:

What is the relationship between individual factors and service quality of three-wheeler transportation?

Question 03:

What are the significant factors that influence on service quality of three-wheeler transportation in Kurunegala city?

Objective 01:

To understand the nature of service quality dimensions and overall service quality.

Objective 02:

To understand the relationship between individual factors and service quality of three-wheeler transportation.

Objective 03:

To determine the significant factors, influence on service quality of three-wheeler transportation in Kurunegala city.

B. Significance of the research

Three-wheeler has become a common transport mode in Sri Lanka, especially in the urban areas. Among the urban cities, I have chosen Kurunegala city to conduct this survey as Kurunegala is the capital city of the North Western province and in Kurunegala district. Kurunegala is the main financial and congested city and rapidly industrial developing, urbanizing area in Sri Lanka which is also has working and many different ethnic

communities, residing population around 80,755 (Department of census and statistics) Kurunegala city is also known for being one of the popular business destinations. Therefore, this research will be more valuable because this is the first survey done for the Kurunegala city.

Outcome of this study identifies the factors affecting service quality in private three-wheeler transportation in Kurunegala city which will be more important to parties who are engaged in private transport as a business as well as for the government to identify the requirements in order to maximize service quality and customer satisfaction and enhance the existing service.

This study also shows the significance of three-wheeler as a way of transport in Kurunegala city area and it shows the usefulness of the three-wheeler transport to the people of Kurunegala city.

C. Literature review

According to the Wijesundara & Ushantha, 2018, they have conducted their study to identify the service quality factors of three-wheeler transportation as the mode of tourist transportation in Sri Lanka. Data were collected from tourists who travelled to Ahungalla tourist's region of Sri Lanka and data were gathered by using both self-administered questionnaires and interviews. The study found that service quality was high in the main segment as a resultant of segmentation. They have identified the reliability, responsiveness, tangibility, assurance and empathy as the main factors for passengers to get satisfied with three-wheeler transportation. Tourists were also dissatisfied with some service quality dimensions and best practices in these aspects must be enhanced to uplift the existing service quality level of three-wheeler transportation. (Wijesundara & Ushantha, 2018)

There was a study based on analysis of the economic and social parameters of the three-wheeler taxi service in Sri Lanka. Data were collected from 200 operators and 100 passengers from a divisional secretariat area in Colombo district. This study covered a number of details pertaining to ownership, management and fare structures, as well as opinions on the service quality attributes by users. They have identified economic and social factors as fundamental factors. (Kumarage, et al., 2010).

Based on this research Nishantha, 2017, they have conducted their study to identify the development of a fare structure for the three-wheelers. And this survey shows that the three-wheeler is best for shorter distances (last mile connecting) and not efficient for longer distances. He has identified fare price irregularities using analytical techniques for three-wheeler transport service, professionalism, communication and driver attitudes. He has collected data from Colombo area. (Nishantha, 2017) According to Bandara, et al., 2018, this study focuses on existing socio-economic features and the operational characteristics of three-wheeler taxi services. This survey was conducted with the participation of 340 three-wheeler passengers from Colombo area. After the analysis as a result, they have identified fare price, fare meters,

regulations, travel time, operation hours, age, and experiences as main factors. (Bandara, et al., 2018) .

II. METHODOLOGY

A. Population

Target population for the study was passengers of three-wheeler transportation in Kurunegala city, Sri Lanka.

B. Sample

The questionnaire was distributed around 340 passengers who are using three-wheeler transportation in Kurunegala city and 306 qualified respondents were selected out of them for the sample. The final outcome of the study was mainly based on passengers’ information stated in questionnaire.

C. Sample Techniques

For this research, the sample was selected through simple random sampling method. Simple random sampling is a sampling technique which comes under probability sampling method. Main aim of that technique to be used in the study was due to the fast as well as convenient availability of the subjects as from this technique, sample is selected in such a way that every possible sample of some size is equally likely to be chosen.

D. Data Collection

Questionnaire had been distributed by using online “Google Form”. The questionnaire consisted of 11 questions and 19 variables were included in the questionnaire. After that questionnaire was distributed among the passenger via E-mails and social media networks like Instagram and Facebook and communication methods like Viber, Telegram and WhatsApp.

The main part of the questionnaire which contains independent variables comprised of 5 Likert scale questions. A “Likert scale” is a specific statement, Likert scale is a common ranking format for surveys. Respondents rank quality from strongly satisfied to strongly dissatisfied using five Likert scale levels (Allen & Seaman, 2007) . For this study, Likert scale was used because the focus was upon measuring service quality of three-wheeler transport quality in Kurunegala city. Below table represent the five-point Likert scale.

E. Conceptual Framework

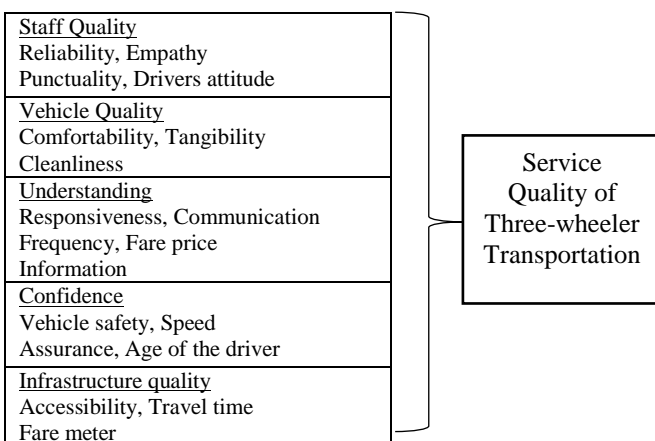


Fig.1 Conceptualization (Source: Author Developed)

TABLE 1
LIKERT SCALE

Strongly Satisfied	Satisfied	Neutral	Dissatisfied	Strongly Dissatisfied
5	4	3	2	1
Strongly Satisfied	Satisfied	Neutral	Dissatisfied	Strongly Dissatisfied
5	4	3	2	1

F. Regression Model

Multiple regression generally explains the relationship between multiple independent or predictor variables and one dependent or criterion variable. A dependent variable is modelled as a function of several independent variables with corresponding coefficients, along with the constant term. Multiple regression requires two or more predictor variables, and this is why it is called multiple regression. The following formula is used to calculate the multiple regression model.

Equation 3.3 Multiple Regression Model

$$y = a + b_1x_1 + b_2x_2 + \dots + b_px_p$$

y = Variable can be expressed in terms of a constants

a = Slope

b = Time the x variable

III. DATA ANALYSIS AND THE RESULTS

A. Nature of Service Quality Dimension and Service Quality

First objective has been addressed using descriptive statistics to understand the responses of passengers with regard to three-wheeler transportation. Results are provided in table 2.

TABLE 2
DESCRIPTIVE STATISTICS

Measures	Staff quality	Vehicle quality	Understanding	Confidence	Infrastructure Quality	Service quality
Mean	3.3497	3.3192	3.3373	3.3023	3.3224	3.5458
Std. Deviation	.89160	.95289	.92214	.90429	.95579	.80135
Skewness	-.506	-.690	-.676	-.631	-.509	-.804
Std. Error of Skewness	.139	.139	.139	.139	.139	.139

Kurtosis	.435	.199	.471	.389	.130	.697
Std. Error of Kurtosis	.278	.278	.278	.278	.278	.278

In relation to descriptive statistics all the mean values with regard to individual factors are in moderate level. They are representing neutral level responses. This is because all the mean values are around the Likert scale 3. Mean value of the service quality is 3.54 this is having somewhat agree level, but it is also marginal. These results indicate that individual factors are not in an acceptable level. According to the standard deviation, comparatively infrastructure quality is more deviated. This is because it consists of highest standard deviation that is 0.95. Service quality has a minimum standard deviation that is 0.8 and it comprises a minimum deviation comparatively. The coefficients of skewness are between -1 and +1 therefore, service quality dimensions and overall service quality are approximately normally distributed. According to these results, individual factors of service quality are not in an acceptable level with regard to three-wheeler transportation.

B. Relationship between Individual Factors and Service Quality

Second objective has been analysed by using Bivariate Correlation Analysis. Researcher applied Pearson correlation analysis and that is a powerful parametric technique. Results are given in table 3.

TABLE 3
CORRELATION ANALYSIS

Individual Factors		Service quality
Staff quality	Pearson Correlation	.373**
	Sig. (2-tailed)	.000
	N	306
Vehicle quality	Pearson Correlation	.369**
	Sig. (2-tailed)	.000
	N	306
Understanding	Pearson Correlation	.328**
	Sig. (2-tailed)	.000
	N	306
Confidence	Pearson Correlation	.364**
	Sig. (2-tailed)	.000
	N	306
Infrastructure Quality	Pearson Correlation	.339**
	Sig. (2-tailed)	.000
	N	306

With regard to the correlation analysis all the p values are highly significant between the individual factors and service quality. Therefore, they are representing highly significant association between the service quality dimensions and service quality of three-wheeler transportation. All the coefficients of correlations are indicating positive figures.

Accordingly, higher the individual factors represent higher the service quality. According to these results service quality of three-wheeler transportation is significantly positively correlated with the service quality dimensions. Correlation analysis gives the relationship between independent factors affecting for the three-wheeler service quality has been analysis by using following hypothesis.

- H₀: There is no any relationship between service quality and the independent variable**
- H_A: There is a relationship between service quality and the independent variable**

According to the above table 3, there is a positive correlation between service quality and the staff quality factor. That is 0.373 which is statistically significant because p value is less than 0.05. (0.000<0.05). Therefore, H₀ is rejected and it can be concluded that there is a relationship between service quality and the staff quality factor.

Taking the vehicle quality factor and the service quality, there is a positive correlation of 0.369 which is statistically significant because p value is less than 0.05. (0.000<0.05). Therefore, H₀ is rejected and it can be concluded that there is a relationship between service quality and the vehicle quality factor.

According to the above table 3, there is a positive correlation between service quality and the understanding factor. That is 0.328 which is statistically significant because p value is less than 0.05. (0.000<0.05). Therefore, H₀ is rejected and it can be concluded that there is a relationship between service quality and the understanding factor.

Taking the confidence factor and the service quality, there is a positive correlation of 0.364 which is statistically significant because p value is less than 0.05. (0.000<0.05). Therefore, H₀ is rejected and it can be concluded that there is a relationship between service quality and the confidence factor.

Finally taking the infrastructure quality factor and the service quality. There is a positive correlation of 0.339 which is statistically significant because p value is less than 0.05. (0.000<0.05). therefore, H₀ is rejected and it can be concluded that there is a relationship between service quality and infrastructure quality factor.

C. Effect of Service Quality Dimension on Service Quality of Three-wheeler Transportation

Third objective has been analysed by applying multiple regression model. It is expected to determine significant factors influence on service quality of three-wheeler transportation. To estimate these values a sample is taken the following question developed.

$$y = a + b_1x_1 + b_2x_2 + \dots + b_px_p$$

y = Variable can be expressed in terms of a constants
 a = Slope
 b = Time the x variable

Results of the model summary are provided by table 4.

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MODEL SUMMARIES

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.393 ^a	.155	.140	.74296	1.621

According to the model summary multiple correlation is 0.393. This means that individual factors are having weak association jointly with service quality of three-wheeler transportation. Durbin Watson test statistics is 1.621. This is between the expected standard value that is 1.5 and 2.5 and therefore residuals are independent, and model is appropriate. Jointly effect of individual factors has been analysed by Regression ANOVA. Results are provided in table 5.

TABLE 5
 REGRESSION ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	30.263	5	6.053	10.965	.000 ^a
Residual	165.596	300	.552		
Total	195.859	305			

In the regression ANOVA, probability of F-test statistics is

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
1 (Constant)	2.398	.169		14.158	.000		
Staff quality	.202	.117	.224	1.726	.085	.167	6.004
Vehicle quality	.184	.128	.218	1.436	.152	.122	8.212
Understanding	-.214	.137	-.246	-1.565	.119	.114	8.771
Confidence	.065	.135	.073	.481	.631	.121	8.256
Infrastructure Quality	.109	.104	.130	1.045	.297	.183	5.465

0.000. This is highly significant at 1% and it says that

individual factors jointly influence on service quality of three-wheeler transportation. Individual effect has been analysed by individual Coefficient and results are given by table 6.

TABLE 6
 INDIVIDUALS EFFECT

With regard to individual coefficient, staff quality is marginally significance with positive Beta values. Individual probability is 0.085. This is marginally significant at 10% with 0.202 individual Beta value. This says that staff quality has a marginal positive effect on service quality of three-wheeler transportation. Vehicle quality, understanding, confidence and infrastructure quality are individually insignificant. Therefore, they have not influence individually on service quality, but they influence jointly in the current situation.

According to standard coefficient of Beta most influence factor is the understanding but in the current situation it has influenced negatively. Second and third factors are respectively staff quality and vehicle quality. They are having positive influence on service quality of three-wheeler transportation.

All the VIF values are less than 10. Therefore, individual factors are not perfectly correlated. This means that they are not having multicollinearity problems. Regression result is more valid. Behaviour of standardized residual is presented by fig. 2.

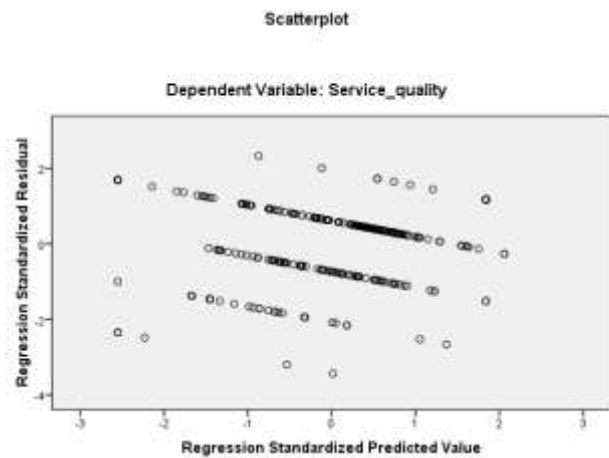


Fig. 2 Residuals Behaviour

In the scatter plot standardized residual have been presented against standardized predicted value. They are randomly distributed without having any predictable pattern. They do not have a funnel shape. Variance of residual is constant. This means that regression model is more valid as it does not have heteroscedasticity problem.

D. Discussions of Research Findings

In the data analysis part in the analysis chapter, demographic data was analysed according to the descriptive statistics. According to the researcher, most of the respondents were in the male category for using three-wheeler service in Kurunegala city which takes a

percentage of 59.5%. Most of the passengers were in 21-30 age category, which is 57.8%, passengers are interested in using three-wheeler service in Kurunegala city. Also, this research found out that most of the employees like to use three-wheeler service. Also, most of the three-wheeler passengers use three-wheelers several times a week. When considering about travel purposes and travel methods, most of the three-wheeler passengers use three-wheeler for work purposes and majority use three-wheeler at park for starting their journey.

In Sri Lanka, three-wheeler service passengers are strongly satisfied with cleanliness of the three-wheelers, availability of fare meter, travel time and speed. The highest number of satisfied responses are given to communication factor, responsiveness and punctuality are rated as the lowest satisfied factor by the respondents. According to the responses, the highest natural rating is given for empathy, age of the driver and comfort of the ride. Majority of the respondents are strongly dissatisfied with the availability of the fare meter, vehicle safety, driver's attitude and reliability.

When considering the passenger satisfaction with gender satisfaction, it is evident that the satisfaction rate is higher in males which takes a percentage of 48.8% than in females in Kurunegala city. When considering the overall satisfaction of both males and females, both genders are satisfied.

In the distribution of three-wheeler passenger satisfaction and age, age is divided in to five categories and among those categories, age between 21 to 30 categories has submitted the highest number of responses. Out of them, 49.7% respondents were satisfied with three-wheeler transport service.

Analysing passenger satisfaction with occupation, employed passengers take the highest responses which is 57.6%. Taking passenger satisfaction with usage of transport in to consideration, several times a week category takes the highest percentage which is 50%. When considering passenger satisfaction and purpose, there are 4 purposes. Among the four purposes, the work category is rated the highest. In passenger satisfaction with method, many passengers choose at park method to start their journey. Out of those responses, most responses are in the satisfied level which takes the percentage of 61.1%

The primary objective of this research is to understand the nature of service quality dimensions and overall service quality. To achieve the primary objective, descriptive statistics is used, and it was identified that the nature of the service quality dimensions is in a moderate level and all the individual service quality factors are in an acceptable level. Furthermore, the service quality dimensions and overall service quality are approximately moderately distributed. According to the result, the primary objective has been achieved.

The secondary objective of this research is to understand the relationship between individual factors and service quality of three-wheeler transportation. To achieve this secondary objective, Pearson Correlation was conducted, and it was identified that all p values of the correlation analysis are highly significant between the individual factors and service quality. Therefore, they are

representing highly significance association between the service quality dimensions and service quality of three-wheeler transportation.

According to Correlation Analysis, staff quality and service quality has the strongest relationship. Vehicle quality takes the second strongest relationship and P value of all the other factors are highly significant between the individual factors. Therefore, there is a positive relationship in understanding confident infrastructure quality with the service quality. According to these outcomes, staff quality of three-wheeler is positively correlated with the service quality dimensions.

The tertiary objective of the research is to determine the significant factors, influencing on service quality of three-wheeler transportation of service quality. To achieve the tertiary objective, Regression Model was applied, and it was identified that individual factors are having a weak association jointly with service quality of three-wheeler transportation. According to the regression ANOVA, it is clear that individual factors jointly influence on service quality of three-wheeler transportation.

IV. CONCLUSION

First, the researcher has identified a broad area which is about three-wheeler transportation in Sri Lanka. Then it was narrowed down to Factors Affecting for the Service Quality of Three-Wheeler Transportation in Kurunegala City. After that quantitative approach was used to measure the factors affecting the service quality. Then collecting data was done through a questionnaire which was distributed online and printed questionnaires to three-wheeler passengers in Kurunegala city. Then fed it into SPSS version 16.0 for analysing purposes. Then a statistical analysis was conducted, Descriptive Statistics, Correlation Analysis and Regression Model have been applied, a reliability test was also conducted to check the internal consistency of variables.

Then conducted a descriptive statistic to achieve the primary objective. To achieve secondary and tertiary objectives, Pearson Correlation and Multiple Regression Models were used respectively. Then it was concluded that the service quality dimensions and overall service quality are approximately normally distributed. According to Pearson Correlation, it was evident that staff quality to service quality has the strongest relationship and other factors too possess a positive relation with service quality. Furthermore, it was also conducted that the staff quality is marginally significant with service quality of three-wheeler transportation.

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