

Exploring the Success Factors of Radio Taxi Services in Punjab : An Application of Factor Analysis

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Abstract

The rapid and developing economy of India has led the product life-cycle to become shorter and allocation of task to become more precise. Due to changing era and upcoming industry forces, the manufacturing sector has already taken the backseat, giving enough space to service sector to play in front-end. In order to meet the future needs of car passengers, the role of quality offered by Radio Taxi Services comes into play. The main objective of the study is to identify underlying factors affecting the quality of Radio Taxi services in Punjab. The study also attempts to unblock the factors having a major impact on overall service quality offered by Radio Taxis among the respondents under study. The methodology includes the structured questionnaire on 5-point Likert scale to measure the variables under study with the help of various statistical techniques like Reliability Analysis, Factor Analysis, and Regression Analysis. The judgmental sampling with sample size of 120 passengers is used. The study is limited to select Radio Taxi services like Mega Cabs of Chandigarh, Ludhiana and Amritsar only. The results indicate that there are six underlying factors named as Comfort, Delivery, Safety, Handing Over, Ergonomics and Accessibility that are affecting the quality of Radio Taxi services in Punjab. Out of these, Comfort has a major impact on overall service quality followed by safety and accessibility offered by Radio Taxis. The results of the study enrich the existing body of knowledge related to service quality offered by Radio Taxis. This research implies a framework for the service providers to understand how Comfort, Delivery, Safety, Handing Over, Ergonomics and Accessibility can catalyze their quality. With the help of these findings, Radio Taxi service providers can reframe their

strategies to identify areas in which they can improve the quality of service for passengers' delightment. Future studies could expand the geographic circumference, the scope to the specific industry sectors, and the target audience.

Key Words

Service Quality, Structured Questionnaire, Reliability Analysis, Factor Analysis, Regression Analysis and Judgmental Sampling

INTRODUCTION

The loss due to absence of an effective service quality or the benefits due to well-managed service quality try to bring sharp focus on its importance. How good is the integration of service quality dimensions, matters a lot to every firm? Customer care and service quality are important for several reasons. Firstly, service quality affects the attitudes of buyers towards repurchase. If they have a good experience, they are more likely to buy again, and if a poor experience, less likely. This simple fact can be surprisingly neglected and mismanaged by even the largest and most well-intentioned firms. Secondly, customers may judge the service they receive on different criteria from that of the provider. Whereas the marketer might focus on technical expertise or speed of execution, the customer might value 'bedside manner'. The way they are treated and the perceived attitude of employees just as highly. In fact, the latter can cause customers to question the former, if unsatisfactory (Young, L. and Burgess, B., 2010).

The integration of service quality dimensions in Radio Taxi Service is an area under great discussions. As Radio Taxi Service providers need to develop greater strategic alliances along with zero defect information so the role of service quality has been tremendously stressed upon. Effective service quality requires effective tangibles, reliability, responsiveness, assurance and empathy which can influence a passenger's expectations and may help in shaping their expectations of a service. (Panda, T. K., 2008).

INDIAN RADIO CABS SCENARIO

The days when passengers had to depend on old taxis with unruly drivers fleecing them with tampered meters and circuitous routes may soon vanish. Travelling has, to some extent, become a hassle-free and safe experience in India thanks to radio cabs. Ease of booking, safety and customer service, accurate fare meters, etc. make these cars a blessing for locals and foreigners travelling in India. Five years ago, radio cabs were not so popular. Today, the radio cab service is one of the fastest growing businesses in the transport sector. With a huge demand-supply gap

in India, this is a sector many players are keen to explore. Adding to the cab operators' revenues is cab advertisements, which is like a mobile hoarding. With over 10 players across India cashing on this lucrative market -- Meru, EasyCabs, Select Cabs, Mumbai Gold, Mega Cabs, Metro Cabs, Delhi Cabs, Quick Cabs, and women cab services like Priyadarshini Private Cabs, Go For Pink, and For-She -- the business is set to boom and spread to new cities. Radio Cabs offer a secure and safe service, which has made them popular across all cities. While Priyadarshini private cabs (in Mumbai), Go For Pink (in Chennai) and For-She (in Mumbai and Delhi) offer cars with women drivers to ensure safe travel for women, other cabs like Meru offer credit card payment system. Most of the cabs offer newspapers and magazines. These radio cabs are air-conditioned vehicles equipped with state-of-the-art GPS-based communication technology and most have well-groomed drivers too. The service is backed by a 24x7 customer call centre. Most passengers of radio cabs are either corporate executives or families. Today, there is an increasing usage of cabs due to parking issues, for shopping trips and sometimes even school trips. A constant monitoring system, cars driven by women, cars designed for the disabled, cars with the option of payment by credit cards, etcetera make radio cabs a viable business in India (Boom time for radio cabs in India, Rediff Business, 2010).

REVIEW OF LITERATURE

The idea behind this literature review is to document and critically summarize the literature relating to the integration of supply chain management and quality management systems.

Kuo, M. (2011) presents an effective approach based on combining VIKOR, GRA, and interval-valued fuzzy sets to evaluate service quality of Chinese cross-strait passenger airlines via customer surveys. The proposed approach can enable decision-makers to understand the gaps between alternatives and aspired levels. An empirical study is used to establish a complete service quality evaluation framework for reducing the gaps to achieve the aspired level. Based on the gaps in priorities, it can help an airline to identify its own strengths and weaknesses in specific areas of passenger service to further improve service quality.

Tsai, W.; Hsu, W.; and Chou, W. (2011) develop a multi-criteria evaluation model to evaluate the gap between passengers' perceptions (perceived service quality) and their expectations (expected service quality), and to diagnose managerial strategies of gap reduction within the airport passenger service context. This multi-

criteria evaluation model is combined with the analytic hierarchy process method, the VIKOR (Višekriterijumska optimizacija i KOmpromisno Resenje in Serbian, which means Multi-criteria Optimization and Compromise Solution) method, and the importance-performance analysis (IPA) technique. The multi-criteria model can not only overcome the weaknesses of traditional IPA, it can also consider passenger preferences and satisfaction simultaneously to analyse managerial strategies for reducing the customer gap, thus improving service quality and meeting passengers' expectations.

Jin-Woo, P.; and Se-Yeon, J. (2011) investigate transfer passenger's perception of airport service quality and its influence on value, satisfaction, airport image, and passenger behavior. To test the relationships between the variables, Structural Equation modeling is used to analyze survey data collected from 331 transfer passengers at Incheon International Airport. The results show that airport service quality would raise the level of transfer passengers' satisfaction, value perceptions, and airport image formation.

Dell'Olio, L.; Ibeas, A.; and Cecín, P. (2010) evaluate how bus users perceive the quality of their public transport service. In particular, it looks at how perception of quality varies according to the available information. The experiment compares an overall evaluation of service quality before and after making passengers reflect on the importance of certain fundamental system variables which they may not have previously considered. Focus groups were used to individualize the most relevant variables. A quality survey was carried out both on-board buses and at bus stops and the overall service quality was related to the aforementioned variables using ordered probit models. The perception of quality is shown to change with the category of users and that there tends to be more criticism towards variations in overall quality until the users are stimulated into thinking more deeply about other influential variables. The application of this methodology may provide operating companies with valuable information for planning marketing policies aimed at different categories of user, in order to improve the service quality and attract more passengers to using public transport.

Feiz, D.; Maleki, M.; and Zargar, S. (2010) assess service quality in passenger rail service based on the zone of tolerance and its relationship with perceived service value and passenger satisfaction. Service quality is measured using two concepts: service superiority and service adequacy. The relationship among these concepts and perceived service value and passenger satisfaction form the objectives of the study. The results of the research indicate that perceived service quality is

within the passenger zone of tolerance; hence the passenger rail service level is acceptable to passenger's view. Service superiority and service adequacy influence perceived service value and satisfaction and perceived value plays a mediating role in the effect of service superiority and service adequacy on the passenger satisfaction. Furthermore, there is a positive significant relationship between perceived service value and passenger satisfaction.

Vanniarajan, T. T.; and Alleswari, A. A. (2010) have made an attempt to the relationship between service quality passengers satisfaction and repurchase intention among the passengers with the help of structural equation modeling. The findings of the study reveal that the service quality of bus service is the significant predictor of the passengers' satisfaction and their behavioral intention.

Jin-Woo, P.; Rodger, R.; and Cheng-Lung, W. (2009) investigate how air passengers' expectations, ticket price, airline service quality, value, passenger satisfaction and airline image determine their buying behavior. The results of the path analysis reveal that air passengers' buying behavior differs significantly between Korean and Australian international passengers. Results also reveal that the determinants of air passengers' buying behavior differ by airlines.

OBJECTIVES OF THE STUDY

The above review of literature reveals that there exists a wide gap in literature and seeing the importance of Indian Radio Cabs in the light of globalization, it necessitates the research to unravel the complexities of the variables under study. The present research has been undertaken to fill this gap with regards to the following objectives :

- To evaluate the scale used to measure the variables under study.
- To identify underlying factors affecting the quality of Radio Taxi services.
- To find out which factor is mostly preferred by passengers in relation to above objective.

Population	Sample Size
Passengers of different Radio Cabs in Punjab	150

RESEARCH METHODOLOGY**Table 1****Distribution of Respondents**

	all (n = 120)	
	n	p
Age (years)		
20-30 years	20	16.7
30-40 yrs	73	60.8
40 yrs and above	27	22.5
Total	120	100
Gender		
Male	93	77.5
Female	27	22.5
Total	120	100
Education		
Graduate	21	17.5
Post-Graduate	37	30.8
Professional Degree	62	51.7
Total	120	100

Research Design

Cross-Sectional in nature since the survey that is carried out represented a snapshot of one point of time.

Sampling Design**Table 2****Sampling Design**

Population	Passengers of different Radio Cabs in Punjab.
Sampling Element	Individual Passenger from select service provider in select cities.
Sampling Technique	Use Judgmental Sampling method to leverage research.
Sample Size	120

Table 1 presents the profile of the respondents who has participated in this research study. Around more than half of the participants are males (77.5 per cent). Almost half of the participants are having professional degree and 61 per cent of the respondents are in the age group of 30-40 years.

Tools for Data Collection

Questionnaire has been developed by the researchers themselves with the help of preliminary interviews of experts & other relevant literature. Primary data was collected on a Likert Scale. The secondary information is collected with the help of online databases like Ebscohost, Emerald, and Jstor etc.

Tools for Data Analysis

Reliability analysis, Factor Analysis, Regression Analysis etc. are being used for carrying out the statistical analysis with the help of PASW 18.0. In order to run exploratory factor analysis the, the sample size should be at least 4 times the number of items in the scale {Malhotra, N.K} and in this study number of items are 11 so the sample size should be equal to 44 and in this study sample of 120 is selected to represent population sufficiently.

The scope of study is limited to Chandigarh, Ludhiana and Amritsar geographically. The study involves the respondents of more than 18 years of age and revolves only around the Radio Taxi Service providers.

RESULTS AND DISCUSSIONS

Reliability Test

The reliability of scale was tested with the help of reliability analysis using PASW 18.0 software with reliability metrics given below :-

Table 3

Reliability Statistics

Cronbach's Alpha	0.973
Number of Items	18
Number of Cases	120

As the reliability metric (0.973) is more than standard criteria (0.700) {Field, A. P. (2009).} so the scale is highly reliable. The face validity method was used to check the validity of the scale and the validity was found to be satisfactory to carry out the study. Hence first objective is achieved.

Evaluation of Scale

Most of the items are found to be consistent by using their item to total correlation values.

Table 4

Reliability Statistics for Items

Cronbach's Coefficient for Scale	0.973	
Item	Corrected Item-Total Correlation	Cronbach's coefficient if item deleted
The car should have air condition	.814	.971
The seats of the car should be comfortable	.819	.971
The cars' interior should be spacious	.850	.971
Company should deliver the car to where I want	.814	.971
Company should allow me to return the car to where I want	.823	.971
Employee of the company should inform me about the car's functions and accessories	.850	.971
Car should have no technical problem	.814	.971
Car should have necessary safety features like ABS, Airbags	.823	.971
Car should have insurance and collusion damage waiver	.849	.971
Car should be very clean when I receive it	.780	.972
Car should have enough fuel when I receive it	.800	.971
Local maps and tourist information should be provided when I receive the car	.776	.972
Car should have ergonomic features for customers with disabilities or special needs	.792	.972
Car should have manual and automatic gear option	.762	.972
Car should have hydraulic or electrical steering system	.832	.971
Company should easily be accessible	.765	.972
Employee of the company should be reachable at anytime	.732	.972
Employee of the company should be available to meet with me in case of extraordinary situations like accident, technical problem	.786	.972

As the value of each corrected item-total Correlation is more than 0.5, so all the items of the scale are retained and no item is rejected. This scale cannot be improved further as the values of Cronbach's coefficient, if item deleted, are less than 0.973.

Factor Analysis

PASW 18.0 software was used to find out the relevant factors relating to the variables under study. 18 variables were analyzed with the help of Principle component method using the varimax rotation and 6 factors were generated.

Checking the Appropriateness of Factor Analysis

Table 5
Factor Analysis Statistics

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.(KMO)		.846
Bartlett's Test of Sphericity	Approx. Chi-Square	498.223
	Df	36
	Sig.	.000

As KMO value is more than 0.5 (Naresh K. Malhotra) so it is appropriate to run the factor analysis.

Table 6
Factor Analysis Results

Factor Name	Eigen Value	% of Variance	Statements	Factor Loadings
F1	3.96	44	V1 - The car should have air-condition	.814
			V2 - The seats of the car should be comfortable	.819
			V3 - The cars' interior should be spacious	.850
F2	3.00	34	V4 - Company should deliver the car to where I want	.814
			V5 - Company should allow me to return the car to where I want	.823
			V6 - Employee of the company should inform me about the car's functions and accessories	.850
F3	2.17	24	V7 - Car should have no technical problem	.814
			V8 - Car should have necessary safety features like ABS, Airbags	.823

Contd.

Contd. Table 6

			V9 - Car should have insurance and collusion damage waiver	.849
F4	2.11	20	V10 - Car should have insurance and collusion damage waiver	.780
			V11 - Car should be very clean when I receive it	.800
			V12 - Car should have enough fuel when I receive it	.776
F5	1.98	16	V13 - Local maps and tourist information should be provided when I receive the car	.792
			V14 - Car should have ergonomic features for customers with disabilities or special needs	.762
			V15 - Car should have manual and automatic gear option	.832
F6	1.66	14	V16 - Company should easily be accessible	.765
			V17 - Employee of the company should be reachable at anytime	.732
			V18 - Employee of the company should be available to meet with me in case of extraordinary situations like accident, technical problem	.786

V1, V2 and V3 have emerged as the most important variables having highest loading on factor F1 labeled as Comfort with Eigen value 3.96 and variance 44. The major variable of this factor is V3 with factor loading 0.850. Delivery stands for the second factor (F2) emerged from V4, V5 and V6 with Eigen value 3.00 and variance of 34. V6 is the main constituent of this factor with factor loading 0.850. The remaining factors are named as Safety (F3), Handing over (F4), Ergonomics (F5) and Accessibility (F6) depending upon the load of items on the respective factors.

Regression Analysis

Multiple regression analysis is used to study the impact of factors generated on the overall quality of Radio Taxis and to find out the factor most preferred by passengers under study.

Table 7
Model Summary Box of Regression Analysis

Mode	R	R square	Adjusted R Square	F Statistics	P Value
b1	.706a	.498	.490	58.063	.000a

a. Predictors : (Constant), Factor 1, Factor 2, Factor 3, Factor 4, Factor 5, Factor 6

b1. Dependent Variable: Overall quality is good

Corresponding Regression Line

$$\text{Overall quality is good} = 0.637 + 0.502 (F1) + 0.396 (F2) + 0.408 (F3) + 0.306 (F4) + 0.316 (F5) + 0.402 (F6)$$

R value indicates the correlation coefficient between various dimensions of criterion and predictor variables. In the first case, R=0.706 indicates a good hypothesized relationship between the overall quality and the resulting factors under study. R² is the coefficient of determination. It is 0.498 indicating the authenticity of the research. Closer the value of R² to 1, greater is the authenticity of the research (Viswanathan, 2005). The results of analysis exhibit that 49.8% variation in the overall quality is because of the resulting factors under study indicating that the research is authentic. Adjusted R square value = .490 indicating the adjustment in R² to reflect the reality. F Statistics indicates that the model fitted is fairly accurate. The p value in is less than 0.05 showing that results are statistically significant. The passengers give more importance to factor (F1) followed by (F3) and (F6) in relation to overall quality.

CONCLUSIONS

From the above analysis, it is concluded that use of service quality is high in case of Radio Taxi service providers. The research findings have also indicated that the Comfort, Delivery, Safety, Handing Over, Ergonomics and Accessibility are the positive predictors of overall quality the Indian Radio Cabs. Hence we can say that overall quality is strongly related to various factors affecting service of Radio cabs indicating that when Radio Cab Providers practise the Comfort, Delivery, Safety, Handing Over, Ergonomics and Accessibility, it enhances overall quality.

The results indicate that Comfort, Delivery, Safety, Handing Over, Ergonomics and Accessibility catalyze the quality in Indian Radio Cabs. The results of the study enrich the existing body of knowledge related to Indian Radio Cabs. This research implies a framework for the service providers to understand how

Comfort, Delivery, Safety, Handing Over, Ergonomics and Accessibility can catalyze their quality. With the help of these findings, Radio Taxi service providers can reframe their strategies to identify areas in which they can improve the quality of service for passengers' delightment. Future studies could expand the geographic circumference, the scope to the specific industry sectors, and the target audience.

References

- Dell'Olio, L.; Ibeas, A.; and Cecin, P. (2010), Modelling User Perception of Bus Transit Quality, *Transport Policy*, 17(6), 388-397.
- Feiz, D.; Maleki, M.; and Zargar, S. (2010), Measuring Service Quality : Iran Railway, *SCMS Journal of Indian Management*, 7(3), 68-88.
- Field, A. P. (2009), *Discovering Statistics Using SPSS : (and Sex and Drugs and Rock 'n' Roll)*. Los Angeles [i.e. Thousand Oaks, Calif.: SAGE Publications.
<http://business.rediff.com/slide-show/2010/may/27/slide-show-1-auto-boom-time-for-radio-cabs-in-india.htm>
- Jin-Woo, P.; and Se-Yeon, J. (2011), Transfer Passengers' Perceptions of Airport Service Quality : A Case Study of Incheon International Airport, *International Business Research*, 4(3), 75-82.
- Jin-Woo, P.; Rodger, R.; and Cheng-Lung, W. (2009), Differences in Air Passengers' Buying Behaviour : Findings from Korean and Australian International Passengers, *Transportation Planning & Technology*, 32(5), 441-460.
- Kuo, M. (2011), A Novel Interval-valued Fuzzy MCDM Method for Improving Airlines' Service Quality in Chinese Cross-strait Airlines, *Transportation Research : Part E*, 47(6), 1177-1193.
- Malhotra, N. K. (2010), *Marketing Research : An Applied Orientation*, 6th ed. Saddle River, N. J. : Pearson.
- Panda, T. K. (2008), *Marketing Management : Text and Cases : Indian Context*, New Delhi : Excel Books.
- Tsai, W.; Hsu, W.; and Chou, W. (2011), A Gap Analysis Model for Improving Airport Service Quality, *Total Quality Management & Business Excellence*, 22(10), 1025-1040.
- Vanniarajan, T. T.; and Alleswari, A. A. (2010), Busqual and Repurchase Intention Among The Passengers : An Empirical Study, *Journal of Marketing and Communication*, 6(1), 10-17.
- Viswanathan, M. (2005), *Measurement Error and Research Design*, Thousand Oaks : Sage Publications.
- Young, L.; and Burgess, B. (2010), *Marketing Technology as a Service : Proven Techniques That Create Value*, Hoboken, N. J. : Wiley.