

## **Modelling Customer's Perceived Service Quality and Customer behavior towards Online Cab Services in India**

Vishal DEVALALIKAR <sup>a</sup>, Darshana OTHAYOTH <sup>b</sup>

<sup>a,b</sup> *National Institute of Technology, Tiruchirappalli, 620015, India*

<sup>a</sup> *E-mail: [vishaldevalalikal@gmail.com](mailto:vishaldevalalikal@gmail.com)*

<sup>b</sup> *E-mail: [darshana@nitt.edu](mailto:darshana@nitt.edu)*

**Abstract:** The high demand for transport service and lack of good quality of public transport has given opportunity to many cab aggregators to gain customers. People go for cab because it offers desirable comfort, flexibility and privacy. It also helps to avoid problem like parking issues. So it's important to assess the aspects that customer are looking for the most while hailing an online cab service. To study the relationship of service quality attributes with overall satisfaction of the cab users, a web based survey was conducted. A Structural Equation Modeling (SEM) technique is used to explore the relationship between service quality constructs and overall satisfaction of cab services. The results show significant effect of service quality on customer's satisfaction with online cab services. 24/7 cab availability and Safety inside cab are the two most important factors considered by customers along with waiting time for cab arrival and travel time.

*Keywords:* Service Quality, Cab services, User's perceptions, Structural equation modeling

### **1. INTRODUCTION**

Transport is considered as very important element that try to connect different communities with different factors that facilitates socio-economic development. It is the mode by which urban and rural communities access to different facilities like recreational, jobs, healthcare etc. According to World Bank (2017), passenger traffic will increase by 50% to exceed 80 trillion passenger kilometers by 2030 compared to 2015 and additional 1.2 billion cars will be on the road (Mensah et al., 2018). The constant growth in the number of private vehicles travelling on urban roads causes congestion, traffic jams, pollution noise etc. (Alonso et al., 2018). Due to rapid growth in population and changing the lifestyle of the people and their progress, people choose luxuries well-being and their transportation needs has been sustained on the safety, speed and convenience of while travelling (Velmurugan et al., 2019).

Taxi (cab) has covered the gap between private and public transport in time. Public transport like bus metro etc. are mostly associated with the government where all operation, fixed routes, schedules are important aspects. When it comes to cab services, it ensures privacy and comfort more than public transport. Taxi has more flexibility than a bus by providing door to door services (Shaaban & Kim, 2016). Cab or taxi may not be a sustainable mode of transport but it has its own advantages to people. People generally go for taxi because it offers desirable comfort and flexibility and privacy. It also helps to avoid problem like parking issues, parasitic traffic (Alonso et al., 2018).

Over the past few years, the radio taxi (online taxi) concept has made travel simple, secure and convenient in India (Sharma & Das, 2017). The online cab booking is just a matter of few clicks on smartphone you cab book a cab and it will arrive at your desired location to help you to reach with hassle-free in travel. The online cab market has grown by 30% in last one year with monthly booking crossing 65 million (redseer.com 2018). Particular cab

aggregators like Uber and Ola has shown almost exponential growth aiming to solve intra-city commuting problems of customers.(Sharma & Das, 2017).

In this study, a web based survey is conducted to identify the factors which influences customer's perceived service quality of online cab services in India. With the help of the collected data preliminary analysis is done and the model is estimated with the help of SPSS and AMOS software. Later the interpretation of the model results is also carried out to understand the influence of the service quality measures on satisfaction.

## **2. OBJECTIVES OF THE STUDY**

The study was carried out with the following objectives,

- To identify the attributes that influences the customer's perception about service quality of online cab services.
- To perform Importance Satisfaction analysis on the identified attributes of online cab services
- To perform the Confirmatory Factor Analysis (CFA) among the identified attributes of online cab services using Structural Equation Modelling (SEM).
- To identify whether the service quality particularly influence customer's overall satisfaction about the online cab services.

## **3. LITARATURE REVIEW**

Sharma and Das [5] studied about the service quality and customer's satisfaction about online cab services in India and found that tangibles, physical facilities have significant effect on overall satisfaction followed by responsiveness. The research on modelling taxi user service quality in Spain carried out by Alonso *et al.* [2] found that waiting time is the most important factor considered by frequent users and journey time considered as important by almost all users along with safety. The study showed that different user have different perception about service quality which depends on travel characteristics, way of accessing journey, waiting rime and socio economic characteristics. Velmurugan, Shruthi and Rajkamal [3] conducted a study about user's perception of Ola services in Salem city. Ranking analysis methodology showed that driver's irresponsibility and at time driver cancelling ride are highest ranked issue by users. Shaaban and Kim [4] paper focused on passenger's satisfaction of taxi services in Doha. SEM technique was used to assess service quality. Result showed that income is the greatest factor influencing satisfaction followed by age and occupation. Mensah and Ankomah [1] used regression model to assess the effect of service quality on customer's satisfaction. It was found that there is significant effect of service quality on commuter's satisfaction with taxi services. However, responsiveness did not had a significant effect on satisfaction. A user's perception study to measure customer's satisfaction in Jakarta city was conducted by Dachyar and Rusydina [6] found that company's image has strongest impact followed by companies trust. Company's need to consider these factors to increase customer's satisfaction and earn customer's loyalty. Garrido [7] proposed use of ANN for analysis of perceived service quality of public transportation system. Analysis showed different category of variables have greater and lesser impact on overall satisfaction. Frequency is the most influential variable followed by speed and information and proximity.

### **3.1 Gaps in literature**

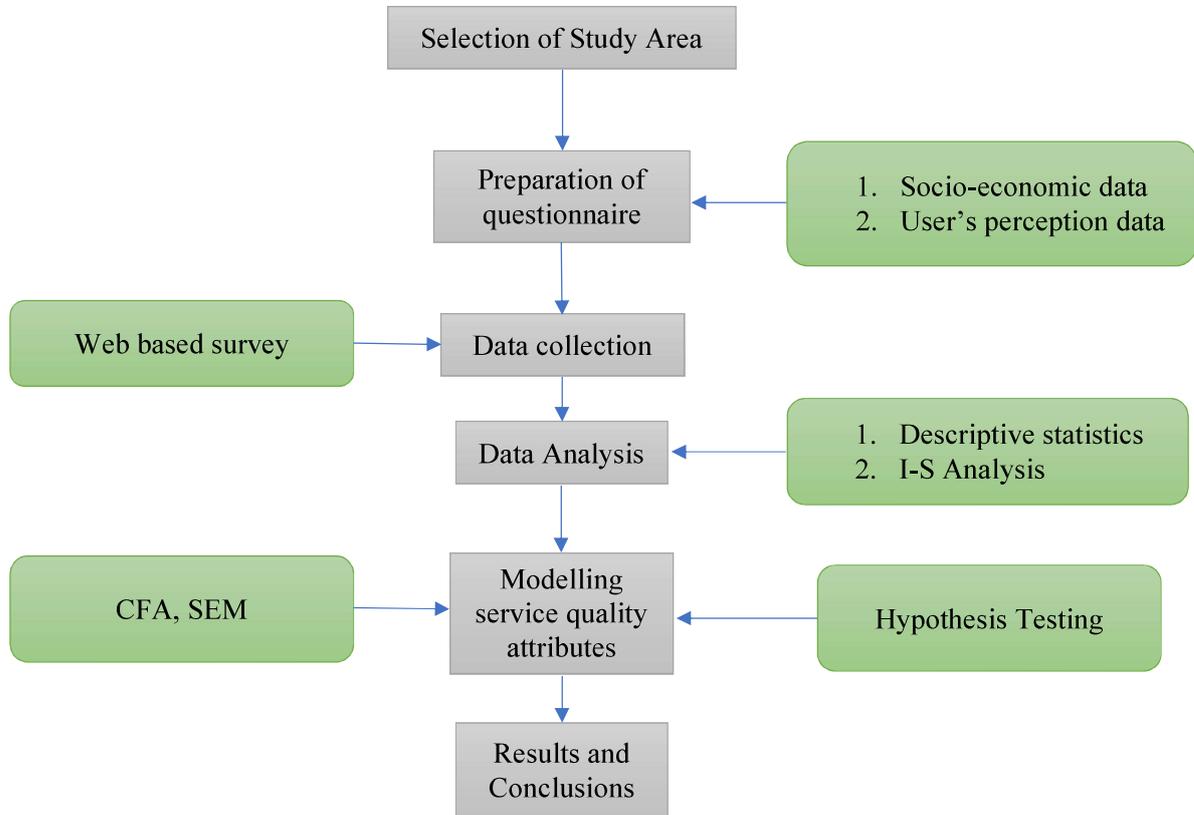
- Very few studies done pertaining to service quality and customer's satisfaction of online cab services in India.
- Most of the studies have used conventional method for service quality analysis like descriptive statistical analysis (ranking, mean, variance etc.), regression model etc.
- Limited studies have used SEM technique for service quality analysis of online cab services.

## **4. METHODOLOGY**

Structural Equation Modeling includes various set of mathematical models, computer algorithms and statistical methods that fit the networks of constructs to data. SEM includes path analysis, confirmatory factor analysis, latent growth modeling etc. SEM is used mostly in the social science because of its ability to impute relationship between observed variables and latent constructs. SEM is a technique that has ability to handle large no of endogenous and exogenous variables simultaneously. SEM includes set of equations linked by different variables. In SEM we can introduce 'Latent variables' which are also called as unobserved variables. The measured variables called indicators are associated with the error terms. Latent variables are linear combination of observed variables.

SEM is considered as the most effective method to deal with Likert scale data. SEM is generally estimated by maximum likelihood method (ML). Parameters considered to check results of model are different statistical tests like data reliability tests, Cronbach's Alpha value, factor analysis, composite reliability. For checking goodness of fit there are parameters like Goodness of fit index (GFI), Comparative fit index (CFI), Root Means Square Error Approximation (RMSEA), Root Mean Square residual (RMR) etc. SEM technique is analyzed using AMOS software.

The methodology adopted for the study is shown in figure 1



**Figure 1.** Methodology

## 5. STUDY AREA AND DATA COLLECTION

### 5.1 Study Area

The study areas considered are Pune and Tiruchirappalli city. The study is about perceived service quality of cab service. So service quality dimensions related data was collected for study and some primary data. The online cab service and operation is same everywhere in India. Starting from booking a cab online to payment mode to mode of transport Etc. So a web based survey was conducted for data collection using google forms. Pune and Tiruchirappalli are the cities from where data was collected. In Tiruchirappalli Ola cab service is available. Where in Pune Ola, Uber and Meru cabs are the three dominating cab aggregators.

### 5.2 Data Collection

#### 5.2.1 Design of questionnaire

The SERVEQUAL model is used for questionnaire design. The SERVEQUAL Questionnaire was first published in 1985 by A. Parshuraman [8]. The SERVEUAL model is designed to

capture the customer expectation and perception of a service along five dimensions that are believed to represent service quality. The attributes that are considered for the study are divided into two categories as part A and part B.

Part A of the questionnaire includes information related to socio-economic data and travel related data. Variables were categorized as given in table 1.

**Table 1.** Categorization of primary data

Variable	Categorization of variable
Age (in years)	18;25 , 25;40 , 41;60 , >60
Gender	Male; Female; Other
Monthly Income (in INR)	Not earning-; <10,000; 10,000-30,000; 30,000-50,000; 50,000 - 1,00,000; Above 100,000
Frequency of usage of cab service	Less than 5 times; 5-15 times; More than 15 times

Part B includes user's perception data includes of service quality dimensions related questions. The service quality dimensions are Tangibility, Reliability, Responsiveness, Assurance and Empathy. Tangibility includes with physical facilities, equipment personnel, and interior facilities. Reliability is the ability to perform promised service dependably and accurately. Responsiveness is the willingness to help customer and prompt service. Assurance is the ability to inspire trust and confidence. Empathy deals with the trustworthiness and honesty. Likert scale was used ranging from 1 to 5 for both importance and satisfaction rating of service quality indicators. Dimensions and their respective indicators are given in table 2.

**Table 2.** Measured variables for service quality

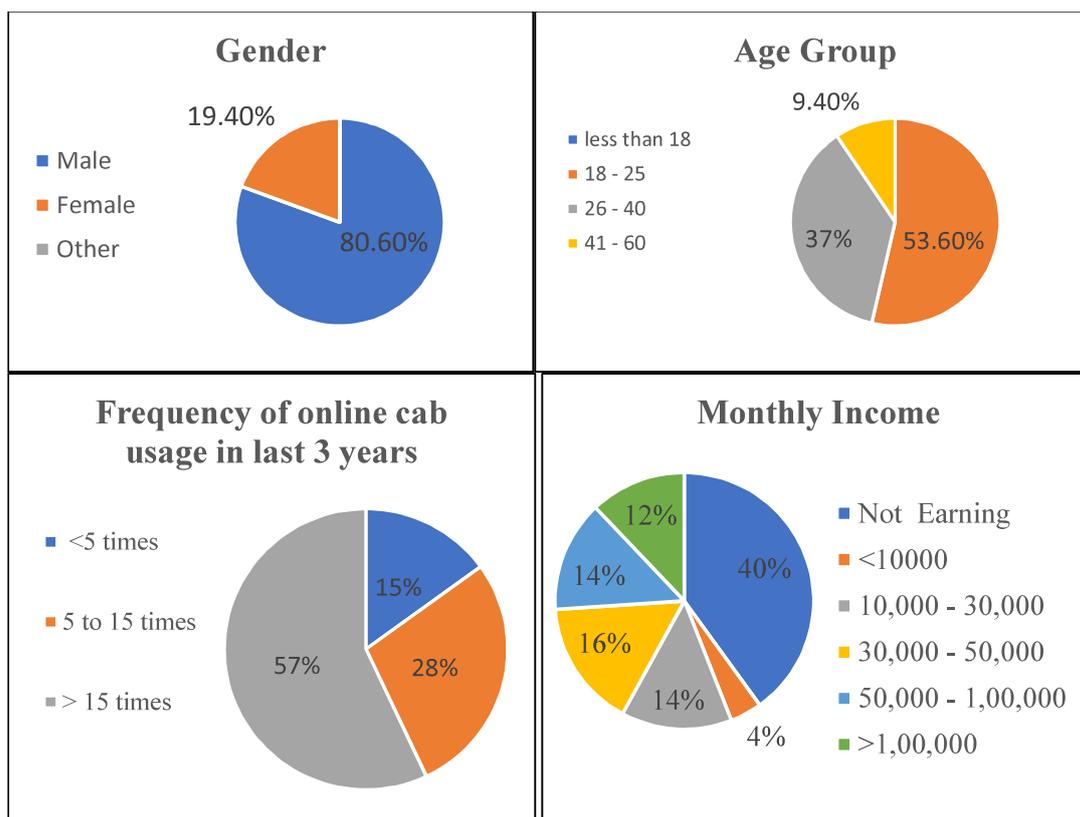
Service Quality Dimensions	Measured variables (indicators)
Tangibility	<b>Q1</b> -GPS system, comfort & Cleanliness inside the Cab <b>Q2</b> -Driver's appearance was neat & well dressed <b>Q3</b> -Cab was visually appealing (attractive)
Reliability	<b>Q4</b> -You reached destination in the stipulated period of time using cab service <b>Q5</b> -Cab service is available for you 24*7 <b>Q6</b> -Cab arrived for you at desired pickup location without delay <b>Q7</b> -Driver drove vehicle safely, followed traffic rules <b>Q8</b> -Cab didn't break down on the road
Responsiveness	<b>Q9</b> -Driver showed genuine interest in solving problem <b>Q10</b> -Driver was never too busy to listen to your request <b>Q11</b> -Driver provided timely and efficient service for you

Assurance	<b>Q12-You felt safe inside cab</b> <b>Q13-You had trust on driver when driver choose an alternate route</b> <b>Q14-Driver was consistently Courteous (Polite) with you</b> <b>Q15-Driver had the knowledge to answer your questions</b>
Empathy	<b>Q16-Driver gave you personal attention (Didn't talked on phone while driving)</b> <b>Q17-Driver informed about the delay or inability to deliver</b> <b>Q18-Driver was honest and righteous</b>

## 6. DATA ANALYSIS

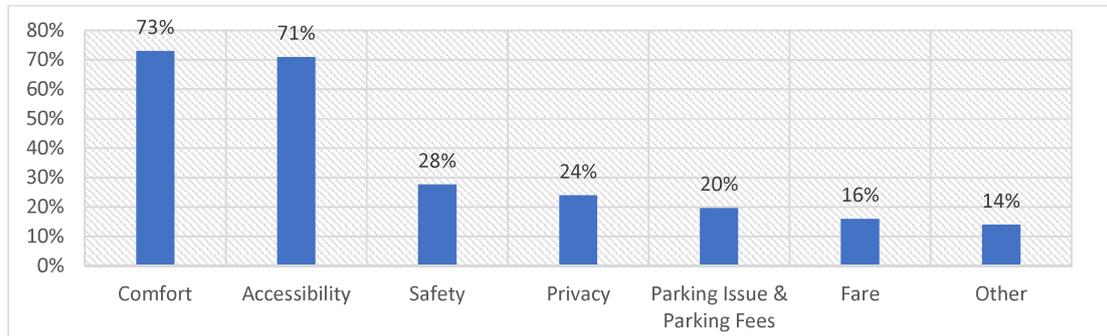
The data collected through web based survey was analyzed. Microsoft Excel and SPSS are used to analyze the primary data obtained from the survey.

In total, data from 300 respondents has been collected. All the data are entered in excel. Analysis and descriptive statistics are carried out using statistical analysis tool. Figure 2 shows the primary data analysis.



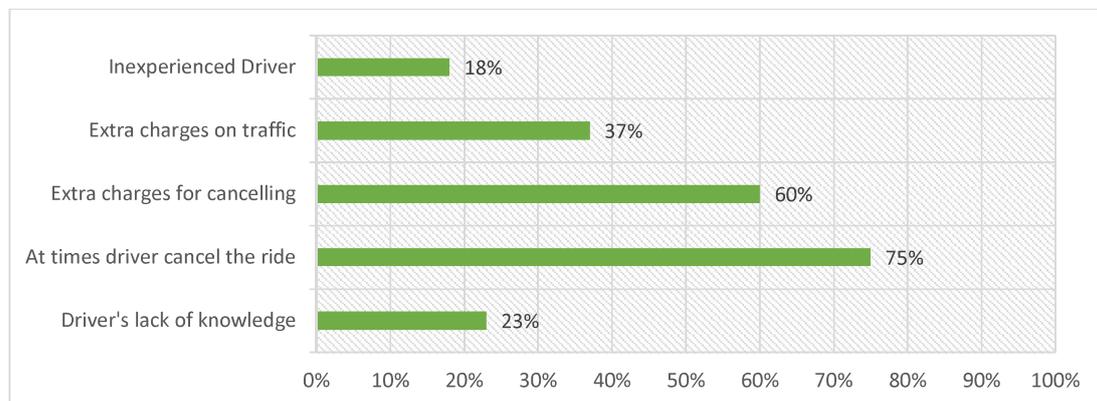
**Figure 2.** Primary data

Respondents were asked about why they go for online cab services instead of other mode of public transport. The analysis from given figure 3 showed that majority of them uses the cab service for Comfort (73%) and Accessibility (71%)



**Figure 3.** People use online cab service for

The next important question asked to respondents were about the difficulty and the issue they face the most while using cab services. Analysis from given figure 4 showed that ‘At time driver cancel the ride’ (75%) is the issue majority of the people faced along with ‘extra charges on cancelling the ride’ (60%)



**Figure 4.** Difficulties faced while using online cab services

### 6.1 Importance-Satisfaction Analysis

Importance-Satisfaction (IS) analysis was carried out to know which attributes or factors are highly important and satisfactory. This analysis helps to understand which factors are highly important according to user and they are less satisfied with it. The formula to calculate IS rating given by (Iseki and Smart, 2012) as follows.

$$IS\ rating = Importance\ rating\ (Satisfaction\ rating - 100) \quad (1)$$

where, satisfaction rating is the % of the people who rated the factor as highly satisfied and importance rating is the % of the people who rated the factor as highly important. Following table 3 gives the ranking of the factors based on satisfaction and importance and IS rating. Importance rank ‘1’ indicates highly important factor for the user. Similarly satisfaction rank ‘1’ indicates highly satisfied factor for the user. Where rank ‘1’ IS indicates that for user this factor is most important but they are less satisfied with it and requires improvement for it.

**Table 3.** Importance Satisfaction Analysis

Indicators	Importance		Satisfaction		IS rating	
	Rating (%)	Rank	Rating (%)	Rank	Rating (%)	Rank
Availability 24/7	40.10	1	9.90	11	36.13	1
Pickup delay	37.69	4	6.70	15	35.16	2
Drive drove vehicle safely	39.30	3	13.50	4	33.99	3
Safety inside cab	40.07	2	17.50	2	33.06	4
Reached destination in stipulated time	37.61	5	13.50	3	32.53	5
Driver inform about the delay/inability to deliver	33.33	8	8.30	13	30.56	6
Driver was honest and righteous	32.90	9	10.30	10	29.51	7
Comfort & cleanliness inside the cab	33.38	7	11.90	6	29.41	8
Driver provide timely and efficient service	32.14	10	11.50	7	28.44	9
Trust on driver when driver choose an alternate route	30.00	12	5.94	16	28.22	10
Driver is consistently Courteous	31.00	11	11.11	8	27.56	11
Cab doesn't break down on the road	37.31	6	29.36	1	26.36	12
Driver show genuine interest in solving problem	27.38	13	10.30	9	24.56	13

Driver give you personal attention	25.80	15	7.10	14	23.97	14
Driver is never too busy to listen to your request	25.82	14	12.30	5	22.64	15
Driver has the knowledge to answer your questions	24.60	16	9.50	12	22.26	<b>16</b>
Driver's appearance is neat & well dressed	17.40	17	5.10	18	16.51	<b>17</b>
Cab was visually appealing (attractive)	13.89	18	5.90	17	13.07	<b>18</b>

From the table 3 of IS analysis, it was understood that

- ‘Cab availability 24/7’ is the most important factor according to users followed by ‘Safety inside cab’, ‘driver should follow traffic rules ’ and ‘waiting time for cab arrival’.
- It was found that ‘travel time, ‘driver should follow traffic rules’ and ‘cab performance (doesn’t broke down on the road)’ are factors users are highly satisfied with it.
- From the IS rank it was understood that ‘Cab availability 24/7’ is the most important factor that requires greater need of improvement followed by ‘waiting time for cab arrival’ and ‘Safety inside cab’.
- IS ranking indicates that ‘Visual appeal of cab’ and ‘Drivers appearance’ are the factors less important to user and they are satisfied with it.

## 6.2 Bi-variate analysis

To ascertain the relationship between service quality attributes and demographics of online cab users, a bi-variate analysis using Chi- Square test was carried out with the help of Python script. The following table 4 shows the chi square test results for some important relations.

Salient findings from bivariate analysis are as follows,

- Female cab users are less satisfied with safety while hailing a cab however the factor is equally important for both male and female.
- Different income group people have different satisfaction level about online cab services.
- Frequency of cab usage does not affect the overall satisfaction level of the cab users.

**Table 4.** Bi-variate Analysis

Variables	Service Quality Attributes	Chi-Square value	DOF	p-value
Gender	Safety inside cab	11.38	4	<b>0.02*</b>
Age	Safety inside cab	15.52	12	0.21
Income	Safety inside cab	19.31	20	0.50
Gender	Overall Satisfaction	2.35	4	0.67
Age	Overall Satisfaction	16.69	12	0.16
Income	Overall Satisfaction	35.38	20	<b>0.01*</b>
Frequency of cab usage	Overall Satisfaction	19.31	8	0.51

\*Significant at 5% significance level

## 7. SEM MODEL DEVELOPMENT, RESULTS AND DISCUSSION

### 7.1 Confirmatory Factor Analysis (CFA)

CFA is used to test whether the measures of latent variable consist with the nature of the latent variable understood by researcher based on theory and previous research. Objective of the CFA is to check whether the data fit a hypothesized model or not. CFA is the first step in structured model to assess the measurement model.

Reliability test was performed before doing CFA to check whether data collected is consistent for use or not. For checking consistency of the data Cronbach's Alpha value was calculated for each latent variable. Alpha value for each latent variable came to be more than 0.7 showed that data is reliable to use. KMO test value came to be 0.94 which is greater than 0.75. Alpha value, mean and variance of each latent variable (construct) is given in following table 4.

**Table 5.** Characteristics of service quality dimensions

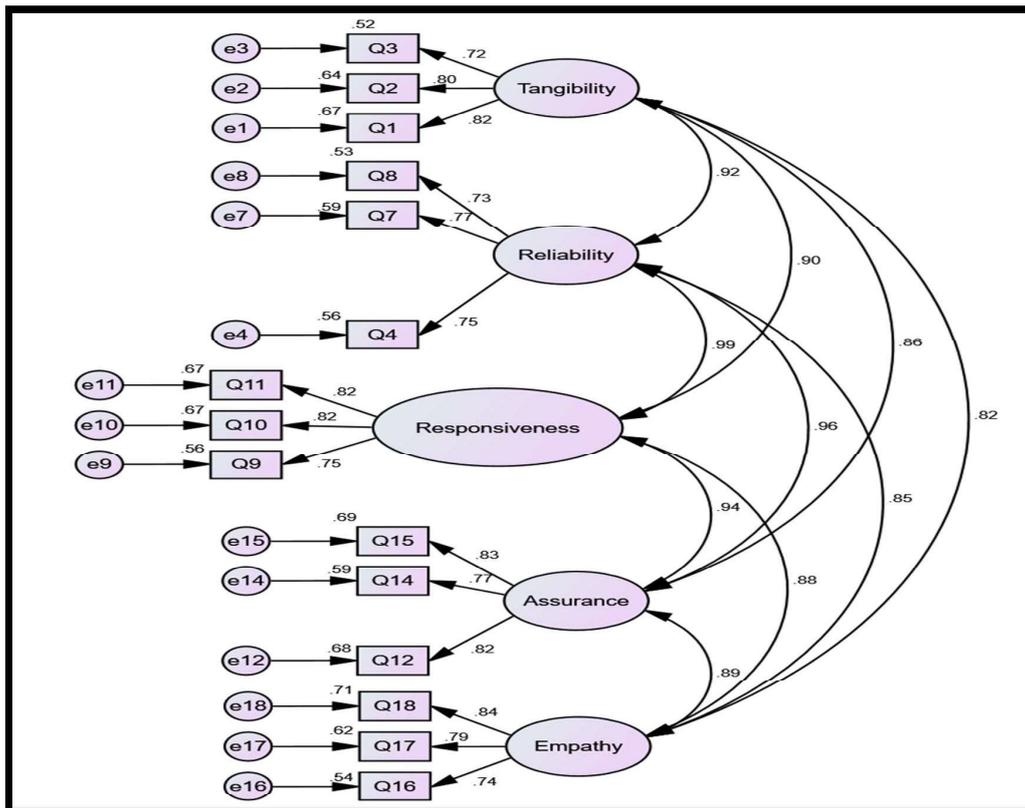
Dimensions	Cronbach's Alpha value	Mean	Variance
Tangibility	0.820	3.305	0.066
Reliability	0.833	3.473	0.091
Responsiveness	0.858	3.409	0.081
Assurance	0.840	3.355	0.087
Empathy	0.853	3.170	0.089

To analysis the results of CFA certain parameters need to be considered which will indicate that the hypothesized model is of good fit and correct one.

**Table 6.** Reliability Results of service quality dimensions

Sr. No.	Service Quality Dimensions	Standardized Factor Loadings	Composite Reliability (C.R.)	Average Variance Extracted (AVE)
1	Tangibility	0.915	0.824	0.61
2	Reliability	0.991	0.794	0.563
3	Responsiveness	0.98	0.839	0.636
4	Assurance	0.961	0.848	0.651
5	Empathy	0.895	0.833	0.626

Following table 5 shows the reliability results of service quality dimensions. Average variance extracted (AVE) value for interrelation between indicators (measured variables) of a single construct and Composite Reliability (C.R.) value for relationship between construct are tow parameters considered in convergent reliability. For reliability of model, C.R. >0.7 and AVE >0.5. For best fit of model C.R. > AVE value. Results shows all values are within the limits.



**Figure 5.** Zeroth order CFA

## 7.2 Hypothesis Testing using SEM

The main objective of the study to check the relationship between service quality and overall satisfaction.

H1 – Service Quality particularly influences the overall satisfaction of online cab service.

First Zeroth order CFA performed using AMOS software. Various goodness of fit measures are tested on the model which are summarized in the following table. After performing CFA, A structural equation modeling performed using the measurement model created while doing CFA.

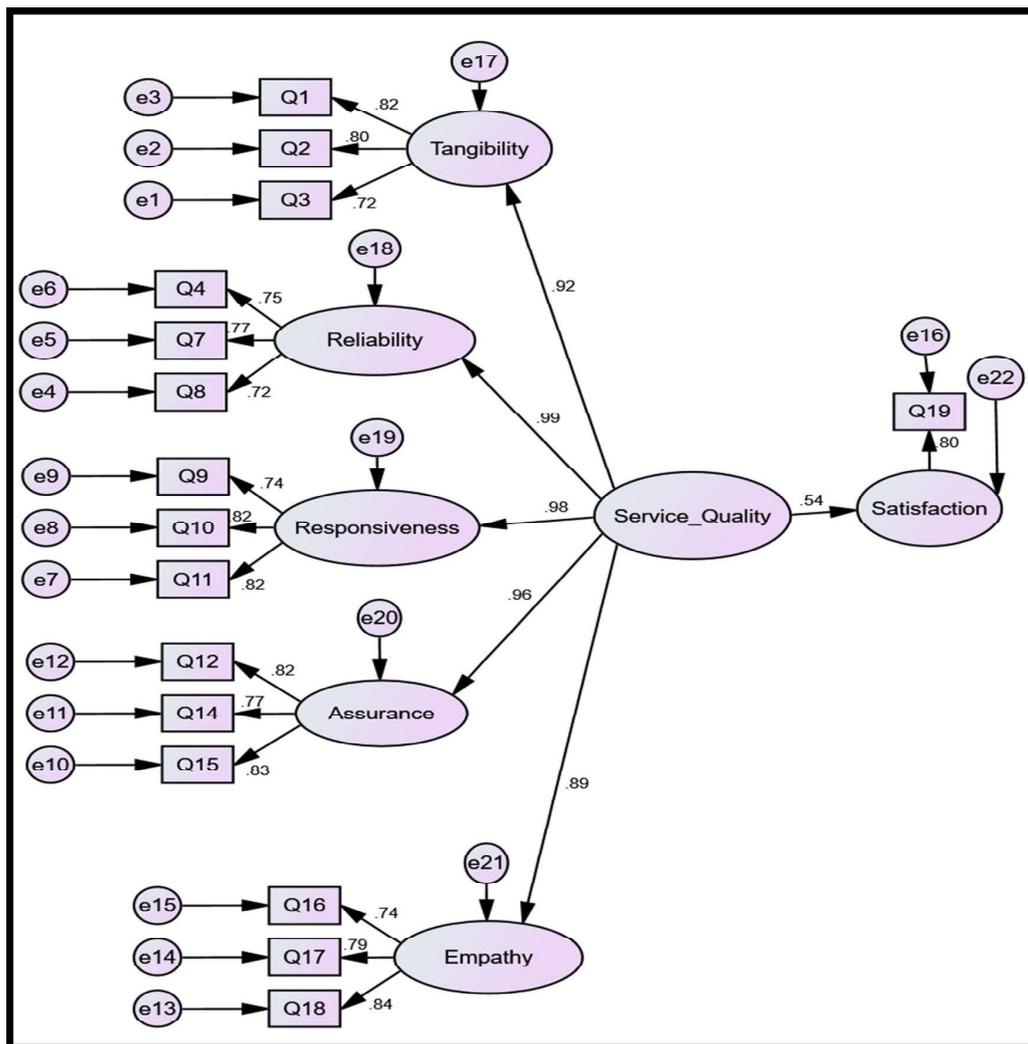


Figure 6. SEM model

Following table 6 shows different parameters estimated in the model. Standardized Regression weights, Standard error value (S.E), Critical ratio (C.R.) and probability values (P) are the parameters estimated. Analysis results showed that R-square value for the two measured variables Q5 and Q6 of reliability and Q13 of assurance were less than 0.5, Hence they were excluded from further analysis. Probability values for latent variables and measured variables are well within limit i.e. less than 0.05. Standard regression weight for Overall satisfaction is

0.54, Shows that service quality influences overall satisfaction by 0.54 indicates that the hypothesis made is valid within the significant level.

Following table 7 shows the different parameters considered for checking goodness of fit model. Parameters like Chi Square value, Goodness of fit index (GFI), Comparative Fit Index (CFI), Root Mean Square Error Approximation (RMSEA) and Root Mean Square Residual (RMR) tested for the model. All the estimates of model fit indices are well within the required limits.

**Table 7.** Parameters Estimation and Level of Statistical Significance

			Estimate	S.E.	C.R.	P	Standardized Estimate
Satisfaction	<---	Service Quality	0.494	0.072	6.868	***	<b>0.567</b>
Tangibility	<---	Service Quality	1				0.915
Reliability	<---	Service Quality	1.271	0.117	10.901	***	0.993
Responsiveness	<---	Service Quality	1.32	0.11	12.032	***	0.983
Assurance	<---	Service Quality	1.296	0.108	11.96	***	0.961
Empathy	<---	Service Quality	1.23	0.107	11.455	***	0.895
Q3	<---	Tangibility	1				0.721
Q2	<---	Tangibility	1.129	0.09	12.607	***	0.801
Q1	<---	Tangibility	1.155	0.091	12.657	***	0.804
Q8	<---	Reliability	1				0.721
Q7	<---	Reliability	1.029	0.081	12.698	***	0.773
Q4	<---	Reliability	0.937	0.076	12.322	***	0.75
Q11	<---	Responsiveness	1				0.817
Q10	<---	Responsiveness	1.032	0.064	16.021	***	0.821
Q9	<---	Responsiveness	0.923	0.066	13.973	***	0.745
Q15	<---	Assurance	1				0.827
Q14	<---	Assurance	0.892	0.061	14.701	***	0.77
Q12	<---	Assurance	1.035	0.064	16.225	***	0.824
Q18	<---	Empathy	1				0.841
Q17	<---	Empathy	1.087	0.073	14.889	***	0.79
Q16	<---	Empathy	1	0.074	13.577	***	0.737
Q19	<---	Satisfaction	1				0.764

**Table 8.** Goodness of fit measures for the model

Measures	CFI	RMSEA	GFI	Chi-square	RMR
values	0.972	0.054	0.927	178.494	0.028

## 8. CONCLUSIONS

To study the relationship of service quality attributes with overall satisfaction of the cab users, a web based survey was conducted. The majority of the people go for cab service instead of other mode of transport for comfort and accessibility. Majority of the people are facing issues related to ride cancellation by driver and its extra charges. From the IS rank it was understood that ‘cab availability 24/7’ is the most important factor that requires greater need of improvement followed by ‘waiting time for cab arrival’ and ‘safety inside cab. ‘Visual appeal of cab’ and ‘drivers appearance’ are the factors least important to user and they are satisfied with it. From the bi-variate analysis it is understood that female cab users are less satisfied with safety while hailing a cab however the factor is equally important for both male and female.’. Results of SEM showed that the service quality do affect the overall satisfaction customers about the online cab services.

## 9. LIMITATIONS AND FUTURE SCOPE

Limitation of this study is that only service quality related data is considered. The service quality dimensions (Latent variables) considered for the study are taken previous literatures. In SEM, the directions of arrows were based on certain hypotheses made from previous studies related to service quality. However, the model was able to distinguish between direct and indirect relations between the variables and analyses relationships between service quality dimensions without any random error. In ANN, the model accuracy can be further improved by tuning the hyperparameters or by using some deep learning techniques like dropout regularization. There may be other factors related to travel characteristics of the customer e.g. O-D data, data related to various transit/para-transit facilities and their service quality, first mile/last mile connectivity facilities in the city which might contribute to the service quality of online cab service in a city. Factors related to online cab booking facilities like coupon redemption, piece consciousness can be considered for future studies.

## 10. REFERENCES

1. Ali, F., Florida, S., Rasoolimanesh, S. M., & Ringle, C. M. (2018). *An assessment of the use of partial least squares structural equation modeling (PLS-SEM) in hospitality research*. 30(1), 514–538. <https://doi.org/10.1108/IJCHM-10-2016-0568>
2. Alonso, B., Barreda, R., Olio, L., & Ibeas, A. (2018). *Modelling user perception of taxi service quality*. 63(January 2016), 157–164. <https://doi.org/10.1016/j.tranpol.2017.12.011>
3. Alonso, B., Barreda, R., Olio, L., & Ibeas, A. (2018). *Modelling user perception of taxi service quality*. 63(January 2016), 157–164. <https://doi.org/10.1016/j.tranpol.2017.12.011>
4. Bollen, K. A., & Pearl, J. (2013). *Eight Myths About Causality and Structural Equation Models*. 301–328. <https://doi.org/10.1007/978-94-007-6094-3>
5. Chetanont, S. (2016). *Quality Perception of Public Taxi Services towards Satisfaction in Using among Foreign Tourists : The Case Study of Taxis in Bangkok*. 4(8), 499–503.

- <https://doi.org/10.18178/joebm.2016.4.8.442>
6. Cronin, J. J., & Taylor, S. A. (1992). *Reexamination and Extension Measuring Service Quality : A*. 56(3), 55–68.
  7. Dachyar, M., & Rusydina, A. (2015). *Measuring Customer Satisfaction and Its relationship Towards Taxi ' s Service Quality Around Capital City Jakarta*. 01.
  8. Eboli, L., & Mazzulla, G. (n.d.). *Service Quality Attributes Affecting Customer Satisfaction for Bus Transit*. 21–34.
  9. Evans, G., Pickup, M., Evans, G., & Pickup, M. (2010). *Reversing the Causal Arrow : The Political*. 72(4), 1236–1251. <https://doi.org/10.1017/S0022381610000654>
  10. Garrido, C., Oña, R. De, & Oña, J. De. (2014). *Expert Systems with Applications Neural networks for analyzing service quality in public transportation*. May. <https://doi.org/10.1016/j.eswa.2014.04.045>
  11. Hensher, D. A., Prioni, P., Journal, S., Jan, N., Hensher, D. A., & Prioni, P. (2002). *A Service Quality Index for Area-wide Contract Performance Assessment*. 36(1), 93–113.
  12. Iseki, H., & Smart, M. J. (2012). *How Do People Perceive Service Attributes at Transit Facilities? Examination of Perceptions of Transit Service by Transit User Demographics and Trip Characteristics*. <https://doi.org/10.3141/2274-18>
  13. Karimi, M., Azizi, M., Javanshir, H., Mohammad, S., & Fatemi, T. (2015). *Decision Science Letters*. 4, 349–362. <https://doi.org/10.5267/j.dsl.2015.4.003>
  14. Kim, K., Pant, P., & Yamashita, E. (2004). *Measuring Influence of Accessibility on Accident Severity with Structural Equation Modeling*. 1–10. <https://doi.org/10.3141/2236-01>
  15. Lemmink, J. G. A. M. (2002). *Modelling and evaluating service quality measurement using neural networks*. October. <https://doi.org/10.1108/01443570210446360>
  16. Mensah, I., Ankomah, P., (2018). *Taxi Service Quality And Satisfaction Among Commuters In The Accra Metropolitan Area*. December.
  17. Modeling, E., Marsh, H., Marsh, H. W., Muthe, B., Trautwein, U., Morin, A. J. S., & Nagengast, B. (2010). *A New Look at the Big Five Factor Structure Through Exploratory Structural A New Look at the Big Five Factor Structure Through Exploratory Structural Equation Modeling*. September. <https://doi.org/10.1037/a0019227>
  18. Outwater, M. L., Castleberry, S., Shiftan, Y., & Ben-akiva, M. (1999). *Attitudinal Market Segmentation Approach to Mode Choice and Ridership Forecasting Structural Equation Modeling*. 03, 32–42.
  19. Publications, S. (1985). *A Conceptual Model of Service Quality and Its Implications for Future Research*. 49(4), 41–50.
  20. Shaaban, K., & Kim, I. (2016). *Assessment of the taxi service in Doha*. 88, 223–235. <https://doi.org/10.1016/j.tra.2016.04.011>
  21. Sharma, K., & Das, S. (2017). *Service Quality and Customer Satisfaction - With Special focus on the Online Cab Industry in India*. 12(7), 192–200. <https://doi.org/10.5539/ijbm.v12n7p192>
  22. Techarattanased, N. (2015). *Service Quality and Consumer Behavior on Metered Taxi Services*. 9(12), 4242–4246.
  23. Velmurugan, J. S., Shruthi, R., & Rajkamal, S. V. (2019). *Customer Perception and Problems towards Ola Services in Smart Cities with Reference to Salem*. 11(3), 1–12.