A STUDY ON QUALITY OF CUSTOMER SERVICE DELIVERY OFFERED BY TAMIL NADU TRANSPORT DEPARTMENT IN SALEM DISTRICT BY USING STRUCTURAL EQUATION MODELING

V.JEYAGOWRI[1], Dr.M.LATHA NATARAJAN[2]
[1]. *Research Scholar In Management, Research And Development Centre, Bharathiar University, Coimbatore – 641 046.*
[2].*Professor And Head, Department Of Mba, Vivekanandha College Of Engineering For Women, Thiruchengode – 637 205*
[3]. *Dr.M.Gurusamy, Associate Professor, Department Of Management Studies, Paavai College Of Engineering, Pachal, Namakkal – 637 018*

ABSTRACT

Transportation is one of the most important infrastructure requirements which are essential for the cultural, social and economic development of the country.The responsibility of Transport Department is to control and regulation of transportation of passengers and goods. The Transport Department is also responsible for levy and collection of motor vehicles tax as envisaged in the Tamil Nadu Motor Vehicles Taxation Act 1974 and the Tamil Nadu Motor Vehicles Taxation Rules 1974. The department is further responsible for the implementation of road safety policy and programmes. The objective of this study is to examine the quality of customer service delivery offered by the Tamil Nadu Transport Department. Results of the improvement effort also benefit the customer. Data are collected using questionnaire. The sample unit of the study is customers of Tamil Nadu Transport Department in Salem District. The total sample of the study is 150. Primary research data is collected in the form of structured survey results from various respondents in Salem District. Secondary research data is collected in the form of reference literature on the research topic. The collected data were analyzed by using IBM SPSS Statistics version 20 for data input and analysis.

Key Words: Tangibles, Reliability, Responsiveness, Assurance, and Empathy.

INTRODUCTION

Transportation is one of the most important infrastructure requirements which are essential for the cultural, social and economic development of the country. The Transport Department is entrusted with the following responsibilities with regard to control and regulation of transportation of passengers and goods by means of roads: Licensing of drivers of motor vehicles, Registration of motor vehicles, Issuance of permits for various categories of motor vehicles, Providing an efficient public transportation system, Control of vehicular pollution, Collection of road taxes etc., Policy making, co-ordination, implementation, monitoring and regulatory functions of all the transport related aspects, and Evolving Road safety policy. The Transport Department is also responsible for levy and collection of motor vehicles tax as envisaged in the Tamil Nadu Motor Vehicles Taxation Act 1974 and the Tamil Nadu Motor Vehicles Taxation Rules 1974. The department is further responsible for the implementation of road safety policy and programmes.

REVIEW OF LITERATURE

Colin Bosch (2009) Service organizations which are highly interactive, labour-intensive, reliant on a number of service providers, required to perform at various locations and have high intensity/volume operations, will be

susceptible to failure; Metrorail services fall into this category. Zeithaml*et al*. (2006) define services as deeds, processes and performances in the following categories: pure services, value-added services, customer service and derived service. Muhammad Hafiz Rashid (2008) said that excellent quality of customer service is so important for government agencies even though they are not-for-profit. Better service enhances productivity, and treating customer right the first time saves time and money. Creating satisfied customers reduces the likelihood irate citizens take their complaints to higher sources, or to a public forum where negative word-of-mouth can be damaging. Zeithaml*et al*. (1990) concluded that a number of underlying patterns in the responses were extremely consistent in the focus group interviews. From this, they were able to define good service quality as meeting or exceeding what customers expect from the service. Sasser, Olsen and Wyckoff (1978 in Parasuraman, Zeithaml and Berry, 1985) suggest that three distinct dimensions of service performance are relevant: levels of material, facilities and personnel. They reason that service quality involves more than just outcome, it also includes the manner in which the service is delivered.

STATEMENT OF THE PROBLEM

Every employee's responsibility is to demonstrate good customer service, but especially critical for those who have day-to-day contact with the public. As the largest department in Tamil Nadu, the quality of customer service of Tamil Nadu Transport Department provide has a tremendous influence on public perceptions of the quality of the customer service. Therefore the main purpose of this study is to understand the quality of customer service delivery offered by the Tamil Nadu Transport Department and to examine the perception of customer service quality in the Tamil Nadu Transport Department.

OBJECTIVES OF THE STUDY

- To examine the quality of customer service delivery of the Tamil Nadu Transport Department at Salem District.
- To recommend area(s) that requires improvement.

SCOPE OF THE STUDY

The area of the study is quality of customer service delivery in Tamil Nadu Transport Department. It's focused on the dimensions of customer service quality from customer perspectives particularly in the Regional Transport Office of Tamil Nadu with special reference to Salem District. It may helpful to frame new strategies and improve the quality of services of Tamil Nadu Transport Department. The outcome of the study will be useful for the Tamil Nadu Transport Department to improve customer service quality. Results of the improvement effort also benefit the customer. In the long run, this study may be used as a reference for evaluating customer service quality in the Tamil Nadu Transport Department.

LIMITATION OF THE STUDY

This study was conducted at Salem District only and not on other cities of Transport Department of Tamil Nadu as this requires broader evaluations as well as some limitations such as time and funds. The sample used for this study was 150 customers who interacted with the Transport Department of Tamil Nadu at Salem District.

RESEARCH METHODOLOGY

Data were collected using questionnaire, the most common tool to examine the Quality of Customer Service Delivery offered by Tamil Nadu Transport Department in Salem District. The sample unit of the study is customers of Tamil Nadu Transport Department in Salem District. The total sample of the study is 150. Primary research data is collected in the form of structured survey results from various respondents in Salem District. Secondary research data is collected in the form of reference literature on the research topic. The collected data were analyzed by using IBM SPSS Statistics version 20 for data input and analysis. Structural Equation Modeling is used to analyze the data of this study.

DATA ANALYSIS AND INTERPRETATION

Structural Equation Modeling (SEM): Model fit assessment

Structural equation modeling was used to analyze the suitability of the model based upon the collected samples. As recommended by Anderson and Gerbing (1988), measurement model to test the reliability and validity of the survey instrument was analyzed first, and by using AMOS version 20 the structural model was analyzed. The structural

equation model (SEM) is most useful when assessing the causal relationship between variables as well as verifying the compatibility of the model used (Peter, 2011). Structural equation modeling evaluates whether the data fit a theoretical model. In order to evaluate the model, emphasis was given to Chi-square/degrees of freedom, CFI, GFI, AGFI, TLI, IFI, RMSEA and PGFI **(Table 1).** As per the result, Chi square statistics with $p = 0.475$ does it show a good fit of the model. Common model-fit measures like chi-square/degree of freedom, the comparative fit index (CFI), root mean square error of approximation (RMSEA), the normed fit index (NFI), incremental fit index (IFI), and the Tucker Lewis index (TLI) were used to estimate the measurement model fit. Table 1 shows the estimates of the model fit indices from AMOS structural modeling.

FIGURE NO.1: PROPOSED CONCEPTUAL MODEL

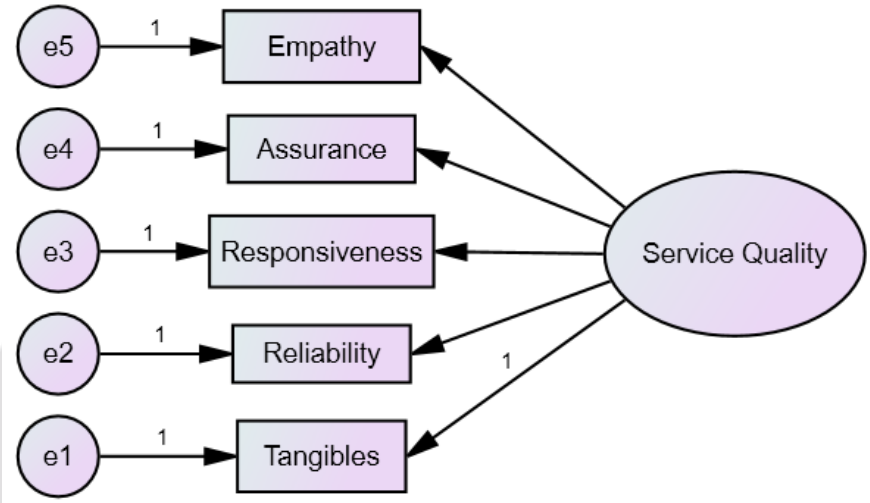
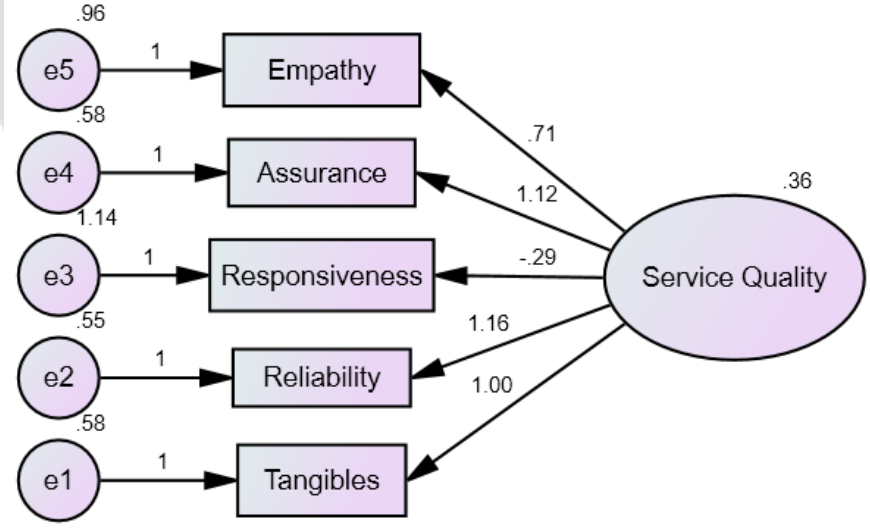


FIGURE NO.2: PROVED EMPIRICAL MODEL



Legend: * One way arrows stand for regression weights.

According to Gerbing and Anderson (1992), the criteria for an acceptable model are as follows: RMSEA of 0.08 or lower; CFI of 0.90 or higher; and NFI of 0.90 or higher. The fit between the data and the proposed measurement model can be tested with a chi-square goodness-to-fit (GFI) test where the probability is greater than or equal to 0.9 indicates a good fit (Hu and Bentler, 1999). The GFI of this study was 0.976 more than the recommended value of 0.90 the other measures fitted satisfactorily; AGFI = 0.927, CFI = 0.949, TLI = 8.99, IFI = 0.952 and NFI = 0.907 with chi-square/degree of freedom <5 at 9.816and RMSEA = 0.080 (Bagozzi and Yi, 1988) indicate a good absolute fit of the model. Goodness of fit indices support the model fit and these emphasized indices indicate the

acceptability of this structural model. For the purpose of testing the model fit null hypothesis and alternative hypothesis are framed.

HYPOTHESIS

Null hypothesis (H_0): The hypothesized model has a good fit.

Alternate hypothesis (H_1): The hypothesized model does not have a good fit.

TABLE NO.1: MODEL FIT INDICES

Fit Indices	Results	Suggested values
Chi-square	9.816(0.081) 13	P-value > 0.01
Chi-square/degree of freedom	1.963	≤ 5.00 (Hair et al., 1998)
Comparative Fit index (CFI)	0.949	> 0.90 (Hu and Bentler, 1999)
Goodness of Fit Index (GFI)	0.976	> 0.90 (Hair et al. 2006)
Adjusted Goodness of Fit Index (AGFI)	0.927	> 0.90 (Daire et al., 2008)
Normated Fit Index (NFI)	0.907	≥ 0.90 (Hu and Bentler, 1999)
Incremental Fit Index (IFI)	0.952	Approaches 1
Tucker Lewis Index (TLI)	0.899	≥ 0.90 (Hair et al., 1998)
Root mean square error of approximation (RMSEA)	0.080	< 0.08 (Hair et al., 2006)
Parsimony goodness-of-fit index (PGFI)	0.325	Within 0.5 (Mulaik et al., 1989)

As per the above **Table No.1**, it is clear that values of all the items are above the suggested value of 0.01 (Hair et al., 2006). According to Bollen (1989a), the higher the probability associated with Chi-square, the closer the fit between the hypothesized model and the perfect fit. The test of our null hypothesis H_0, that shown in **Figure No.2**, yielded a chi-square value of 9.816 with 5 degrees of freedom and a probability of higher than 0.01 (p <0.081). It is suggesting that the fit of the data to the hypothesized model is entirely adequate. As per the result, Chi square statistics with $p = 0.081$does show a good fit of the model.

Hair et al. (1998) suggested the value for the fit statistic minimum discrepancy/degrees of freedom (CMIN/DF), otherwise chi-square/ degrees of freedom as ≤ 5. As per the **Table No.1**, the value for the chi-square/degrees of freedom is 1.963which is less than the accepted cut off value of ≤ 5.

TABLE NO.2: UNSTANDARDIZED ESTIMATE REGRESSION WEIGHTS: (GROUP NUMBER 1 - DEFAULT MODEL)

S/N		Factor	Unstandardized Estimate	S.E.	C.R.	P
Tangibles (Factor1) (e1)	<---	Service Quality(F1)	1.000			
Reliability (Factor2) (e2)	<---	Service Quality(F1)	1.156	0.222	5.220	0.001
Responsiveness (Factor3) (e3)	<---	Service Quality(F1)	-0.287	0.177	-1.626	0.104
Assurance (Factor4) (e4)	<---	Service Quality(F1)	1.116	0.215	5.198	0.001
Empathy (Factor5) (e5)	<---	Service Quality(F1)	0.714	0.190	3.767	0.001

Level of significance for regression weight

Table No.2 shows the unstandardized coefficients and associated test statistics.

When F1 goes up by 1, Factor1 goes up by 1. This regression weight was fixed at 1.000, not estimated.

The probability of getting a critical ratio as large as 5.220in absolute value is less than 0.001. In other words, the regression weight for F1 in the prediction of Factor2 is significantly different from zero at the 0.001 level (two-tailed).

The probability of getting a critical ratio as large as -1.626in absolute value is 0.104. In other words, the regression weight for F1 in the prediction of Factor3 is not significantly different from zero at the 0.005 level (two-tailed).

The probability of getting a critical ratio as large as 5.198in absolute value is less than 0.001. In other words, the regression weight for F1in the prediction of Factor4 is significantly different from zero at the 0.001 level (two-tailed).
The probability of getting a critical ratio as large as 3.767in absolute value is less than 0.001. In other words, the regression weight for F1 in the prediction of Factor5is significantly different from zero at the 0.001 level (two-tailed).
These statements are approximately correct for large samples under suitable assumptions.

TABLE NO. 3: STANDARDIZED REGRESSION WEIGHTS: (GROUP NUMBER 1 - DEFAULT MODEL)

Factors	Standardized Estimate	S.E.	C.R.	P
Service Quality (F1)	0.362	0.106	3.409	0.001
Tangibles(e1)	0.580	0.092	6.328	0.001
Reliability(e2)	0.547	0.102	5.338	0.001
Responsiveness (e3)	1.137	0.133	8.540	0.001
Assurance (e4)	0.585	0.102	5.752	0.001
Empathy (e5)	0.960	0.121	7.954	0.001

Table No.3 shows the standardized estimates for the fitted model. Relative contributions of each predictor variable to each outcome variable can be evaluated by standardized estimates. Figure 2 shows Structural Modelof Quality of Customer Service Delivery offered by Tamil Nadu Transport Department in Salem District. As per **Figure 2**, it is clear that customers attach more values to the organization as a whole is not Responsiveness (e3) (1.137) in Tamil Nadu Transport Department in Salem District.

Bayesian Analysis for Estimation of Mediation Model:
AMOS provides several diagnostics that help to check convergence. Notice the value will be 1.0052 on the toolbar of the Bayesian SEM window. AMOS displays an "**Unhappy Face**" when the overall C.S. is not small enough.

FIGURE NO.3: UNHAPPY FACE

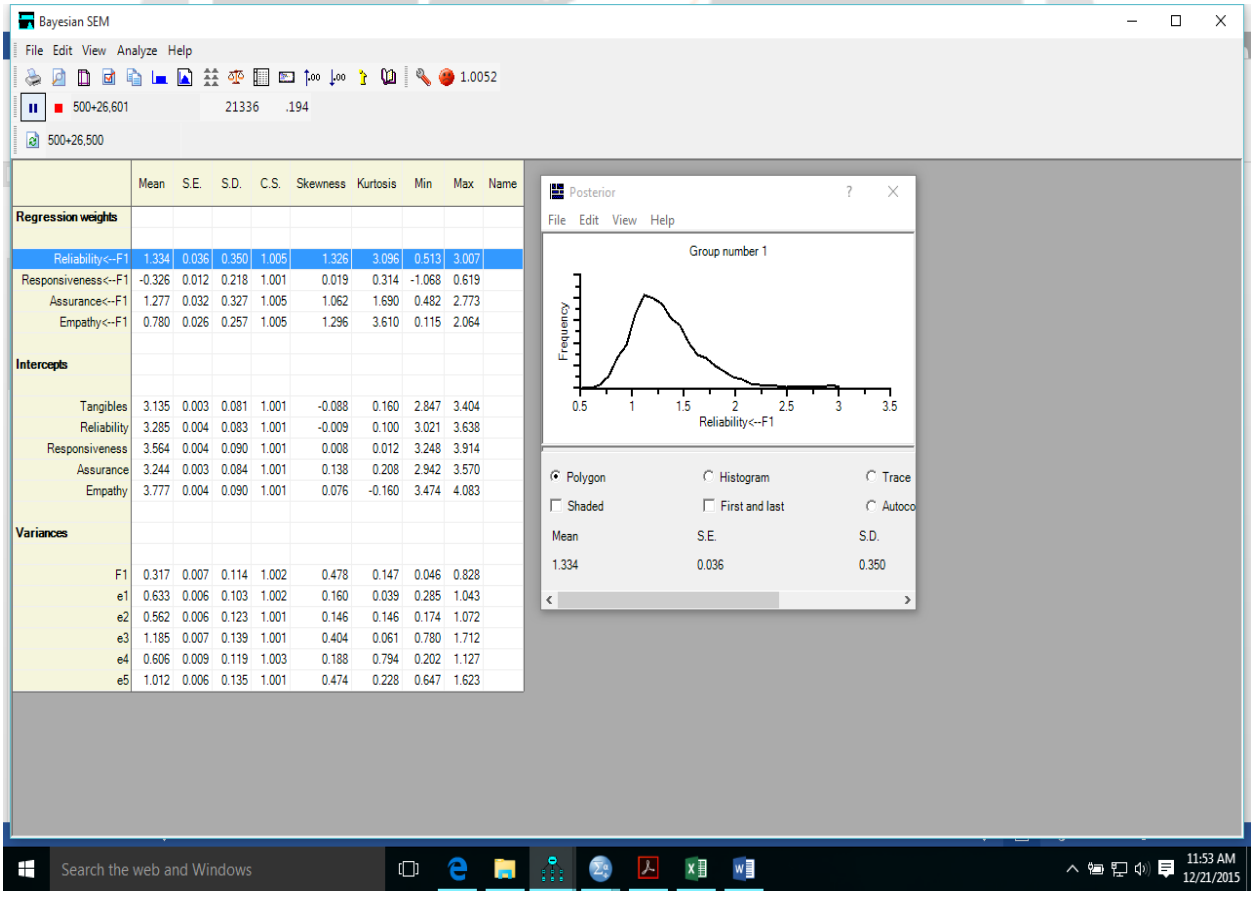
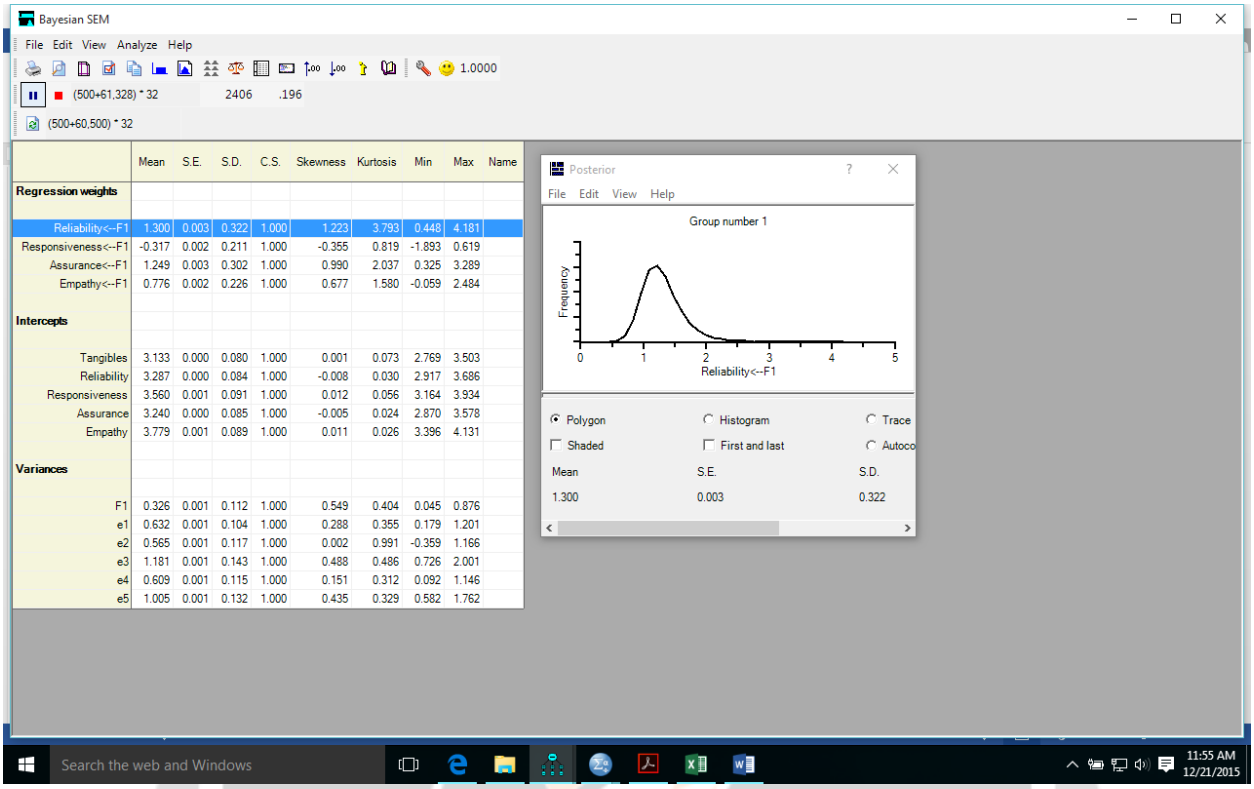


FIGURE NO.4: HAPPY FACE



	Mean	S.E.	S.D.	C.S.	Skewness	Kurtosis	Min	Max	Name
Regression weights									
Reliability<--F1	1.300	0.003	0.322	1.000	1.223	3.793	0.448	4.181	
Responsiveness<--F1	-0.317	0.002	0.211	1.000	-0.355	0.819	-1.893	0.619	
Assurance<--F1	1.249	0.003	0.302	1.000	0.990	2.037	0.325	3.289	
Empathy<--F1	0.776	0.002	0.226	1.000	0.677	1.580	-0.059	2.484	
Intercepts									
Tangibles	3.133	0.000	0.080	1.000	0.001	0.073	2.769	3.503	
Reliability	3.287	0.000	0.084	1.000	-0.008	0.030	2.917	3.686	
Responsiveness	3.560	0.001	0.091	1.000	0.012	0.056	3.164	3.934	
Assurance	3.240	0.000	0.085	1.000	-0.005	0.024	2.870	3.578	
Empathy	3.779	0.001	0.089	1.000	0.011	0.026	3.396	4.131	
Variances									
F1	0.326	0.001	0.112	1.000	0.549	0.404	0.045	0.876	
e1	0.632	0.001	0.104	1.000	0.288	0.355	0.179	1.201	
e2	0.565	0.001	0.117	1.000	0.002	0.991	-0.359	1.166	
e3	1.181	0.001	0.143	1.000	0.488	0.486	0.726	2.001	
e4	0.609	0.001	0.115	1.000	0.151	0.312	0.092	1.146	
e5	1.005	0.001	0.132	1.000	0.435	0.329	0.582	1.762	

Reflecting the satisfactory convergence, AMOS now displays a "**Happy Face**" (Yellow). The value of C.S will be 1.0000; there is a more precision to be gained by taking additional samples, so it might stop as well. The Posterior dialog box now displays a frequency polygon of distribution of Tangibles, Reliability, Responsiveness, Assurance, and Empathyfactors predicting to the Quality of Customer Service Delivery offered by Tamil Nadu Transport Department in Salem Districtacross the samples is proved.

CONCLUSION

It could be very well concluded that the hypothesized five-factor model fits the sample data. Based on the viability and statistical significance of important parameter estimates; the considerably good fit of the model (CFI, GFI, AGFI, NFI, IFI, TLI, RMSEA), it can be concluded that the five-factor model shown in Figure No.2 represents an adequate description of Quality of Customer Service Delivery offered by Tamil Nadu Transport Department in Salem Districtgoodness of fit indices support the model fit and these emphasized indices indicate the acceptability of this structural model. Definitely, this study will be useful to Tamil Nadu Transport Department to ascertain the importance given by their customers for the various important factors pertaining to service quality system.

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