THE RELATIONSHIP BETWEEN SERVICE QUALITY AND ATTITUDINAL LOYALTY OF BUS PASSENGERS: MEDIATING ROLE OF PERCEIVED VALUE, CUSTOMER TRUST AND CUSTOMER SATISFACTION

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In

MANAGEMENT

By

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DECLARATION

I, Mahesh R, hereby declare that the thesis entitled, "The Relationship between Service Quality and Attitudinal Loyalty of Bus Passengers: Mediating role of Perceived Value, Customer Trust and Customer Satisfaction", submitted by me under the guidance and research supervision of Prof. B. Raja Shekhar is a bonafide research work which is also free from plagiarism. I also declare that it has not been submitted previously in part or in full to this University or any other University or Institution for the award of any degree or diploma. I hereby agree that my thesis can be deposited in Shodganga /INFLIBNET.

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MAHESH R

ABSTRACT

Previous research on service quality findings have indicated that in the transport sector service quality is a key factor effecting customer satisfaction and future consumption behaviour. However, when we attempt to measure the effect, we face three distinct issues. Firstly, no instrument with acceptable measurement properties to assess service quality of bus transport has been found in the literature. Another area of concern is misspecification of SERVQUAL as reflective-reflective higher order construct. Finally, ambiguity exists in the direction and magnitude of service quality effects on the outcome variables. This study has following five objectives to address the issues discussed above: (1) Adaptation of SERVQUAL instrument to measure perceived service quality in bus transport sector (2) conceptualize SERVQUAL as reflective-formative type higher order construct (3) develop the integrated service quality-attitudinal loyalty model (4) test the mediation effect of corporate image, perceived value, customer trust and customer satisfaction in the relationship between service quality and attitudinal loyalty and (5) to capture the unobserved heterogeneity in the chosen sample by testing the integrated model. Study 1 was used to adapt modify the SERVQUAL scale and further study 2 was conducted to test the proposed hypothesized relationships in the integrated model. An on-site survey was conducted at the central bus stand of the state capital on both weekdays and weekends using purposive sampling technique.

To adapt modified SERVQUAL scale, principal component analysis, confirmatory factor analysis were performed and result shows the final version of the service quality adapted scale (modified SERVQUAL) contains 22 items under five dimensions namely, bus services (5 items), bus stand services (4 items), reliability (4 items), empathy (4 items) and staff behaviour (5 items) with sound psychometric property in

terms of validity and reliability. In addition, Gap analysis was employed to measure the existing service quality of Tamil Nadu public transport corporation using perception vs expectation scores of the modified SERVQUAL scale. The results reveal that all the five dimensions of the service quality have obtained negative scores. It further suggests that the current level of service provided by the Tamil Nadu public transporters was not adequate and not meeting the expectation level of the passengers.

The Partial Least Square Structural Equation Modeling (PLS-SEM) was carried out to examine the structural relationship between the service quality and attitudinal loyalty, when service quality is considered as a reflective- formative type construct. The result showed that the direct and indirect relationship of the integrated research model, except corporate image to attitudinal loyalty relationship, all other direct relationships are significant. In addition, perceived value, customer trust and customer satisfaction are partially mediating the relationship between service quality and attitudinal loyalty relationship.

Finally, the unobserved heterogeneity is captured using FIMIX-PLS. Results indicated that two segment model is appropriate to capture the heterogeneity in the sample profile. The post hoc analysis is performed using Chi-squared Automatic Interaction Detector (CHAID) to identify the explanatory variable in the homogeneous group without a priori information of group characteristics. The outcome shows that frequency of travel explained the segment membership (low and high frequent traveller). In addition, both high and low frequency travellers influence the performance of the model to varying degrees. It appears that the segment 2 model for high frequency travellers results in a greater change in attitudinal loyalty when compared to low frequency traveller model and global model. Theoretical and practical implications of the study and its limitation and suggestions for future research are discussed.

CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS

AGFI	Adjusted Goodness of Fit Index
AIC	Akaike Information Criterion
AL	Attitudinal Loyalty
AMOS	Analysis of Moment Structures
ASRTU	Association of State Road Transport Undertakings
AVE	Average Variance Extracted
BIC	Bayesian Information Criterion
BS	Bus services
BSQ	Bank Service Quality Measurement
BT	Bus Stand Services
CB-SEM	Co-variance Based Structural Equation Modeling
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
CHAID	Chi-squared Automatic Interaction Detector
CI	Corporate Image
CR	Construct Reliability
CS	Customer Satisfaction
CT	Customer Trust
EM	Empathy
EN	Normed Entropy Values
FIMIX-PLS	Finite mixture- Partial Least Square
GFI	Goodness of Fit Index
GOF	Goodness of Fit Index
IFI	Incremental Fit Indices
IPMA	Importance Performance Matrix
MANOVA	Multivariate Analysis of Variance
NFI	Normed Fit Index
PCA	Principle Component Analysis
PLS-SEM	Partial Least Square- Structural Equation Modeling
PV	Perceived Value
RFI	Relative Fit Index
RL	Reliability
RMSEA	Route Mean Square Error of Approximation
SB	Staff Behaviour
SERVPERF	Service Quality Measurement
SERVQUAL	Service Quality Measurement
SPSS	Statistical Package for Social Sciences
SQ	Service Quality
TLI	Trucker Lewis Index
VIF	Variance Inflation Factor
WEBQUAL	Website Quality Measurement

NOTATIONS

%	Percentage
H	Hypothesis
λ	Loadings
α	Cronbach's Alpha
p	Probability value of significance level
f^2	Effect Size
Q^2	Predictive Relevance
df	Degrees of freedom
χ^2	Chi-Square
$\Delta\chi 2$	Change in Chi-square
SE	Standard Error
N	Number of observations
M	Mean
B	Unstandardized Beta Coefficient
SD	Standard Deviation
SEB	Standardized Error of Beta
β	Standardized Beta Coefficient
C	Constant
t	t-statistic
R^2	Coefficient of determination

CHAPTER I

INTRODUCTION

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INTRODUCTION

Today's service-dominated economy has resulted in a true paradigmatic shift (Kuhn, 1996), wherein capital has been replaced by the customer as the scarcest resource (Peppers & Rogers, 2005) and the creation of value is no longer the sole domain of the firm (Prahalad & Ramaswamy, 2004). The determination of a firm's quality and value, as well as which firm is worth loyalty is now totally in the domain of the customer. Zeithaml, Parasuraman, & Berry, (1990) briefly describe this new paradigm: "The only criteria that count in evaluating service quality are defined by customers. Only customers judge quality; all other judgments are essentially irrelevant".

The customers' assessment for quality of services is critical for service providers who aim to improve business performance, to strengthen core competencies, and to place themselves more strategically in the marketplace (Cronin & Taylor, 1992; Jain & Gupta, 2004). Organizations that provide superior service quality also experience higher economic returns (Aaker & Jacobson, 1994; Gilbert , Veloutsou, Goode, & Moutinho, 2004). Therefore, it has become universal for service providers to seek out competitive advantages by providing superior service. For several decades, business management researchers have investigated service quality because they feel that marketing has turned more competitive and focus of managing marketing has relocated from internal performance, such as productions, to external interests such as satisfaction of the customer and customers' perception for quality of services (Grönroos, 1992).

Much more recognition has been given to the quality services in the marketing literature from the last two decades. The traditional disconfirmatory model which was adopted by the SERVQUAL scale, was the first attempt to operationalize service quality. Although, after getting popularity in many areas and also the contribution made by the scale was great in the field of service quality it was adjudged to be inadequate because it holds in it the conceptual weaknesses caused by the disconfirmatory paradigm, as well as its unsuitability empirically. Later in the field of service marketing, researchers have applied models with diverse dimensions. Many models, say (Brady, 1997) hierarchical multidimensional model, and synthesizes of preliminary approaches mirrors the complexity of the service quality perception's construct. Although innumerable attempts have been made in both transport sector and business management, the research on service quality is still in a dilemma because of the complexity of the construct. No consent has been made regarding the conceptualization or operationalization of consumer's perceptions for service quality.

Many empirical studies in various sectors of service industry such as banking, hotel, hospital, education, insurance, long distance calls companies, workshops, car rental, and other financial companies have been conducted to find out the factors that determine service quality. Coulthard (2004), stated the problems with SERVQUAL may be more serious than generally acknowledged. Also Niranjan and Metri (2008), challenged Parasuraman, Zeithaml, and Berry's (1988), gap model and argued that a new paradigm was needed to accurately depict service quality in different sectors. They also suggested to instigate a separate scale for measuring service quality concept in different contexts. Service quality has always been the main study for transport sector, in today's very competitive environment in which a lot of travel coaches are available for customers to

choose from. Most of the transport related studied have studied SERVQUAL scale to assess the service quality. There is a need to develop a new scale or modify the existing scale in the context of bus transport services. We need to study further the factors that enable transport corporations to entice and retain their customers. It is believed that, high service quality delivery influences customer's value and their satisfaction. Furthermore customer satisfaction will lead directly to the customer loyalty (Morris, 1998). Therefore, the relevance of service quality, corporate image, perceived value, customer trust and satisfaction seems justified to the survival of service industry, which includes the transportation sector.

Another important issue in the service quality research is the misspecification of service quality as reflective-reflective higher order construct. From reflective measurement perspective, almost all the constructs in social science are reflective in nature (e.g., customer satisfaction and perceived value). However, the social science researchers ignored the complementary measurement approach (i.e., formative) to reflective measurement approach. Jarvis, Scott. MacKenzie, and Podsakoff (2003), made a strong argument about misspecification of constructs in consumer and marketing research. Misspecification of the formative construct as reflective or reflective construct as formative, may lead to biases and in turn it may affect the study conclusions. Jarvis et al., (2003) made recommendations to correctly specify the constructs in marketing and consumer research so that the study findings or conclusion can be generalized without having any biases. Also they have proposed four types of hierarchical constructs: Reflective-Reflective type, Reflective-Formative type, Formative-Reflective type and Formative-Formative type. In general, a higher (or second)-order construct is a general

concept that is either represented (reflective) or constituted (formative) by its dimensions (lower (or first)-order constructs). Therefore, the relation between the higher and lower-order constructs is not a question of causality, but rather a question of the nature of the hierarchical latent variable, as the higher-order construct (the general concept) does not exist without its lower-order constructs (dimensions) (Becker, Klein, & Wetzels, 2012). Hence, it is a necessity to conceptualize the service quality as reflective formative higher order construct.

Review of existing literature on service quality and its positive impact on its outcome variables reveals that variation exists in relation to the understanding the structural relationship of service quality and other constructs. Numerous studies have investigated the relationship between service quality and other constructs such as corporate image, perceived value, customer trust, customer satisfaction and attitudinal loyalty (Hutchinson, Wagner Kamakura, & Lynch, 2000; Cronin, Brady, & Hult, 2000; Taylor, Nicholson, Milan, & Martinez, 1997; Wallace, Giese, & Johnson, 2004). However, the strength of these relationships were found to be different from one study to another in terms of direction, statistical significance, and magnitude of service quality effects on its outcome variables. For example, few studies have reported that the correlation between service quality and satisfaction as above .80 (Gotlieb, Grewal, & Brown, 1994). Whereas others (Lianxi, 2004), reported a correlation of .20 or below, that explained the varying predictive power of quality services on satisfaction of customer ranging between 4 and 64 percent. In addition, more ambiguity existed between the relationship of quality services and attitudinal loyalty. Some studies failed to observe a noteworthy relationship between service quality and attitudinal loyalty (Keith, Sajeev, & Rod, 2003) and a few other studies

have noticed that the services quality predicts 60 percent of the variance of attitudinal loyalty (Zeithaml, Berry, & Parasuraman, 1996). Similarly, the transport related studies have also identified that the customer's satisfaction must be used in conjunction with perceived value, and perceived value can be a better predictor of repurchase intentions than satisfaction (Cronin et al., 2000; Petrick, 2004; Woodruff, 1997). These inconsistent results lead to the interrogations on customer outcome variables about the strength of the impact of quality services (e.g., trust, commitment, loyalty). Therefore, in spite of its dominant relevance within a growing service economy, a research gap exists conceptually and operationally that there is still lack of agreement for the magnitude of the impact of quality services on key variables of marketing, as well as a theoretical model of service quality and its outcomes. Hence, to clearly ascertain the understanding of the structural relations between service quality and its outcome variables, there is a need to develop an integrated model to further validate the strength of the direct and indirect relationship between service quality and attitudinal loyalty including customer outcome variables.

In empirical research, researcher should consider the importance of treating unobserved heterogeneity in the analysis. Especially, one of the key assumption in employing the structural equation modelling is that the collected samples should be homogenous (Hair, Black, Babin, & Anderson, 2009). In many instances, we may not be able to establish homogeneity of the samples. Recently, marketing scholars have emphasized the importance of identifying unobserved heterogeneity in the theoretical model. Hutchinson et al. (2000), discussed the numerous problems arising from unobserved heterogeneity in behavioural research and recommended solutions to avoid this problem. Many studies have also identified the heterogeneity for the perception of passengers on various aspects of the

service (Cirillo, Eboli, & Mazzulla, 2011; dell'Olio, Ibeas, & Cecín, 2010; Eboli & Mazzulla, 2008, 2011). The heterogeneity is due to the attitude towards the use of public transport, demographic characteristics, and preferences of passengers (Eboli & Mazzulla, 2011). It has even been observed that the same individual may change his or her evaluation for the same service, if they are made to reflect on certain vital aspects of the services (dell'Olio et al., 2010). This heterogeneity reflects a problem for many techniques that intend to assess the service quality. Therefore, there is a need to capture the unobserved heterogeneity in the sample population to further validate service quality and attitudinal loyalty model.

Transport sector in India

Transportation services are the services which help goods and people to be carried from one place to another. "*The transport industries which undertake nothing more than the mere movement of persons and things from one place to another, have constituted one of the most important activities of men in every stage of advanced civilization*". It has become a very important instrument for the economic wellbeing of people. As cities grew and industrialization progressed, new and improved means of transportation had to be found to transport goods to factories and consumers. Modern means of transport, through their fast, safe and efficient services, have broken the distance frontiers and united the whole world into one thread. It brings ideas and inventions to the people and has considerably benefited the evolution of civilization. The road transport encompasses both the passenger and cargo segments. The passenger segment of road transport is the major source of self-employment to lakhs of people. At present, the demand for passenger road transport is met by both public and private sectors. Passenger road transport sector is dominated by publicly owned

State Road Transport Corporations or Undertakings in some states like Tamil Nadu, Uttar Pradesh, Andhra Pradesh, Karnataka, Maharashtra, and Gujarat, while in some other states like Kerala it is dominant only in certain areas of the state. About 80% of the passenger transport needs in India is met by the bus transport system (Kulkarni & Sharad, 2000).

Since, transport sector reinforce the infrastructure needs of all development, it carries an important place in all the sectors of the economy. Passenger transport services forms the basis of all commercial activities. Tamil Nadu is in the forefront in the country in providing an efficient transport service to the people. The state transport undertakings in Tamil Nadu continue their efforts to link the people of the State by providing them necessary transport facilities through a variety of services with the operational aspects of the nationalized bus transport system in the State. In Tamil Nadu, the public road transport services are owned by the state government. Some private players do operate transport services, but their share in terms of quantum of population that they cover is very marginal. Now, the Transport department has eight state transport undertakings under its administrative purview.

The public transport corporations in Tamil Nadu had been showing a better performance over the years in spite of the non-hiking of the bus fares commensurate with frequent hikes in Diesel prices in the past few years and as such, Tamil Nadu has been having comparatively lower bus fares. In addition, the Tamil Nadu transport corporation has received many awards issued by Association of State Road Transport Undertakings (ASRTU) on best performance in vehicle productivity and operational efficiency (1993, 1995, 2007, 2008, 2009, and 2012). All these awards are given on the basis of transport corporations' productivity, efficiency and financial performance. Surprisingly, the end

customers who actually receive the services are not evaluated to know the satisfaction level and the quality of services delivered by the transport corporations.

Research gap

Although research on the service quality has been conducted widely to establish the relationship between service quality and customer satisfaction and results have often been contradictory relative to the antecedent and the mediating effects these constructs have on one another as well as on various affective outcome states. Based on the thorough literature review the present study intends to address the following research gaps.

1. Context specific adaptation of SERVQUAL scale is required (Niranjan & Metri, 2008).
2. Misspecification of service quality as reflective-reflective higher order construct. There is no such thing exist (Cadogan & Lee, 2013). Need to conceptualize SERVQUAL as reflective-formative type construct (Parasuraman, Zeithaml, & Malhotra, 2005; Schembri & Sandberg, 2011).
3. Meta-analysis evidenced that scarcity of consensus about the magnitude of the impact of service quality on key marketing variables, as well as a theoretical model of service quality and its consequences (Carrillat, Jaramillo, & Mulki, 2009).
4. Paucity of evidences exists to test the strength of the intervening variables i.e., perceived value, corporate image, customer satisfaction, and customer trust and effects between Service quality and attitudinal loyalty (Carrillat et al., 2009; Cronin et al., 2000).

5. Numerous problems arising from unobserved heterogeneity in behavioural research (Hutchinson et al., 2000) and there is a need to identify passenger's perceptions on heterogeneity for different facets of the services in bus transport (dell'Olio et al., 2010; Eboli & Mazzulla, 2011).

Definitions of variables

In this study, the researcher has identified attitudinal loyalty as an outcome variable, consumers' perception of service quality as an independent variable, and corporate image, perceived value, customer trust, and customer satisfaction as mediating variables. The following terms have been operationally defined particularly to fulfil the purpose of this study.

Service Quality: "global judgment, or attitude, relating to the superiority of the service" (Parasuraman et al., 1988). Service quality as the customer evaluation of the standard of the services received; bus stand services, bus services, staff behaviour, reliability and empathy.

Corporate image: Perceptions of an organization reflected in the associations held in consumer memory (Keller, 1993).

Perceived value: Customer's overall evaluation of the benefit of a product depending on perceptions of what is obtained and what is spent (Zeithaml, Berry, & Parasuraman, 1988).

Customer Trust: Customer' confidence in the service seller's reliability and integrity (Doney & Cannon, 1997; Morgan & Shelby, 1994)

Customer satisfaction: Cognitive or affective reaction that arises in response to a single or extended set of service encounters (McDougall & Levesque, 1995).

Attitudinal loyalty: The degree to which a customer remains consistent with long-term commitment towards the company, measured by attitudinal attachments such as affection.

Assumptions

The following are the basic assumptions of this study: (i) Service quality, corporate image, perceived value, customer trust, customer satisfaction and attitudinal loyalty were measured validly and reliably by the instruments used in the study. (ii) The sample respondents were representative of the study population. (iii) Respondents participated in the study are voluntarily and (iv) Respondents answered questions honestly.

Chapterisation of the thesis

The remaining research chapters are structured and explained further. The very next chapter reviews the literatures which strengthen the research model and put forward the hypotheses. The third chapter debates on the methodology used in the study. Later results are presented in the fourth chapter followed by discussions in the last chapter.

This chapter rationally explains the radical changes and issues in the service quality research. This chapter also declares the research gap identified in the existing literature. The definitions of the variables, assumption and chapterisation of the study are narrated.

CHAPTER II

REVIEW OF LITERATURE

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REVIEW OF LITERATURE

This chapter presents an in-depth theoretical background with regard to variables of interest in the model and their proposed hypotheses. The purpose of literature review is to categorize the review into three parts. First, it reviews the relevant literature on service quality and the dimensions that emerge in general marketing and transportation setting. Secondly, the direct and indirect relationships among the study variables such as service quality, corporate image, perceived value, customer trust, customer satisfaction, and attitudinal loyalty are presented. Finally, last part of the chapter includes theoretical background and literature support for proposing hypotheses of the research model are discussed.

Review methodology

The purpose of literature is to collect and create structured references related to research gap identification from research articles, books, projects and other sources. 120 research papers published in international reputed journals have been systematically analysed and an effort has been made to gain key insights on impact of service quality, corporate image, perceive value, customer trust, customer satisfaction and attitudinal loyalty. The following articles published in the reputed journals have provided a strong base for the present work: The relevant research articles published up to March, 2015 were downloaded from different databases like EBSCO, Emerald, Sage, Springer, Elsevier, ProQuest, Taylor and Francis and Wiley. Article search were processed based on keywords: service quality, corporate image, perceived value, customer trust, customer satisfaction and attitudinal loyalty. Most of the papers reviewed have marginally supported the current research work. However, to

make the review more brief and inclusive, analysis was conducted on those articles that cater suitable answers for the following questions:

1. Does the research articles interpret the understanding for service quality, corporate image, perceived value, customer trust, customer satisfaction and attitudinal loyalty of public transportation?
2. Has the papers endeavoured to analyse the direct and indirect relationship among service quality, corporate image, perceived value, customer trust, customer satisfaction and attitudinal loyalty?

Service quality

Service quality has been a recurrently researched topic in the service marketing literature. Parasuraman, Zeithaml, and Berry (1985) were the first to introduce a formal service quality model which uncovered the criteria used by consumers in evaluating service quality fit with the help of 10 potential overlapping dimensions as: tangibles, reliability, responsiveness, communication, credibility, security, competence, courtesy, understanding/knowing the customer, and access. In measuring service quality and investigating the relative importance of service quality attributes to the overall service quality perceived by consumers, many scholars adopted SERVQUAL in different service industries. However, it has also received some criticisms (Buttle, 1996; Cronin & Taylor, 1992; Cronin & Taylor, 1994). For example, many studies have proved a poor fit for the disconfirmation model of SERVQUAL (Brown, Churchill & Peter, 1993; Cronin & Taylor, 1992; Rust & Oliver, 1993). Some researchers criticize that SERVQUAL is not universal (Brown et al., 1993), and is expected to differ in terms of its definition and contributors depending on the industry context (Syed Saad Andaleeb & Basu, 1994; Asubonteng,

McCleary, & Swan, 1996; Spiros & Sergios, 2003), and needs to be tailored to the specific service industry (Carman, 1990).The most remarkable works in the area of service quality demonstrate various researchers' expertise in understanding the concept and thereby building a strong theory. Insights from these studies and contributions made so far have been synthesized as literature in three sections; first, the studies on service quality. Second, studies examining the interrelationship between service quality and other constructs and third, studies on the mediating impact of different constructs on customer satisfaction and service quality.

Service quality is an extensively researched area. A study in a way which can guide management decisions was proposed by Grönroos (1984) developing an explicit service quality model which explains how the service is perceived and evaluated by consumers. Perceived service quality is the outcome of consumer's evaluation process where the consumer compares his expectations with the perceived service delivered to him, this is explained by two quality dimensions called as technical and functional quality. The technical quality describes outcome of a service and functional quality describes more about the process, i.e., how a consumer gets a service, where the latter is the key to making successful marketing decisions. One of the outstanding works of Parasuraman et al. (1985) is developing a service quality model which explained series of four discrete gaps found from the service provider's side and one from the consumer's side, the most significant being the perception and expectation (P-E) gap. The conceptual framework emphasized the need to develop a standard scale to assess consumer's perception towards service quality and led to the identification of 10 service quality dimensions.

As intended Parasuraman et al. (1985) has developed a multiple item scale called SERVQUAL to measure service quality as perceived by consumers with five dimensions, namely tangibles, reliability, responsiveness, assurance and empathy. This scale addresses the consumer's side of gap mentioned in their previous study. SERVQUAL scale is most widely used scale in the area of service quality research. To test the robustness of the service quality model (Zeithaml, 1988) has proposed an extended model of service quality which has addressed provider's side of four gaps and identified various organizational factors and their association with these service quality gaps. Communication and control processes adopted in different companies were studied to measure the degree to which they influence the four gaps. The above model was tested empirically by Parasuraman, Bahri, Deaton, Morrison, and Barnes (1992) to identify the organizational obstructions to deliver high quality service performance. The propositions for each gap were formed which shaped as the antecedents of the service quality gaps from provider's side. Multiple item scales with different anchor points were used in the study for analysing each gap. This model helps organizations to evaluate the provider's side limitations of delivering service quality.

In contrary with the studies of (Parasuraman et al., 1985, 1988) Cronin and Taylor (1992) criticized the conceptualization of SERVQUAL and proposed a performance based measure of service quality widely known as SERPERF which considered items that measure performance only. The authors claimed that it is a better model to encapsulate service quality perceptions than SERVQUAL. The authors ascertained that service quality is an antecedent to customer satisfaction in contrary to Bitner (1990) who stated that satisfaction is an antecedent to service quality. The study also analysed the relationships of

other constructs with service quality, namely customer satisfaction and purchase intention. A similar study by Boulding, Kalra, Staelin, and Zeithaml (1993) examined how customers form opinions about the quality of a service and in turn how these opinions effect consumer's behaviour. According to them consumer's perceptions and expectations may change over time, they are not constant. A dynamic process model of service quality was developed by these authors which inspected the process by which customers update their expectations and perceptions. The scale measuring behavioural intention was developed based on the perceptions formed by individuals who combine previous experience and recent transactions to form a cumulative perception of a service that in turn leads to the formation of favourable behaviour. Another study by Zeithaml, Berry, and Parasuraman (1993) was a more elaborative review on customer expectations which examined the nature and determinants of customer expectations in three forms as - adequate, desired and predicted service Further the antecedents to these expectations were also identified. An extension of the above study by Parasuraman, Zeithaml, and Berry (1994a) prescribed a more analytical approach for measuring service quality by using alternative scale. The SERVQUAL scaling approach only measures perceptions and is a psychometric scale. The authors adopted a direct measure which assesses the difference between perceptions and desired service expectations by including items related to desired and adequate service in SERVQUAL scale. This approach was defined as diagnostic approach which, according to these authors is more preferred than the psychometric scale. In another study, A. Parasuraman et al. (1994a) attempted to address the issues raised by Cronin and Taylor (1992) about the SERVQUAL scale and re-examined and explained the issues raised. The authors agreed to Cronin and Taylor's argument that SERPERF explains more variance

and performs better than SERVQUAL as latter measures only the shortfalls of a service. At the same time the authors criticized that SERPERF was not conceptualized properly as it lacks theoretical support. Also defended and justified the superiority of SERVQUAL scale, as it identifies the areas of weaknesses in delivering quality service within a company, which is more useful to service providers. The authors argue that SERVQUAL is based on expectation-disconfirmation process, whereas SERVPERF conceptualizations remains questionable. In response to the above study, Cronin and Taylor (1994) have justified their debate by making insightful arguments that the SERPERF captures longitudinal index of service quality that can be summed up and charted proportional to the times and across the customer sub groups. This justification supports the tool in becoming superior to SERVQUAL. The arguments and debates on Service quality conceptualization continues in research. Apart from the studies mentioned above about the service quality conceptualization, certain studies are important to discuss as they have investigated the service quality aftermaths. One among them is Zeithaml et al. (1996) study, in which they have examined the behavioural consequences of service quality. Customers' behaviour in terms of remaining or detaching with the company is influenced by service quality. The authors have developed a conceptual model that illustrates behavioural consequences of service quality as mediating variables between service quality and financial gains of retaining or loss from losing a customer. The authors claim that the model is an exhaustive behavioural intentions battery than the previous ones.

New ideas on theorizing perceived service quality by Brady (2001) has led to developed a hierarchical model of service quality which includes service outcome, interaction and environment quality as primary dimensions. The assessment of service outcome, employee

interaction and environment quality by customers encapsulate overall perception of service quality. This comprehensive model was built by integrating various service quality conceptualizations. These authors claim that customer's overall perception of the quality of a service can be better captured by this model. Zeithaml, Parasuraman, and Malhotra (2002) investigated website service quality and presented a comprehensive review of literature in this area, according to the authors various studies have been reported measuring e-Service quality but most of them are not empirically validated. One empirically validated study, which measures e-Service quality (Loiacono, Watson, & Goodhue, 2002) is WEBQUAL but this scale was found to be more relevant to interface design than service quality measurement. They stressed the need to identify antecedents to e- service quality and a dimension specific measure which evaluates e-service quality. Scholarly work continues in the area of service quality by re-examining the original study by researchers leading to development of an improved model or concepts, for which one such study is Brady, Cronin, and Brand (2002) performance only measurement of service quality. The study strengthens the argument made by them in their previous study (Cronin & Taylor, 1992) that SERPERF is a better instrument to capture consumer's service quality perceptions than SERVQUAL. The recursive model developed from the study confirms the superiority of only performance approach. The other argument made by them is that the service quality and customer satisfaction does not completely explain all of the discrepancies in purchase intensions of a consumer. The Table 1, summarizes the timeline of service quality literature

Table 1

Summary of the timeline of service quality literature

Author	Timeline of service quality
Sasser, Olsen, and Wychoff (1978); Grönroos (1982)	Notion of Service Quality
Crosby (1979)	Relationship between service quality and costs
Oliver (1980); Holbrook and Corfman (1985)	Definition of service quality as a form of attitude
Grönroos (1982)	High quality service is the antecedent of customer retention
Grönroos (1984)	Service quality includes technical and functional quality
Parasuraman et al. (1985)	Service Quality is theorized as a comparison of customer expectations and perceptions
Parasuraman et al. (1988)	SERVQUAL as a measurement for service quality
Rechinhheld and Sasser (1990)	Relationship between service quality and customer loyalty
Parasuraman, Berry, and Zeithaml (1991)	Revised SERVQUAL
Glynn Mangold and Babakus (1991)	Lack of measurement focusing on the outcomes of service quality
Cronin and Taylor (1992)	Introduction of SERVPERF as an alternative to SERVQUAL
Boulding et al. (1993)	Relationship between service quality and customer satisfaction
Rust and Zahorik (1993)	Relationship between service quality and profitability
Dabholkar, Thorpe, and Rentz (1995)	developed Retail Stores Service Quality
Avkiran (1999)	Introduction of BANKSERV as an alternative to SERVQUAL under financial service context
Cronin et al. (2000)	Service quality influences behavioural intentions
Bahia and Nantel (2000)	Introduction of BSQ as an alternative to SERVQUAL under financial service context
Brady et al. (2002) and Chiu (2002)	Value, emotions and behaviour have to be included in an efficient measurement of service quality
Brady et al. (2002)	Need for a new approach to measure service quality
Coulthard (2004)	Problems with SERVQUAL may be more serious than generally acknowledged
Parasuraman et al. (2005)	Developed E-S QUAL
Niranjan and Metri (2008)	challenged the Parasuraman et al. (1988) gap model and argued that a new paradigm is needed to accurately depict service quality in IS/ITES outsourcing

Parasuraman et al. (2005) has proposed a multiple item scale called E-S-QUAL to measure service quality delivered by websites of which - further stages has led to the refinement of the scale forming a sub scale called E-Res-QUAL, which measures recovery service quality. The reliability and validity of both scales have demonstrated good psychometric properties.

Conceptualisation of service quality as reflective –formative type construct

Most of the constructs in social sciences are latent constructs, and are measured using reflective scales founded in literature based on classical test theory. Classical test theory assumes that each observable item can be viewed as a reflection of the underlying latent construct (Bollen & Lennox, 1991). The point is "that in this type of measurement model, the latent construct is empirically defined in terms of the common variance among indicators"(MacKenzie, Podsakoff, & Jarvis, 2005, p. 710). This type of measurement model is a reflective type, as the latent construct explains the common variation in the indicators. In simple terms, the causality flows from latent construct to the indicators. From a reflective measurement perspective, almost all constructs in social sciences are reflective in nature (e.g., customer satisfaction and perceived value). However, researchers ignored the complementary measurement approach (i.e., formative) to reflective measurement.

Jarvis et al. (2003) made a strong argument about misspecification of constructs in marketing and consumer research. Misspecification of the formative construct as reflective or reflective construct as formative may lead to biases and in turn affect the study conclusions. Jarvis et al. (2003) recommended an accurate approach for specifying the marketing constructs in consumer research so that the study findings or conclusion is generalised without any biases. Also, they have proposed four types of hierarchical

constructs (Reflective-Reflective type, Reflective-Formative type, Formative-Reflective type and Formative-Formative type (Figure 1). In general, a higher (or second)-order construct is a general concept that is either represented (reflective) or constituted (formative) by its dimensions (lower (or first)-order constructs). Therefore, the relation between the higher and lower-order constructs is not a question of causality, but rather a question of the nature of the hierarchical latent variable, as the higher-order construct (the general concept) does not exist without its lower-order construct (dimensions) (Becker et al., 2012).

In the present study, service quality is also a hierarchical or second order construct with reliability, bus stand services, bus services, empathy and staff behaviour as a first order dimension. Overall, the service quality acts as a second order or higher order component for the above mentioned dimensions. In the present study, we have used reflective measurement approach to measure all dimensions of service quality. Also, this reflective measurement approach was consistent with several key criteria recommended by Jarvis et al. (2003) for choosing that specification over the formative indicator specification: the relative homogeneity and hence interchangeability of scale items within each dimension and the high degree of covariation among items within each dimension. In past studies related to service quality, researchers have conceptualised service quality as a reflective-reflective type construct.

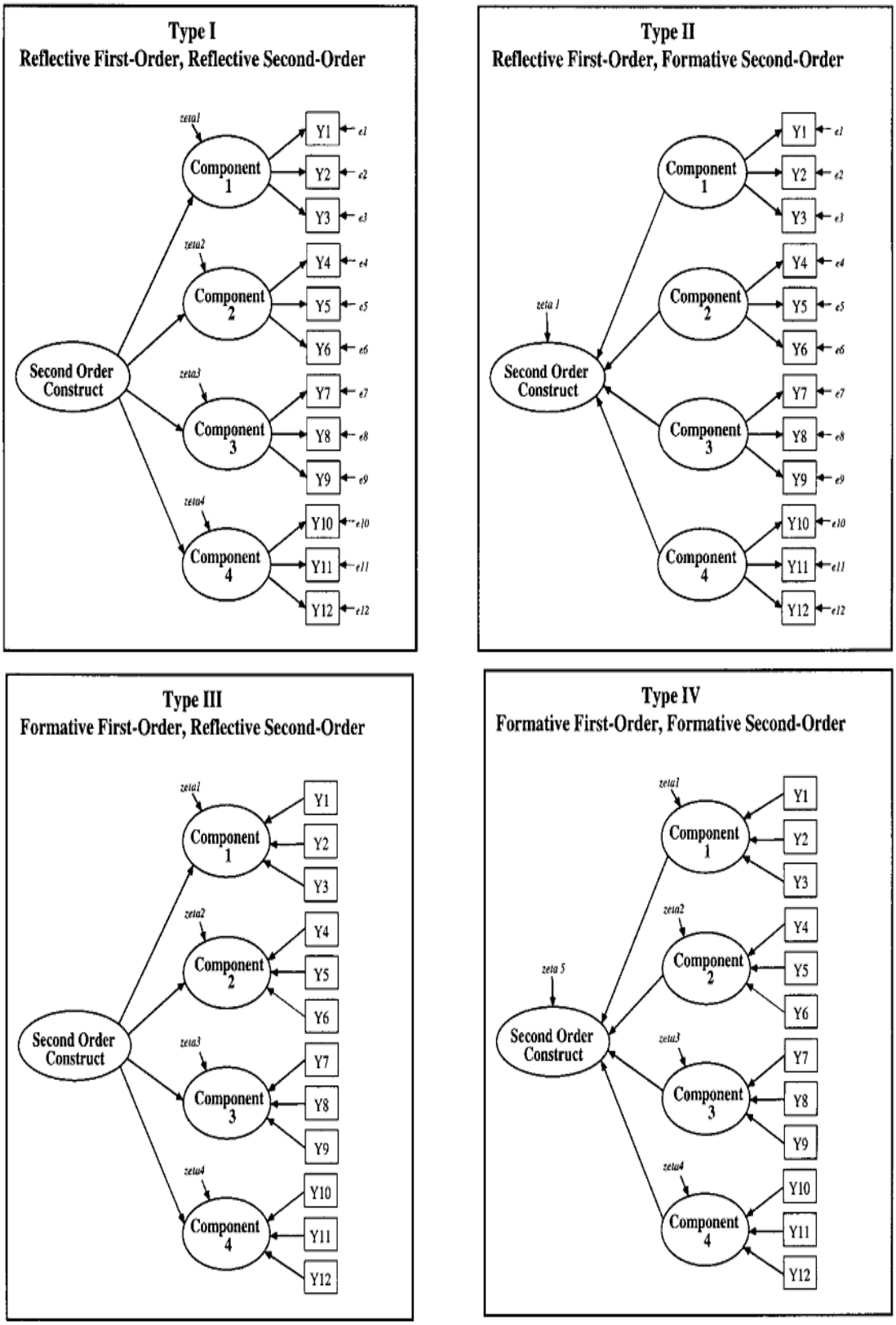

Figure 1 Alternative second-order factor specifications

That is, the first order dimensions are measured using reflective indicators and for the second or higher order factor, (service quality) the first order dimension acts as reflective indicators/dimensions. So in this approach, the causality is from common factor to its dimensions and dimensions to its indicators. In another sense, the service quality causes its dimensions (Reliability, empathy, staff behaviour, bus services, and bus stand services) and the dimensions cause its items/indicators/measures.

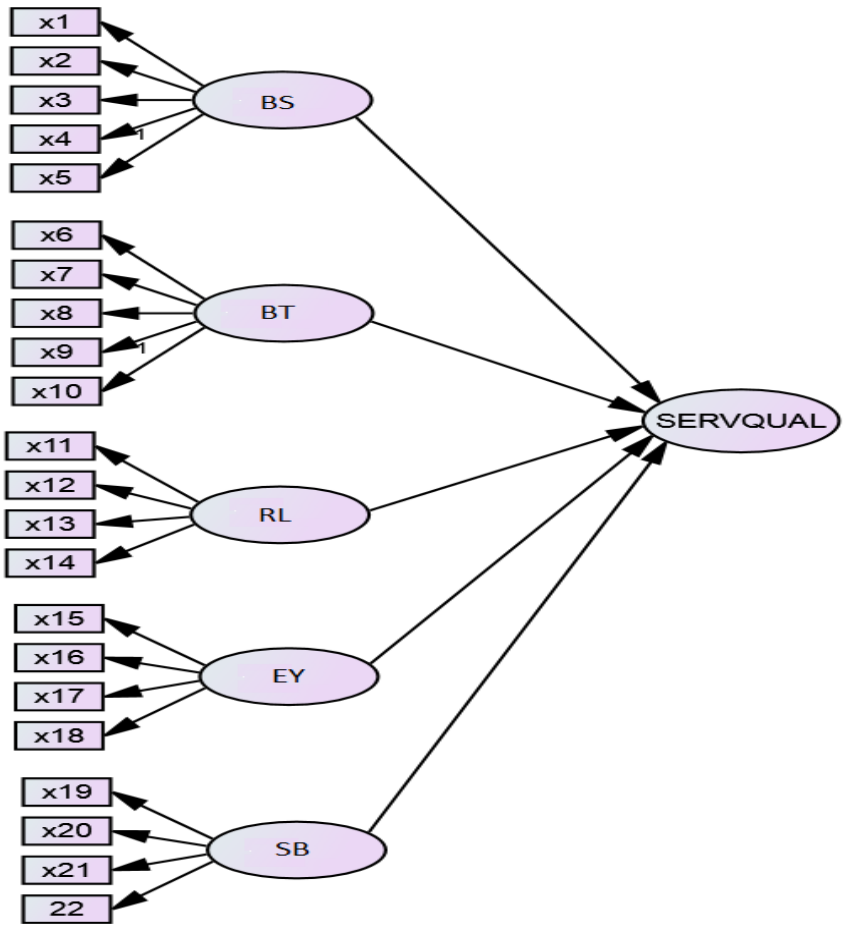

Figure 2 SERVQUAL reflective–formative type higher order model

Note: BS= bus services, BT=bus stand services, EY=empathy, RL=reliability, SB=staff behaviour, SERVQUAL-Service Quality.

Cadogan and Lee (2013) argue that there is "no such thing" as a reflective-reflective hierarchical latent variable model and that such a model is "at worst, misleading, and at best meaningless". Reflective measures should be unidimensional and conceptually interchangeable which conflicts with the view of multiple underlying dimensions being distinct in nature. Thus, it is either unnecessary to model the lower-order constructs as separate constructs, as they should be identical according to a reflective logic or, if multiple distinct dimensions indeed exist, these dimensions should be modeled as formative, leading to a reflective-formative type, hierarchical latent variable model (Cadogan & Lee, 2013).

This argument is also aligned with the limitation mentioned in (Parasuraman et al., 2005). Based on this arguments and recent issues involved in conceptualising a second or higher order construct as a reflective-reflective type construct, the researcher has attempted to reconceptualise service quality as a reflective-formative type construct. Where the service quality dimensions are measured using reflective indicators, common factor or service quality is formed by its dimensions (see Figure 2). In this approach service quality is reconceptualised as a formative construct by using its dimensions as a reflective indicator.

Service quality in bus transport services

Public transportation is one of the essential tools most people require in their daily life (Lei & Mac, 2005). As public transport organizations reach mature stage , the quality of service diminishes gradually and people are left with no choices but to accept what is offered (Andreassen, 1994). To overcome this issue in public transport organization, the concept of service quality needs to be introduced (Ancarani & Capaldo, 2001). Past researchers have identified different components of service quality in public transportation services which are discussed in the following sections.

Competitive tendering is a popular intervention (Hensher & Prioni, 2002) in the policy contract bus services which resulted in the cost efficiency and effectiveness. Researchers have tried to bridge the gap between the specification of the contract performance and service effectiveness with the help of which it is easy to measure the services effectiveness for satisfying customers on a scale of relevant dimensions for customer satisfaction Access time, service reliability, travel time, and fares have a significant relation with customer satisfaction. Apart from this, Safety (Hensher & Prioni, 2002) in the bus journey has an eminent role to be played for building customer satisfaction. Another aspect related to bus safety is bus monitoring and benchmarking, where it becomes the important responsibility of bus driver and conductor to keep their passengers safe and secure. Hensher, Stopher, and Bullock (2003) has shown significant influence on the quality of services produced in the service sector. Researchers in the same regard initiated the way of measuring the attributes independently while exploring their relative importance in calculating the overall satisfaction for commercial bus contracts. In addition to this, researchers have propounded a service quality index which will investigate the ways of qualifying service quality and will also help in comparing the levels between and within the commercial operators of bus depots from three segments (i.e., route types) individually from the three depots. Researchers have contemplated their findings from two sides i.e., operator's side as well as passenger's side where they emphasized on dimensions leading to customer satisfaction for the bus services and also suggested bus operators to offer more attractive bus services in spite of challenges faced by them such as – local government policies and so on.

Effects of service quality, customer satisfaction and switching barriers Jen and Lu (2003) are some of the important dimensions to be studied including the already stated factors in

their literature review as service sacrifice, and service value on the behavioural intentions of the customers for the bus services as they reflect a significant impact on passenger's behavioural intentions except the interpersonal relationships of switching barriers for Taipei – Tainam and Taichung – Kaohsiung routes in four bus companies. For maintaining market importance and financial performance, a firm need to understand the behavioural intentions of its customers, that too when it comes to the service sector. Loyalty being one of the vital factor for quality of services is a well-established concept in the literature of service marketing. Researchers have emphasized long back on loyalty (Jen, Tu, & Lu, 2010; Kim, Lee, Kim, & Kwon, 2005) as a key indicator for the measurement of service quality for the intercity bus services and has also explored the key dimensions (i.e., service value, sacrifice, satisfaction, service quality, trust, switching cost, attractiveness of customers and so on). Which influence the loyalty. . In continuation, researchers have tried to build up the causal relation between the explored latent variables and the loyalty for the bus services through Structure Equation Modelling technique. It was clearly perceived that if customers are satisfied with the services, they possess loyalty for the same service in future too. Apart from satisfaction, switching cost, value of services and trust reflected positive and direct effects on loyalty. But, factors like attractiveness of competitors, reflected direct negative effects for which bus staff and planners have to pay more attention in order to maintain and retain the loyalty of the bus passengers as well as attracting the new ones too. Kayode Oyesiku, and, and Somuyiwa (2010) also evaluated the satisfaction level of passengers for Comfort, stable & cheaper fares, availability & reliability of bus services for which once again findings revealed that route planning, scheduling of buses and driver's behaviour significantly contributes towards customer satisfaction. It is very

important for service providers to plan and coordinate the service delivery in such a manner that is both quality and cost effective for the customer for which Kim et al. (2005) in his study of 31 cities of Gyeonggi province using 45 bus service attributes found that there are some critical measures that are suitable to particular types of cities which in turn helps bus schedules or policy makers to design desirable and cost effective transportation plans and policy transportation system for new cities. Service customization is an emerging concept in the services literature and the survey conducted by researchers also revealed that the implementations of bus service should be done differently based on the classification of passengers to achieve higher percentage of customer satisfaction. The route/schedule and friendly behaviour of drivers and conductors were considered to be more important than safety, availability and comfort.

Though, a number of studies have undertaken in various industries but it is discussed earlier also that there is a need to construct the service quality scales for different industries in order to get an in-depth insight of the domain. For this context, a similar study has been undertaken by Kai Chieh Hu and Jen (2007) who has proposed and validated a scale on service quality devised for a city bus transit system in Taipei. The Churchill's paradigm and a focus group interview was combined which resulted in the development of multistage scale for the measurement of bus service quality. The four dimensions i.e., convenience of service interaction with passengers, operating management support and tangibles service equipment were found to be highly reliable and valid and the scale developed was proved to be a better measure for determining overall service quality for city transit system.

As all the customers are different in their personality and behavioural context, so is the case with their taste and preferences for anything. Stradling, Carreno, Rye, and Noble

(2007) tried to examined the major reasons for liking and disliking about the bus travel in Edinburgh, Scotland For which cost, feeling unsafe, disability & discomfort, preference for walking or cycling, preference for car use, problems with service provisions, self - image and unwanted arousal played a vital role in the decision for customer's selection for bus services. Besides these, demographic factors are also influencing the behaviour of customer for the bus journey in Edinburg. This reflects that there are certain demographic and socio-graphic attributes which widely effect or moderate the decision for bus service selection. In the similar pattern a study was undertaken by Too and Earl (2009) to measure the public transport services in Australia using a SERVQUAL framework among the four commuters groups i.e., travellers, business, visitors, education and general community for which it is been observed that there existed a significant difference in the attitudes with respect to public transport of service for the different commuters and it has also been suggested that the transport authority should have different level of services to satisfy all customers. Similarly, Awasthi, Chauhan, Omrani, and Panahi (2011) evaluated the service quality of transportation systems in urban areas using a hybrid approach, which integrates SERVQUAL and fuzzy TOPSIS. The study evaluated the quality of four metro lines namely Yellow line, Green line, Orange line and Blue line for which researchers defended that the selection of a particular line (Orange line in the study) is more convenient and better than the rest of the lines. This supports that the service provisions strongly effect the customer's selection of the particular service.

In this regard, studies reflecting customer satisfaction for a particular region, state, or country may differ in the results because of the different demographics, socio–cultural backgrounds, governmental policies, etc. To come up this gap of generalising the concept

of customer satisfaction. Eboli and Mazzulla (2007) tried to explore the relationship between global customer satisfaction and service quality attributes while proposing a tool which measures customer satisfaction for public transport services and concluded that the improvement in service planning and reliability are very important to be considered for customer satisfaction globally. It is already been stated in the literature that culture predominates the customer's perception for the purchase of products and services. Randheer, AL-Motawa, and Vijay (2011) measured the influence of culture of commuters using public transport services using SERVQUAL, for which significant results were demonstrated for the customer perceived behaviour and decision to select a particular bus service. Further in the same pattern, Eboli and Mazzulla (2011) measured perception and performance of the transit service quality again using SERVQUAL scale for which objective indicators such as - information at bus stops, stop locations, amenities were contradicting the satisfaction results. Whereas the subjective indicators such as - availability of shelter and benches at bus stop, schedule/maps of bus stop and announcements were considered unsatisfactory but still when measured as a whole admitted a significant influence on customer satisfaction. It is been felt that the objective attributes, though reflected contradictory results, carry importance as a whole and cannot be measured impartially.

Table 2

Summary of most significant studies in service quality in transport sector

Author	Country	Indicators
Golob, Canty, Gustafson, and Vitt (1972)	Michigan, USA	Arriving when planned, having a seat, no transfer trip, total trip time, fare, provision of shelter at stops
Hensher et al. (2003)	Australia	Bus travel time, bus fare, ticket type buses per hour at this bus stop, at bus stop, time walking to bus stop, time of arrival availability of seat in bus, information, access to bus, bus stop facilities, temperature on bus, general cleanliness on board, driver attitude,.
Kim et al. (2005)	Korea	Availability, reliability, operator attributes, safety, comfort, plant and equipment and affordability
Huang, Wu, and Hsu (2006)	Taiwan	Interaction with passengers, convenience of service, tangible service equipment, operating management support.
Eboli and Mazzulla (2007)	Italy	Fare, frequency, reliability
Andaleeb, Haq, and Ahmed (2007)	Bangladesh	Comfort levels, number of buses changed to reach destination staff behaviour, supervision, waiting facilities.
Stradling et al. (2007)	Scotland	Convenience, unwanted arousal, safety, car preference, cost, self-image, short journeys (walk/cycle), disability and discomfort.
Morfoulaki, Tyrinopoulos, and Aifadopoulou (2007)	Greece	Accessibility, safety, on-time performance, information provision, ticketing, frequency, others
Kayode Oyesiku et al. (2010)	Nigeria	Travel time, comfortability, reliability, timeliness, ease of use, and relationship with drivers, experience of drivers, competence of drivers, ease of waiting time, safety.
Too and Earl (2010)	Australia	Tangibles, responsiveness, reliability, assurance
Das and Pandit (2013)	India	Journey time, bus stop accessibility, service coverage, on-time-performance/reliability, safety and security from accidents and thefts, crowding level, misconduct towards women
Garrido, de Oña, and de Oña (2014)	Portugal	Trip conditions, cleanliness, comfort, easy accessibility, safety, visibility of the scenery, waiting time, supplementary services, information provision, on-board entertainment, off-board services, social environment, staff's skills
de Oña, de Oña, Eboli, and Mazzulla (2014)	Italy	Walking distance to bus stop, service frequency, schedule reliability, bus stop facilities, bus crowding cleanliness of interior, fare, information at the bus stop, personnel friendliness

Further extending the literature, Garrido et al. (2014) took into consideration the assessed quality of perceived services by the customers of the public transportation system with the help of Artificial Neutral Networks, where three dissimilar models were applied to measure the relative effect of attributes of service quality. They also tried to measure the relative importance of all the considered aspects in the study in order to get acquainted with their strengths and weaknesses. In total 12 service quality attributes i.e., information, punctuality, driver courtesy, safety on board, bus space, interior cleanliness, bus temperature, and so on; were measured for importance, customer perception, overall quality of the service. Amongst all, frequency is the noteworthy attribute in service quality of the bus transport along with other elements as – proximity, speed and information which was validated under all the three models and significantly holds the same position in all. Jen et al. (2010) proposed an integrated framework of service quality-behavioural intentions for which Coach industry was chosen as the research subject. The results revealed that perceived value is an important interpreter of satisfaction and passengers' behavioural intention.

Corporate image

Image, according to Gronroos (1988) is critical in that a favourable image can allow for minor mistakes to be forgiven. A negative image, on the other hand, can result in mistakes to be perceived as magnified. The researcher, furthermore, suggested that image in essence can be viewed as a filter for the experienced quality perception. Corporate image is a key factor in the overall service evaluation (Bitner, 1992; Gummesson & Grönroos, 1988). Image is described as the overall impression left on the minds of customers (Zimmer & Golden, 1988). Bitner and Hubbert (1994) submit that, if overall service quality is viewed

as “the customer’s judgment of overall excellence or superiority” as noted by Zeithaml et al. (1996), then the firm’s image is likely to have a substantial influence on the customer’s perception of service quality. Gi-Du and Jeffrey (2004) incorporated an image variable into a study linking service quality with customer satisfaction. Their findings showed the inclusion of the image factor in the model had a significant effect as a modifier between functional quality and overall service quality.

Perceived value

To win the competition successfully in a value-consciousness environment, seller must stress the value of their offerings. One value-based strategy, namely acquisition value, emphasizes the value of acquiring the product (Monroe & Chapman, 1987). Zeithaml (1988) defined perceived value as the customer’s overall evaluation of the benefit of a product depending on perceptions of what is obtained and what is spent. Value can be theorized as the overall assessment of the service consumption experience and, like quality and satisfaction, value can be encountered with specific or a more persisting universal assessment (Oliver, 1994). In order to enhance the comprehension of the relative importance of service quality and price in predicting consumers’ purchases decision-making. Value construct as an important construct in consumer decision-making models (Bolton & Drew, 1991; Dodds, Monroe, & Grewal, 1991; Zeithaml, 1988). Value signifies the consumer’s evaluation in terms of costs and benefits and that results from quality and price. Perceived value is identified as an antecedent to satisfaction, customer trust and behavioural intentions (Chen, 2008; Cronin et al., 2000; Petrick, 2004; Petrick & Backman, 2002). Value has been shown to be a significant force in influencing the behaviour of people in all aspects of their lives (Gutman, 1982). It is used in making improved marketing

planning and strategy, if the behaviour of consumers could be related to their values. The results of the previous researches indicate that there is a link among perceived service quality, value, customer satisfaction and loyalty.

Customer trust

Trust is a necessary ingredient for long-term buyer seller relationship (Doney & Cannon, 1997; Ganesan & Hess, 1997). Trust is defined as customer' confidence in the service seller's reliability and integrity (Doney & Cannon, 1997; Morgan & Shelby, 1994). Commonly, customer trust is defined as the willingness to trust vulnerably, an exchange partner in whom one has confidence in a situation of susceptibility (Moorman, Zaltman, & Deshpande, 1992). Mayer, Davis, and Schoorman (1995) defined trust as a buyer's willingness to rely on the seller and take action in conditions where such action makes the consumer susceptible to the seller. The development of the interpersonal paradigm has emphasised the significance of trust in buyer-seller relationships in both industrial as well as customers (Morgan & Shelby, 1994). Sabine (2004) explains that the more choices that are available, the more trust becomes significant in an inter-organizational relationship.

Customer satisfaction

It is believed that higher levels of customer satisfaction may result in higher levels of repurchase. Customer satisfaction has been defined as a cognitive or affective reaction that arises in response to a single or extended set of service encounters (McDougall & Levesque, 1995). According to Oliver (1997), repeat purchasing is necessary to a persisted stream of profitability by achieving higher levels of customer satisfaction. Thus, while preventing dissatisfaction which is a worthy and necessary goal, management should be more interested in what it can do to foster satisfaction (Oliver, 1997). With this basic idea

in mind, more interest has been paid to the concept of customer satisfaction as a corporate goal among academics and business practitioners (Rust & Oliver, 1994). As a consequence, there have been an increasing number of academic publications designed to identify the influence of service quality and customer satisfaction on post-purchase judgment (Bou-Llusar, Camisón-Zornoza, & Escrig-Tena, 2001; Cho, Lee, & Chon, 2004; Choi & Chu, 2001; Rust & Zahorik, 1993; Spreng, MacKenzie, & Olshavsky, 1996).

Attitudinal loyalty

Customer loyalty is an attitude that reveals a long-term commitment of the customer towards the company (Shankar, Smith, & Rangaswamy, 2003). Many studies have debated the superiority of the attitudinal approach because of its ability to interpret the underlying psychological processes better than the rival approaches (Brown, Barry, Dacin, & Gunst, 2005; Chaudhuri & Holbrook, 2001). Park and Kim (2000) viewed attitudinal loyalty as a multifaceted construct with three dimensions adapted from Allen and Meyer (1990) theory, which included investment loyalty, normative loyalty, and affective loyalty. They explained that attitudinal loyalty is "the process of attaching psychologically" to a company or program (SeHyuk & YongMan, 2000). They suggested that, if participants exhibit varied types and degrees of attitudinal loyalty and can be easily identified and reached, this type of loyalty could offer a promising basis for segmenting the market, thus developing target markets.

Relationship between service quality, corporate image, perceived value, customer trust, customer satisfaction and attitudinal loyalty

Examining communications within and with the individuals is a tough and still debatable and researchable task. While utilizing the signalling theory, (Jha, Deitz, Babakus, & Yavas, 2013), tested an integrated model in which the study accumulated that corporate image and interaction quality effect the customers' attitudinal loyalty. Based on an empirical survey the research findings revealed that the corporate image and interaction quality is positively influencing perceived value and customer satisfaction and which in turn it finally effects the attitudinal loyalty of the bank customers. Besides the authors have tested the interaction effect of corporate image on the association between interaction quality and perceived value, customer satisfaction and loyalty, study findings also supported for the hypothesized interaction effects. Overall, the study findings suggested that customer's perceptions of perceived value and customer satisfaction are chiefly formed through their simultaneous understanding of extrinsic and intrinsic cues, which finally influence their behavioural intentions i.e., loyalty. Santiago, Ramon, Javier, and Eva María (2014) has also investigated the multidimensional perspective of perceived value i.e., service quality, perceived price, emotional value and social value on loyalty through overall satisfaction and trust using a sample of 729 cruise passengers which revealed that there exist an empirical support for the proposed hypothesized model and cruise line moderated the relationship between the constructs in the model. Further, validating the constructs, Kim, Hong, Min, and Lee (2011) has investigated the Application Service Provider's performance which included system quality, information quality and service quality for continuance intention through satisfaction and trust. A sample of 203 small and medium-size firm was undertaken for validating the results. The model results revealed that the

information quality and service quality influenced trust and satisfaction, and both of these constructs determined the continuance intention. Trust has a strong effect on continuance intention than satisfaction. Surprisingly, system quality does not have an effect on satisfaction as well as on trust. This revealed that functional quality is a more important issue to be undertaken for customers' satisfaction and trust than the technical quality.

Due to the abundance of choices, customers today have started acting in the more demanding way while interacting with their customer providers, in response to satisfy the customers, service providers are looking into such strategies which can increase customer's satisfaction. Andreassen (2001) in this regard investigated the effects of customer's satisfaction with corporate image and customer intent. The main aim of this study was to study the effect of complaining behaviour of the customer on perceived service quality through service recovery, and in turn leading to customer satisfaction. The findings for which indicated that the customers with higher repurchase intentions were found for the positive view of the suppliers and it was low in case of dissatisfied non-complaining customers. These finding confirmed that service recovery has an impact on the perceptions of complaining customers of the firm and their repurchase intentions.

Cho1 and Haiyan Hu (2009) further exploring the new dimensions, investigated the mediating role of trust in the relationship between service quality dimensions and future intentions, recommendations and commitment. While using the data from the respondents taking up loans from the financial institutions, most of the hypothesized paths came out to be significant for Generation Y, Generation X and Baby boomers. The relationships between responsiveness and trust in Generation X and Baby boomers were not significant. Similarly the relationships between tangibility and trust in Generation Y and Baby boomers

were not significant. The study also revealed a significant difference in few paths in the model, such as for age cohorts, and also indicated some general variability in the relationship between service quality, trust and commitment.

The theories of consumer behaviour; cognitive psychology, and social cognitive psychology were utilized by Andreassen and Lindestad (1998) who explored the effects of corporate image on customer loyalty through core services, disconfirmation and customer satisfaction. From the findings it was inferred that the corporate image has a significant indirect effect on customer loyalty in the goods and services sector. In summary, the authors declared that customer loyalty is driven both by disconfirmation of expectations and corporate image.

In continuation to the study conducted above, Nguyen and LeBlanc (1998) recommended and tested a conceptual framework to predict the customer loyalty through perceived value and corporate image. For this relation, customer satisfaction and service quality was considered as a key antecedent. The findings showed that service quality can create a positive image of the banking institution and a positive impact of perceived value on image. Similarly, customer satisfaction and image perceptions are observed to influencing loyalty with satisfaction having a greater influence on loyalty than image.

The relationship between service quality, perceived value, customer satisfaction, corporate image and behavioural intentions hold a significant place in the services literature. In regard to the maintain the same relation, Hu, Kandampully, and Juwaheer (2009) studied and analysed the relationship between service quality perceived value, customer satisfaction, corporate image and behavioural intentions. By utilizing a sample from a hotel industry customer's survey revealed the findings as – there exists a relationship between

these constructs, also if the customers are offered high-quality services and superior customer value, it may result in achieving high customer satisfaction, which in return affects the firm's corporate image, and ultimately leads to consumer retention. Pavlos and Adam (2008) in the similar trend developed different competing models to examine the theoretical and empirical importance of the behavioural intention in mobile internet service contexts. The results revealed that the relationship between Content quality, Device quality, Privacy Connection quality and Contextual quality on service quality was significant. Similarly, there exist a significant effect of service quality on value and service quality value on satisfaction. Finally, service quality, value and satisfaction positively influenced behavioural intensions. Surprisingly, interaction quality and customer services did not relate to service quality.

An important objective being fulfilled by the customer satisfaction programs is to achieve customer retention which increases their loyalty towards the company. But, there are some variables like switching costs that moderates the linking behaviours and are also important in providing useful insights. Wang (2010) in the same context has tested the moderating role of switching cost in the relationship between perceived value, service quality & corporate image and customer loyalty. The study supported the moderating role of switching costs on the relationship between customer perceived value, corporate image and loyalty. The outcome shows that the influences of customer perceived value and corporate image on the customer loyalty, decrease under conditions of high switching costs. Finally, the switching cost did not moderate the relationship between service quality and customer loyalty.

There exists a replication of Andreassen and Lindestad (1998) model on corporate image and its effect on customer loyalty in the literature by Allison E. Hart & Philip J. Rosenberger III (2004), for which consistency in the results is been reflected and the corporate image has a significant impact on the core services and customer satisfaction perceptions. In the end, the corporate image was directly and indirectly influencing the customer loyalty. The overall research found support for the Andreassen and Lindestad (1998) model in an Australian sample.

A meta-analysis using 139 empirical studies was carried out by Yu and Ramanathan (2012) to investigated the effects of customer-related factors and product-related factors on customer loyalty and the moderating role of product type i.e., intangibility, purchase cycle of the product, type of loyalty measurement i.e., behavioural vs attitudinal and multi vs single item measure, business vs market consumer and time variables. The study supported all hypothesized relationships. Especially trust was having higher effect size on loyalty than other determinants of loyalty. Further, there also existed an empirical support for the moderating hypothesis. Finally, the study revealed that single item measure of loyalty produces a weaker effect than a multi item measures on loyalty. Hence, critically, there exists a strong effect when items were measured together instead of individual measurement.

Corporate reputation under the literature background was also found as a vital variable by Caruana and Ewing (2010) to investigate the relationship between the perceived value of loyalty Using two online vendor's samples (books and shares) the study defended that corporate reputation mediated the relationship between perceived value and loyalty. Similarly perceived value directly influenced loyalty. And so, there exists both direct and

indirect effects of perceived value on loyalty. Using a 119 sample collected from Chinese telecommunication customers, Lai, Griffin, and Babin (2009) tested an integrated model of service quality on loyalty through value, image and satisfaction, for which the results showed that service quality has a direct influence on both value and image. Similarly, value and image influence satisfaction and both satisfaction and value are significant predictors of customer loyalty. Finally, it has been concluded that value has a direct and indirect effect on loyalty through satisfaction. Overall, the study findings supported the western literature evidence in the Chinese context too. For a retail travel agency, de Oña, de Oña, and Calvo (2012) revealed a similar kind of results that, there exists a strong relationship between service quality and loyalty and between customer satisfaction and loyalty. The study findings also found evidence for the relationship between trust and loyalty, but the coefficient for this relationship is lower than the previously stated relationships. This could be interpreted as the reason that trust in long term has an impact on the loyalty and the impact of satisfaction on loyalty and for service quality on loyalty are short term. Finally, the study confirmed the application of service quality scale (Parasuraman et al., 1991; 1988) in the travel agency sector. This helped in validating the scale further in the literature.

Data collected from the financial institutions loan customers reveal that, considerable support for the proposed structural model and it is equally important to validate a scale, the way a scale is being developed. Using Gro¨nroos conceptualization for evaluating a technical quality and functional quality in terms of the increase in relationship quality and customer loyalty in a B2B environment, Ruben Chumpitaz and Nicholas (2007) established a theoretical model with the help of 234 advertising agencies' clients and the results revealed a significant support for all the relationships proposed in the theoretical model.

Communication, delivery of service and administrative service influence commercial service with 64 % explained variance. Advertising influenced relationship satisfaction along with commercial service with 46 % variance. The relationship between satisfaction, trust, commitment and loyalty were also significant. Trust, commitment and relationship satisfaction have explained 60% variance in loyalty. Harris and Goode (2010) also developed and tested a conceptual framework of loyalty, trust value, satisfaction, and service quality while using a sample of online customers of books.com and flights.com which revealed that cognitive-affective-conative-action loyalty sequence is statistically significant. Though some dissimilarities appear in the two studies, structural equation modeling essentially supports the hypothesized framework and positioned trust as central exchange in determining the loyalty. Trust also directly and indirectly influencing loyalty. Similarly, perceived value also directly and indirectly influencing loyalty.

Social Identity is a vital antecedent for the individuals to perceive and get satisfaction for a particular product, service, or membership. In the same context of literature, He, Li, and Harris (2012) explored a social identity perspective of customer–brand relationship using two empirical studies. First, the study confirmed a significant direct and indirect effect of brand identity and brand identification on conventional antecedents of brand loyalty i.e. perceived value, satisfaction, and trust. Second, the study suggested that social recognition viewpoint of brand loyalty can fit in with other views, to model the consumer's mental path to brand loyalty. Third, the research has endorsed the important role of brand identification in brand loyalty, which increased and emphasized on the mediation effect of brand identification effects of brand identity on the paths that lead to brand loyalty through the traditional antecedents of brand loyalty i.e. perceived value, satisfaction, and trust.

Customer is the king of the market since ages. The satisfaction of customer plays a prior role in any commercial and non - commercial setting in the market. Today, every industry, weather it is a product based or services based is facing tremendous competition and satisfying customer has become one and prior goal of the companies. In the same order, Nguyen and LeBlanc (1998) in his study has proposed a conceptual frame work that examined the impact of customer satisfaction, service quality, and value on perceptions of corporate image and customer loyalty towards the service firms while using 1224 sample from the customers of different banks in Canada.. The findings of the study signified that customer's satisfaction and image perceptions has an effect on service loyalty with satisfaction having a greater influence on loyalty than image. In addition the service quality and satisfaction are significantly related to value and that quality exerts greater influence on value than satisfaction. Study also found that higher level of service quality and value will form a favourable image of the banking institution.

Further, if the customer is satisfied there are chances that he will retain and become a loyal customer to that particular company or corporation. To test the same concept, whether it exists or not, Ruben Chumpitaz and Nicholas (2007) empirically tested the business-loyalty model that integrates the concepts of service/product quality, relationship satisfaction, trust, and commitment in a B2B environment with the help of 234 advertising agencies' clients as sample in France. The findings indicate that perceptions of service/product performance can be viewed as antecedents to relationship satisfaction which, in turn, affects trust, commitment, and business loyalty. The "functional quality" including communication, delivery, and administrative activities, and the "technical quality" including the actual service provided, were found to have a direct effect on relationship

satisfaction. This can further be labelled as if a customer if satisfied will be loyal to the company.

Measuring the mediation effect is an effective art of resolving disputes related to relationships in the structural equations. Auh (2005) in order to resolve the same concept of mediating role of trust between soft and hard service attributes and loyalty, tested with the help of data that has been collected from 176 students using critical incident technique in hair care service environment. The results supported the full mediating role of trust for soft attributes where soft attributes has only indirect effect on loyalty and a partially mediating role of trust for hard attributes whereas hard attributes had both direct and indirect effect on loyalty. Study also found the positive link between soft attributes and hard attributes. Santouridis and Trivellas (2009) empirically evidenced with the help of 171 customers of Internet Shoppers in cities located in central Greek to strengthen the mediation role of satisfaction between service quality and customer loyalty. The analysis showed that service quality is the key direct predictor of loyalty and satisfaction was found to have a strong positive impact on loyalty by fully mediating the influence of service quality which was found to effect loyalty directly.

In the similar setting, Vanniarajan and Gurunathan (2009) investigated the mediating role of consumer satisfaction between overall service quality and repurchase intention and the mediation effect of overall service quality between customer satisfaction and repurchase intention among 100 customers from three service industries i.e., Hotel Industry, Banking Industry and Health Care Industry in India. This study supported the mediation role of the customer satisfaction between service quality and repurchase intention and declined the role of service quality mediating between the customer satisfaction and repurchase

intention. For testing the same concept further, researchers like Ahmed et al. (2010) conducted an empirical study on customer of a Sepah Bank branch in Tehran, Iran. The findings of the study maintained the positive relationship between service quality, satisfaction and loyalty. Customer satisfaction was revealed as a mediator in the effects of service quality on service loyalty. It was finally concluded from the study that service encounter plays an important role in customer's satisfaction and loyalty. It is found and empirically validated in the literature that a satisfied customer tends to remain loyal and retains himself with the company for a longer period of time. Ahmed et al. (2010) to validate the concept examined the mediation role of customer satisfaction in the relationship between service quality and repurchase intentions for the telecom sector in Pakistan. Study found that there is significant relationship between service quality and repurchase intentions; service quality and satisfaction and satisfaction and repurchase intentions. Finally, results suggested that satisfaction effectively mediates between service quality and customer repurchase intentions.

In the same race of validating the concept, Dahiyat, Akroush, and Abu-Lail (2011) supported the fully mediating roles of customer satisfaction and customer trust on the relationship between service quality and customer loyalty. Researchers collected a total of 756 valid sample of mobile service operators in Jordon that was tested and validated the research model in the same context. Similarly, tested the conceptual framework in china by investigating the relationships between service quality, corporate image, satisfaction and behavioural intentions. The results indicated that customer satisfaction fully mediates the relationship between retail service quality and behavioural intentions. Customer satisfaction also fully mediates the impact of corporate image on behavioural intentions.

Further, study found that retail service quality significantly influences customer perceptions of corporate image.

Perceived quality in the literature has been defined as the judgement of the customer for the overall value of supremacy of a product or services. It is a basic antecedent for the customer satisfaction, which in turn leads to the loyalty. In order to get clarity on the same concept, Hameed (2013) tested the mediation role of perceived quality, customer satisfaction, and store image for the relationship between advertising expenditure and brand loyalty. Data was collected from 360 customers from different departmental stores for which results maintained that there exist a significant direct impact of advertising on customer satisfaction and store image. Store image and perceived service quality were treated as mediators in the relationship between advertising expenditure and brand loyalty. The study warned an insignificant effect of advertising expenditure on perceived quality and brand loyalty. This reflects that more than the advertising, quality of the product or service plays a vital role in the formation of customer perceptions. In the same context, Jeng and Kuo (2012) tested the mediating role of customer satisfaction and the moderating role of service recovery and perceived value on the effects of service quality on customer loyalty by developing a conceptual model that was applicable in travel industry. Similarly, He and Song (2009) developed a mediation model and proved the full mediation role of satisfaction between tourists' perceived service quality and repurchase intentions and perceived value and repurchase intentions in travel industry. Further, Al-Rousan and Abuamoud (2013) supported the mediation role of tourist's satisfaction between service quality and service loyalty for Marriott hotel chains in Jordan.

Further evidence from the empirical study conducted, by Aliman and Mohamad (2013) with 273 outpatients as a sample from a private hospital in Malaysia. The study tried to investigate the mediation effect of satisfaction on service quality perception and behaviour intentions using regression analysis, which supported that there exist a partial mediation role of satisfaction between perceived service quality and behavioural intentions. The findings were further strengthened when service quality perception came out to be the antecedent of behavioural intentions. But, the strength of the relationship between service quality and behaviour intentions became weaker when the satisfaction is considered as a mediator in the same setting.

Unobserved heterogeneity

It has been evidenced from the literature that multiple studies on the customer satisfaction are measuring somewhat different effects because of many reasons, which includes different populations, experimental design, different subjects, and choice of analysis or intervention. Summarizing or generalizing the meaning of the studies thus conducted may cause problems in the same regard. Many researchers in order to overcome such problems, conduct 'Test of Heterogeneity'. Robert, Lawrence, and Lo (2007) in the same context developed and empirically tested an extension to the SERVQUAL instrument with reference to passenger's rail service quality in New Zealand. Three dimensions i.e., comfort, connections and Convenience were added to the existing dimensions of the SERVQUAL instrument (assurance, empathy, reliability, responsiveness, and tangibles), originally developed by Parasuraman, Zeithaml, and Berry (1994b). Content validity and reliability of the instrument were also checked and reliability of the instrument was assured using high Cronbach alpha values. Multiple regression analysis result maintained that

assurance, responsiveness and empathy were strongly related to perception of service quality than other factors. Finally, researchers have identified the zone of tolerance for service quality.

Further in the literature, to validate the relation between relationship qualities and behavioural intentions, Emre Ozdemir and Hewett (2010) have used goal and action identification theories. Also, researchers have tested how collectivism culture influenced these relationships. In the first study, results demonstrated that collectivism increases the relationship quality and service quality. This effect was contradictory to the hypothesized effect. In the second study the results evidenced that collectivism does not moderate the aforementioned relationship. It is been concluded that the outcome of this study can be used to set the customer retail experience on the basis of collectivist tendencies of the consumers.

A lot of evidences have proved the relationship of customer value on perceived satisfaction and value & satisfaction on customer loyalty Yang and Peterson (2004) in the similar context investigated the relationship of customer value on perceived satisfaction and value & satisfaction on customer loyalty. The authors also examined the moderating role of switching cost on the relationship between value & satisfaction on customer loyalty. Web based survey of online customers revealed that value and satisfaction are the important determinants for loyalty and the moderating role of switching cost is significant when the level of satisfaction and value scores are above average. The results also produced evidences that customer services, order fulfilment, ease of use, product portfolio, and security/privacy are the core determinants for customer satisfaction. Jen and Hu (2003) have also proposed and tested a model on perceived value for Taipei City bus passengers

which revealed that proposed service quality positively effects perceived benefits. Perceived non-monetary benefits and perceived monetary price are significantly linked to perceive cost, perceived benefits and perceived cost are positively related to perceived value. Further, value and attractiveness of the alternative modes directly influences repurchase intentions. The investigation in total revealed that all the proposed relationships were significant and indirect effects between antecedents and repurchase intentions were also significant.

A mélange of constructs were further tested empirically by Yieh, Chiao, and Chiu (2007). The explored relationship using 495 car owners as sample among perceived price fairness, tangibility, interaction, empathy, perceived product quality, satisfaction, trust and loyalty were proved to be significant.. Satisfaction also influences trust and which in turn influences loyalty. The investigation proved that satisfaction is directly and indirectly related to loyalty. A comprehensive model on service quality in the travel industry was also proposed by Martínez Caro and Martínez García (2008). Researchers have conceptualized service quality as third order construct by personal interaction, physical environment (equipment and ambience) and outcome (waiting time and valence). The data collected from users of travel agencies in Spain and third order confirmatory factor analysis supported the third order conceptualization of service quality.

It has been seen in the literature that building customer relationship is very important to satisfy the customer as well as retaining them. Millán and Esteban (2004) in the same culture, developed a multi item scale to measure customer satisfaction in travel agencies services. Results revealed six dimensions from the relationship. The dimensions were service encounters, empathy, service environment, efficiency of advice, reliability and

additional attributes. The measurement properties of the scale produced adequate validity and reliability for the measures. Finally three important recommendations were given to the travel agencies. The recommendations are human resources training policies, strategic focus of technological innovations and quality of service.

Gap analysis

Differences or gaps between the customer's expectations and the perception of services actually experienced are the basis for the gap analysis methodology. The SERVQUAL model for measuring consumer perceptions of service quality is generally recognized as the predominate work in this field. The initial research conducted by (Parasuraman et al., 1985) for their SERVQUAL service quality model supported the hypothesis that service quality is an overall evaluation by the consumer. The service quality research literature shows that subsequent research has reached similar conclusions. The service quality research literature shows that subsequent research has reached similar conclusions.

Kassim and Bojei (2002) discusses about the discrepancy between the customer's expectation and perception with respect to service quality in Malaysian telemarketing industry. The data is collected form 100 tele caller service users who are selected randomly. SERVERQUAL instrument is used for measuring both expectations and perceptions. Further Gap analysis is done to find out the difference between expectations and perceptions. This Study reflects that there exists a gap between expectations and perceptions and highest is in the case of reliability followed by "Responsiveness", "Assurance", "Empathy" and "Tangibles". The results also showed that the gap scores and the rank orderings of dimensions are different, so there is a perceptual problem with respect to telemarketing experience.

Pakdil and Aydın (2007) Measured the service quality in Turkish airlines. The data was collected from 385 passenger from three different routes based on cluster sampling. Passenger were asked to fill the questionnaire on both expectations and perceptions using SERVERQUAL scores. The results for Factor analysis maintained that out of five dimensions "responsiveness" is rated as the most important dimension, followed by "Reliability and assurance". "Tangibility" was rated third, followed by "flight pattern" and "empathy" while "availability" is the least preferred one .Gap analysis was also done to understand the differences between the perceptions and expectations. The results also showed that passenger's educational qualification plays an important role in effecting their expectations and perceptions.

Chen, Chang, and Lai (2009), examined the Service quality form both the perspectives., One Service Quality gap between the two types of customers, and another related to employee statuses among the business customers. The data was collected from the customers (forwarder and shipper) selected from random samples from a list of an international line company of Taiwan. A total of 256 mangers and 225 employees were asked to fill the service quality scale from shipper side. From the forwarder around 192 mangers and 205 employees were asked to fill the questioner on service quality. Confirmatory Factor Analysis was done to check five factor model in shipping industries for both expectations and perceptions. The result showed that applicability of five factor model of Service quality in shipping industries is empirically rejected with respect to perceptions. Two hypothesized gaps were verified with MANOVA technique.

Arabatzis and Grigoroudis (2010), in his study conducted in Dadia–Lefkimi–Souflion national park, to measure the gap between satisfactions and perceptions of the victors. The

data was collected from 230 visitors who visit the park over a period of one year. A questionnaire was developed for this purpose on various aspect of park like Personnel, Natural characteristics, Infrastructure, Recreation facilities and Information–Communication. Visitor were asked to rate the above facilities on a five point scale ranging from Satisfied to Dissatisfied on a voluntary basis and were also requested to give weights to the above factors which they feel most important to least important. The Gap analysis was done with the help of MUSA technique (Multicriteria Satisfaction Analysis) and other softwares. The results were plotted on a matrix form with four sides. Vertical side representing satisfaction and horizontal side representing the Importance level. Above factors were plotted on the matrix which reflected a clear image to the management in identifying the critical point (Recreation facility) which is effecting the satisfaction level of the visitors.

The study conducted by Brown and Swartz (1989), explored the gap in service quality with respect to professional sector especially medical services. The author attempted to measure the concept of service quality for which data was collected from both the patients and the physicians. Around 1128 patients were asked to evaluate the questions on service quality and 30 physician were asked to answer the items the way they believed their patients would respond. Factor analysis was used to extract the factors from 65 questions on different aspects of medical services rendered to patients. Three factors were emerged from the analysis of Physician perception of patient expectations which were Professionalism, Auxiliary Communications, and Professional Responsibility. Six factors emerged from the patient side as Physician Interactions, Staff Interactions, Diagnostics, Professional Competence, Time Convenience and Location Convenience. Further the gap

analysis was done to analyse the Gap difference between the client expectations to client experiences, client expectations to professional perceptions of client expectations and client experiences - professional perceptions of client experiences. The results showed that there existed a significant gap between the two groups and it has a high impact on satisfaction of the patients.

Expectancy-disconfirmation paradigm

According to the disconfirmation paradigm, consumers reach satisfaction levels by comparing the performance of a product or service with their prior expectations about how it should perform (Churchill & Surprenant, 1982; Oliver, 1980; Oliver & DeSarbo, 1988; Tse & Wilton, 1988). If performance exceeds the expectations, positive (negative) disconfirmation occurs and increases (decreases) in satisfaction can be expected to take place. Consumer satisfaction is held to be a function of expectations and disconfirmation, and predictive expectations are used as the standard of comparison.

Essentially, the controversial issue in the expectation - disconfirmation paradigm is the operationalization of expectations. It has been discovered that expectations and perceptions may vary depending upon the individual perspective one is considering (Hall & Elliott, 1993). Three types of expectations have been intensively discussed. They are desired performance ("ideal"), adequate performance ("should"), and predictive performance ("will") (Zeithaml et al., 1993). However, researchers have argued that respondents are often confused when they attempt to differentiate among these three expectations (Tse & Wilton, 1988).

In the research on tourist satisfaction, Weber (1997) concluded that changes in expectations can occur due to pre-trip expectations and a new set of expectations are developed as a

result of various experiences during the trip. Hence, the present study considered both expectations and perceptions of passengers.

Theoretical foundation

Many researchers have investigated to understand the dynamics of services. Researchers continue to devote considerable attention to service quality, customer satisfaction, perceived value and loyalty intentions (Heskett & Schlesinger, 1994; Lynch & Ariely, 2000; Rust & Oliver, 2000). Cronin et al. (2000), tested four different models of services and developed the frame work constituting the most comprehensive study of the issues. Behavioural intention is predicted by perceived value, service quality, and customer satisfaction, where perceived value and customer satisfaction mediate the relation between quality and intention. Further, the present study is drawn from the signalling theory to investigate the process through which service quality and corporate image effect attitudinal loyalty. Buyers make purchase decisions based on sellers' signals that are broadly classified into intrinsic and extrinsic cues (Olson, 1972) . This study focuses upon corporate image as an extrinsic cue and service quality as an intrinsic cue (Andreassen & Lindestad, 1998) . Overall, the present study suggests that customer perceptions of value, customer trust and customer satisfaction are largely shaped through their concurrent interpretations of extrinsic and intrinsic cues, which in turn influence their behavioural intentions (Purohit & Srivastava, 2001; Zeithaml, 1988). Hence, this model is used in order to predict the process through which intrinsic and extrinsic cues individually effect customer loyalty as well as to determine potential synergistic effects.

Research questions

Based on the review of existing literature, the following research questions were constructed.

1. What is the underlying structure of bus service quality scale?
2. What is the structural relationship between service quality and attitudinal loyalty, when service quality is considered as a reflective- formative type construct?
3. How service quality affects attitudinal loyalty via corporate image, perceived value, customer trust, and customer satisfaction in parallel?
4. Is there any unobserved heterogeneity in the study sample?

Research objectives

The broad objective of the research is to examine the structural relationship between the service quality and attitudinal loyalty, when service quality (adapted SERVQUAL multi-dimensional scale) is considered as a reflective- formative type construct. The objectives specifically relate to the following sub-objectives:

1. To adapt the SERVQUAL multi-dimensional scale in the context of public bus transport services.
2. To conceptualize service quality as reflective-formative type latent construct.
3. To test the integrated theoretical model on attitudinal loyalty.
4. To test the parallel mediational role of corporate image, perceived value, customer trust, and customer satisfaction in the relationship between service quality and attitudinal loyalty.
5. To capture the unobserved heterogeneity in the chosen sample by testing the integrated model on attitudinal loyalty using Finite mixture partial least squares (FIMIX-PLS).

Research model and hypotheses development

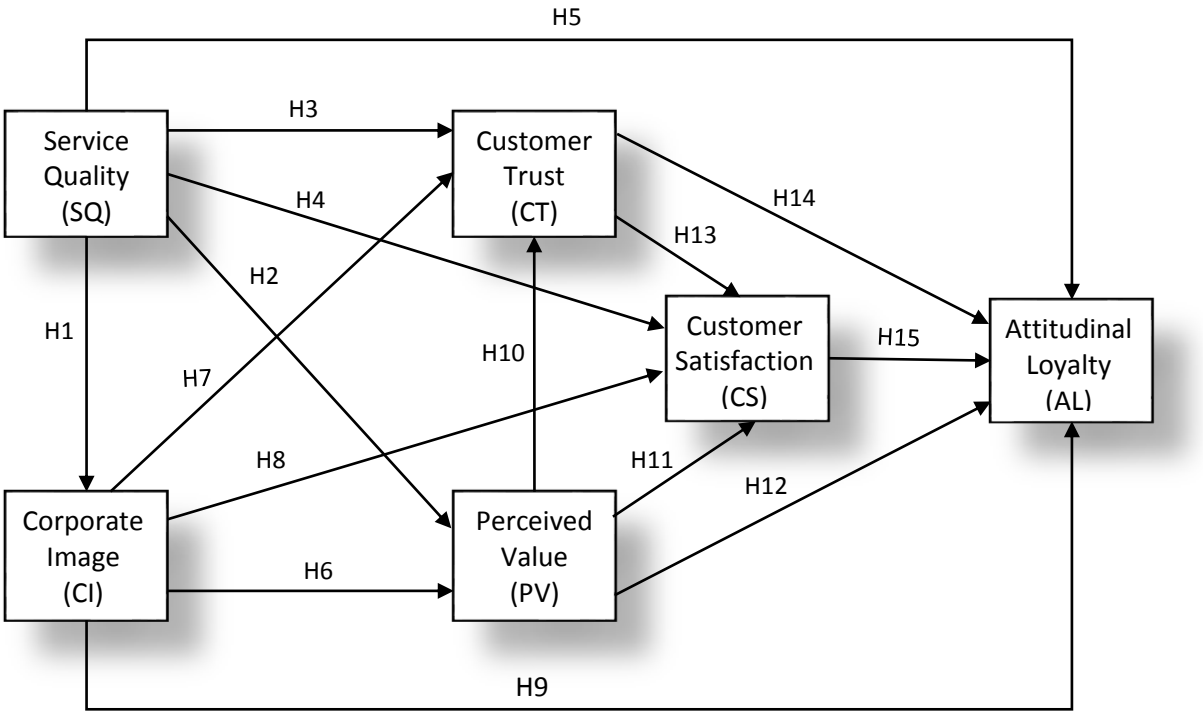

Figure 3 Integrated research model

In practice service quality has various outcomes, including perceived value, corporate image, customer trust, customer satisfaction and attitudinal loyalty (Cronin et al., 2000; Garbarino & Johnson, 1999; Spreng & Mackoy, 1996). Several studies investigated the relationship between service quality and other constructs like corporate image (Barich & Kotler, 1991; Hu et al., 2009; Johnson, Gustafsson, Andreassen, Lervik, & Cha, 2001), perceived value (Parasuraman & Grewal, 2000; Zeithaml, 1988), customer trust (Harris and Goode (2004), customer satisfaction (Brady & Cronin, 2001; Cronin et al., 2000; Lai et al., 2009), and attitudinal loyalty (Amy & Amrik, 2003; Bell, Auh, & Smalley, 2005). Based upon the above discussion, the following hypotheses are proposed:

H_1; There is a positive relationship between service quality and corporate image.

H_2: There is a positive relationship between service quality and perceived value.

H_3: There is a positive relationship between service quality and customer trust.

H_4: There is a positive relationship between service quality and customer satisfaction.

H_5: There is a positive relationship between service quality and attitudinal loyalty.

Corporate image is a key factor in the overall service evaluation (Bitner, 1992; Gummesson & Grönroos, 1988). Image is described as the overall impression left on the minds of customers (Zimmer & Golden, 1988). (Nguyen & LeBlanc, 1998), examined the relationship between service quality and corporate image for which the results revealed that consumers form favourable image of the firm by repeated service encounters. The following studies support the relationship between corporate image and other constructs like perceived value (Hu et al. (2009); Jha et al., 2013; Nguyen & LeBlanc, 1998; Wang, 2010), customer trust (Pan et al., 2012), customer satisfaction (Andreassen & Lindestad, 1998; Lai et al., 2009) and attitudinal loyalty (Chen and Dibb (2010); Jha et al., 2013). Thus we proposed the following hypotheses:

H6: There is a positive relationship between corporate image and perceived value.

H7: There is a positive relationship between corporate image and customer trust.

H8: There is a positive relationship between corporate image and customer satisfaction.

H9: There is a positive relationship between corporate image and attitudinal loyalty.

Perceived value has earned sizable research interest as an enduring construct to predict buying behaviour (Anderson & Srinivasan, 2003; Cronin Jr et al.,2000; Riel & Pura, 2005). Value represents the trade-offs between costs and benefits that results from both quality and price. Perceived value is identified as an antecedent to satisfaction, customer trust and behavioural intentions (Chen, 2008; Cronin et al., 2000; Petrick, 2004; Petrick & Backman, 2002). The following studies support the relationship between Perceived value and

customer satisfaction (Gotlieb et al., 1994; Hu et al., 2009; Patterson & Spreng, 1997), customer trust (Harris & Goode, 2004; Singh & Sirdeshmukh, 2000) and attitudinal loyalty (Lai et al., 2009). Based upon the above discussion, the following hypotheses are proposed:

H10: There is a positive relationship between perceived value and customer trust.

H11: There is a positive relationship between perceived value and customer satisfaction.

H12: There is a positive relationship between perceived value and attitudinal loyalty.

Trust is a necessary ingredient for long-term buyer seller relationship (Doney & Cannon, 1997; Ganesan & Hess, 1997). Trust is defined as customer' confidence in the service seller's reliability and integrity (Doney & Cannon, 1997; Morgan & Shelby, 1994). The development of the relational paradigm has emphasized the significance of trust in buyer-seller relationships in both industrial as well as customers (Morgan & Shelby, 1994). Several studies examined the relationship between Customer trust and customer satisfaction (Benedicktus, 2011; Harris & Goode, 2004; Tsai, Huang, Jaw, & Chen, 2006) Customer trust and attitudinal loyalty (Chen & Dibb, 2010; Harris & Goode, 2010). Thus, the following hypotheses are framed:

H3: There is a positive relationship between customer trust and customer satisfaction.

H4: There is a positive relationship between customer trust and customer attitudinal loyalty.

Customer loyalty is an attitude that reflects a long-term commitment of the customer to the organization (Shankar et al., 2003). Many studies have debated the superiority of the attitudinal approach because of its ability to model the underlying psychological processes better than the rival approaches (Brown et al., 2005; Chaudhuri & Holbrook, 2001). Previous researches found support for the customer satisfaction to attitudinal loyalty

relationship (Cronin & Taylor, 1992; Harris & Goode, 2004). Hence, the resulting hypothesis is as

H15: There is a positive relationship between customer satisfaction and customer attitudinal loyalty.

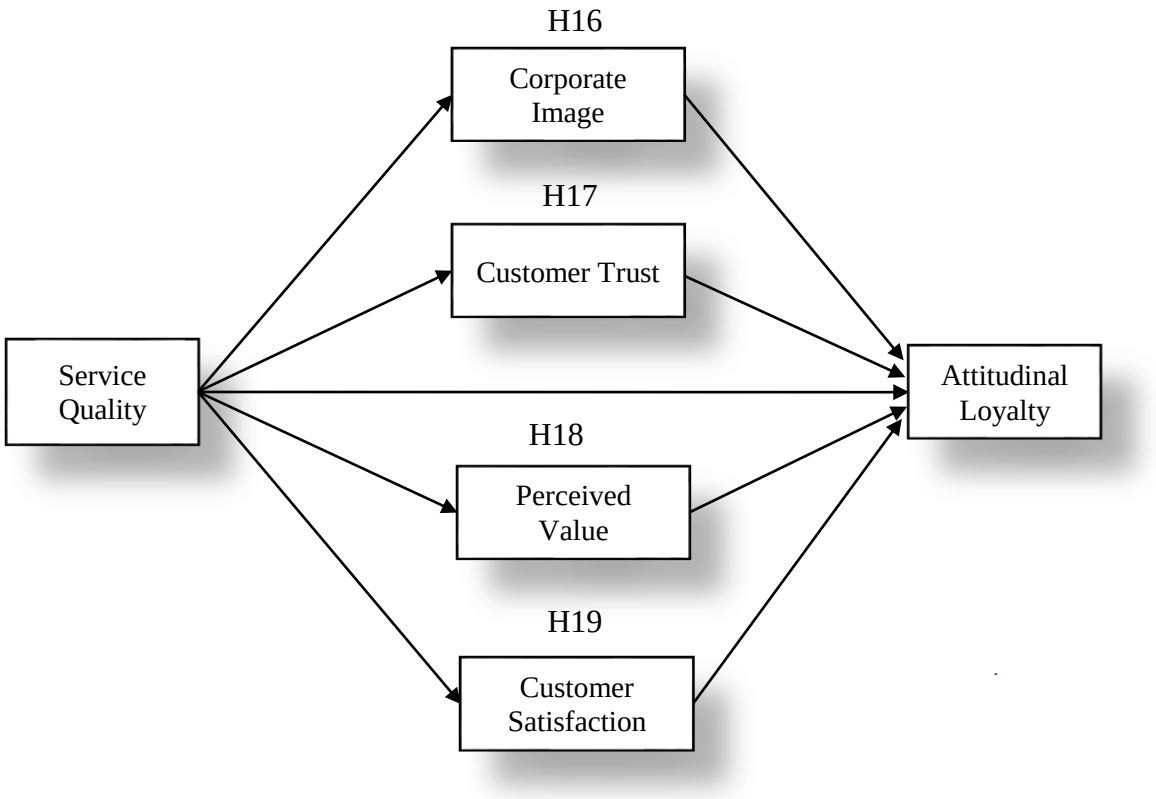

Figure 4 Parallel mediation model

The mediating role of corporate image

Service quality will create a favourable image of the firm for consumers in constant service relationship. Attitude theory suggests that service assessments are the important cause of corporate image and these attitudes increase perceived value and are more accessible in memory (Fazio, Powell, & Williams, 1989). Nguyen and LeBlanc (1998) found that the corporate image mediates between the service quality and customer loyalty. Jha et al. (2013), investigated the mediating role of corporate image between interaction quality and

attitudinal loyalty. The results found that corporate image mediated between interaction quality and attitudinal loyalty. Thus the study proposed the following hypothesis:

H16: Corporate image mediates the relationship between service quality and attitudinal loyalty.

The mediating role of customer trust

Doney and Cannon (1997) and Nicholson, Compeau, and Sethi (2001), has empirically proven that trust is a global unidimensional construct. The service providers who deliver the services to the customers play a role of an antecedent rather than a component of trust Mayer et al. (1995) whereas (Brady & Cronin, 2001) hypothesized that the trust is the consequence of service quality. It has also been proved that trust has an indirect effect between the service quality and customer loyalty. Based on the above logic, the following hypothesis is proposed;

H17: Customer trust mediates the relationship between service quality and attitudinal loyalty.

Mediating role of perceived value

A customer's evaluation of value depends on sacrifice (i.e. the monetary and non-monetary costs associated with utilizing the service) and the customers' frame of reference (Zeithaml et al., 1988). There should be dissimilarities in customers' valuation of service value due to differences in monetary costs, non-monetary costs, customer tastes, and customer characteristics (Bolton & Drew, 1991). Cronin et al., (2000) found indirect effect of service quality on behavioural intentions through service value and consumer satisfaction. Based upon the above discussion, the following hypothesis is proposed:

H18: Perceived value mediates the relationship between service quality and attitudinal loyalty.

The mediating role of customer satisfaction

Turk and Avcilar (2009), examined the effects of service quality of audit firms on customer satisfaction and behavioural intentions and concluded that customer satisfaction mediates perceived service quality dimensions and customer loyalty. While some suggest that satisfaction drives quality, the superiority of evidence indicates that quality drives satisfaction (Dabholkar et al., 1995). Turk and Avcilar (2009), examined the effects of service quality, trust, and customer satisfaction on customer loyalty. The results reflected that the interaction between service quality and customer satisfaction will explain more of the variance in customers' stated purchase intentions than the direct influences of either service quality or satisfaction alone (Akbar & Parvez, 2009; Peyrot, Cooper, & Schnapf, 1992; Söderlund, 2006). Accordingly, the hypothesis proposed as;

H19: Satisfaction mediates the relationship between service quality and attitudinal loyalty.

This chapter highlights the literature serving as the source of hypotheses for the proposed study. Based on the existing literature, research gap has been identified and conceptual model has been proposed. Finally the research questions and objectives were framed to fill the gap in the existing literature.

CHAPTER III
METHODOLOGY

CHAPTER III
METHODOLOGY

This chapter describes the methodological approach undertaken to answer the research questions and test the associated hypotheses. Overview of the research design, sampling frame and methods, data collection procedure, measurement, and data analysis methods for both the studies (Scale adaptation and model testing) are presented in this chapter.

Methodology for SERVQUAL scale adaptation (Study 1)

Research design

Determining the effect of service quality with the service experience is important to understand but very difficult to observe. Surveys are known to be a quick, inexpensive and efficient form of data collection (Zikmund, Babin, Carr, & Griffin, 2012). Based on the above reasons, surveys were considered to be the best methodological alternative to use in order to collect the required data. This research employed the cross-sectional research method.

Questionnaire design

The modified SERVQUAL and transport service quality dimensions were taken into consideration based on previous literature (Wen, Lan, & Cheng, 2005). A questionnaire was constructed to test the actual scale. The final questionnaire contained 68 service quality items. Each item was evaluated using seven-point Likert scale ranging from “strongly disagree” to “strongly agree." Single item scale is used to measure the overall service quality using seven-point Likert scale ranging from “strongly disagree” to “strongly

agree." The second part of the questionnaire presents respondents' demographic information (sex, age, education, family income, and travel purpose).

Pre-testing

To ensure the content validity, the survey instrument was revised and finalized according to the feedback obtained from eight experts who are working in the area of service quality. Also the researcher has collected a 25 pre-test samples from postgraduate students in a state university located in Tamil Nadu. Finally, the questionnaire was corrected by subject experts, based on their suggestions, the necessary changes have been incorporated in the final version.

Population chosen for the study

The study focuses on the measurement of the level of service delivered by public bus Transport Corporation. In India every state has one centralized bus transport corporation but whereas in Tamil Nadu state, Transport Corporation is decentralized and transport department have eight state transport undertakings under its administrative purview. Tamil Nadu Transport Corporation has received many awards issued by Association of State Road Transport Undertakings (ASRTU) on best performance in vehicle productivity and operational efficiency (1993, 1995, 2007, 2008, 2009, and 2012). All these awards are given on the basis of transport corporations' productivity, efficiency and financial performance. Surprisingly, the end customers who actually experience the services were not evaluated to know the satisfaction level and the quality of services delivered by the transport corporations. Therefore Tamil Nadu state transport corporation was chosen as a study population.

Target population

Among the eight transport corporation in Tamil Nadu, The State Express Transport Corporation is the target population for the study. Because, it operates long distance express services connecting all the district headquarters and linking all the important capital cities, historical, religious and commercial places etc. and adjoins states like Andhra Pradesh, Karnataka, Kerala and Puducherry.

Sampling and data collection procedure

An on-site survey was conducted at the central bus stand of the state capital on both weekdays and weekends using the purposive sampling technique. The survey was administered over five weeks. To make more representativeness of the sample, the survey procedure was performed at three different places. 800 questionnaires were distributed, after eliminating incomplete responses and passengers who have not travelled more than two times in the preceding month, only 585 usable samples were obtained.

Sample size

According to the scale development experts, the size of the development sample should be large enough to eliminate subject variance as a significant concern. When factor analysis is used, DeVellis recommends a sample of 300 respondents as the minimum acceptable sample size (DeVellis, 2003). In addition, the appropriate sample size is dependent on the number of items to be tested via factor analysis. Researchers recommend item-to-response ratios ranging from 1:4 to 1:10 (Hinkin, 1998). Since the service quality scale entails 55 items to be factor analysed, the accepted sample size ranges from 220 (55 x 4) to 550 (or 24 x 10) respondents. Therefore, a sample size of 585 respondents was considered the sufficiently acceptable sample size.

Participants

Passengers who travelled more than two times in the preceding month and who have a travel experience of more than 150 kilometres, were chosen as respondents for the present study. The main reason for selecting these participants was that they could be able to realise the service delivery experience very well. The city bus and short distance (<150 kilometres) passengers were excluded in the study. Demographic characteristics are provided in Table 3.

Table 3
Summary of demographic profile of the sample participants (study 1)

Variable	% of total respondents	Variable	% of total respondents
Gender		State	
Male	392(67)	Tamil Nadu	427(73)
Female	193(33)	Other State	158(27)
Age		Average use of services	
Below 20	88(15)	Never	123(21)
20 - 25	392(67)	Frequently	228(39)
25 -30	88(15)	Rarely	117(20)
Above 30	18(03)	Always	117(20)
Income		Purpose	
Below 25000	351(60)	work	111(19)
25000-50000	199(34)	Education	64(11)
50000-75000	12(02)	Family Visit	281(48)
Above 75000	23(04)	Leisure	129(22)
Education		Type of bus	
Graduate	99(17)	Deluxe Bus	187(32)
Post Graduate	392(67)	Ultra Deluxe Bus	158(27)
Research Scholar	70(12)	Air Conditioned Bus	135(23)
Others	23(04)	Volvo Bus	105(18)

Of the respondents, 67% were male and 33% were female; the average age is 23.5 ranged between 19 years to 38 years, the average monthly family income was Rs. 18000 ranged between Rs. 3000 to Rs. 1,50,000. Majority of the respondents (67%) were post graduates followed by graduates (17%), research scholars (12%) and others (04%). More than half

of the respondents belonged to Tamil Nadu (73%) and remaining respondents (27%) were from other states and travelled in Tamil Nadu state transport corporation buses. Almost 48% of respondents reported travelling for the family purposes. Majority of the respondents i.e., 33% travelled by deluxe buses followed by 27% ultra-deluxe buses, 23% air conditioned buses and 18% Volvo buses.

Data analysis

The data collected was analysed using principal component analysis for identifying underlying dimensions of bus transport service quality. To test the measurement properties of the scale researcher first conducted reliability analysis by grouping the items according to the six priori conceptual dimensions from past literature. Then the list of items was reduced within each dimension by examining corrected item-to-total correlations and deleting items whose elimination improved reliability coefficient alpha. The confirmatory factor analysis (CFA) was performed to further validate the psychometric properties of the service quality scale using AMOS 21.0. Unidimensionality of the constructs, reliability using composite reliability method and construct validity using discriminant and convergent validity were tested and the measurement model was evaluated and finalized. To determine the overall fit of the model, several goodness-of-fit tests were used. These tests included: the Root Mean Square Error of Approximation (RMSEA), Goodness-of-Fit Index (GFI), Adjusted Goodness of Fit Index (AGFI), Normed Fit Index (NFI) TLI = Tucker Lewis Index (TLI), Comparative Fit Index (CFI), Relative Fit Index (RFI) IFI = Incremental Fit and Indices (IFI) and the chi-square ($\chi 2$) were reported in this study. The selection of these fit indices is under deliberate examination regarding their nature, performance and stability over a variety of settings (Bentler, 1990; Browne, Cudeck,

Bollen, & Long, 1993; Hoyle, 1995; Jöreskog, 1993). The independent sample t-test was conducted to compare the difference between expectation and perception gap scores using SPSS 21.0 version.

Table 4

Model fit criteria, acceptable thresholds, and definitions

Model fit indexes	Acceptable Threshold	Interpretation
χ^2/df	≤ 3.5 to 0	Compares chi-square to degrees of freedom and significance is greater than .01
GFI, AGFI NFI, TLI RFI, IFI	.9 to 1 (perfect fit)	Values of ≥ .95 indicate a very good fit
RMR	Closest to 0 (perfect fit)	Compares default to saturated model
RMSEA	≤ .1	Values less than .05 indicate a very good fit

Gap analysis

To calculate the difference in the score between the perception and expectation of respondents, the adapted SERVQUAL scale was used. For computing the weighted score of expectation and perception scales, method suggested by Pakdil and Aydın (2007) was adopted. Factor analysis was performed for both expectation and perception; actual scores were converted into new weighted scores based on scores weighted by factor loadings. In computing the expectation score for each factor (Ft_{ei}), passengers' evaluations were weighted by the concerned factor loadings as given in Eq (1). For I=1, 2,...,n, where n is the number of passengers; t=1, 2,...., m, where m is the number of factors, and w_j is factor loading of j^{th} item, j =1, 2,..., k, where k is number of items included in t^{th} factor and where x_{jei} is the i^{th} respondent's expectation score for j^{th} item,

$$Ft_{ei} = W_1 \times X_{1ei} + W_2 \times X_{2ei} + \cdots + W_k \times X_{kei}$$

$$= \sum_{j=1}^{k} w_j \times X_{jei,} \quad (1)$$

And for perception score, the weighted score calculated for a factor is

$$Ft_{pi} = W_1 \times X_{1pi} + W_2 \times X_{2pi} + \cdots + W_k \times X_{kpi}$$

$$= \sum_{j=1}^{k} w_j \times X_{jpi,} \quad (2)$$

Where x_{jpi} is the i^{th} passenger's perception score for j^{th} item. For example, the first factor, F1-staff behaviour, includes Q1, Q2, Q3, Q4, Q5 and Q6 items; with the factor loadings .74, .72, .72, .68, .65 and .65, respectively. If the first respondent scored his/her expectations for Q1 as 7; Q2 as 6, Q3 as 5 Q4 as 4, Q5 as 3 and Q6 as 1, then his/her $F1_e$ score is 18.38. Each respondent's expectation and perception scores were computed.

Common method bias

To minimize the common method bias, the study conducted Post hoc test (Harman single factor) as recommended byPodsakoff, MacKenzie, Lee, and Podsakoff (2003) found that the items did not significantly load on to a single factor (34% variance extracted), Hence the study ensured that the data is free from the common method bias.

Normality

Normality is a common assumption for multivariate applications because the large variation from the normal distribution is producing invalid results (Field, 2013; Hair, Black, Babin, & Anderson, 2010). The normal distribution can be measured by kurtosis and skewness tests (Field, 2013; Hair et al., 2010; Tabachnick & Fidell, 2001). In the present study skewness and kurtosis values are ranged between ±3 for all variables, therefore it is assumed that all the variables are normally distributed.

Methodology for model testing (study 2)

Research design

The focus of study-2 is to test the relationship among service quality, attitudinal loyalty, corporate image, perceived value, customer trust and customer satisfaction. The proposed research model is tested using cross sectional data from the passengers of Tamil Nadu state transport corporation buses.

Sampling and data collection

An on-site survey was conducted at the central bus stand of the state capital of Tamil Nadu on both weekdays and weekends. The purposive sampling technique was employed due to the fact that the population of public transit passengers was not available (Lai & Chen, 2011; Parasuraman et al., 2005). Of 800 questionnaires distributed, 631 returned with a response rate of 78.88%. This sample size was more than adequate based on the following recommendations: (1) Chin and Newsted (1999) recommended ten times the maximum number of predictors based on the factor with the largest number of predictors, (2) Barclay, Higgins, and Thompson (1995) recommended ten times the number of items in the most complex construct (Gefen & Devine, 2001), and (3) Hair, Hult, Ringle, and Sarstedt (2013) recommended when the maximum number of independent variables in the measurement and structural models is six, one would need 75 observations to achieve a statistical power of 80% for detecting R^2 values of at least 0.25 (with a 5% probability of error). In addition, the present study sample size is relatively higher than previous studies in service quality and transport related studies (Chen, 2008; Parasuraman et al., 2005; Park, Robertson, & Wu, 2006; Wen, Lan, & Cheng, 2005).

Participants

Passengers who have travelled more than two times in the preceding month using long distance (>150 kilometre) buses of Tamil Nadu state transport corporation were included in the survey. The city bus and short distance (<150kilometers) passengers are excluded in the study. Nearly 67% of respondents were male. The Table 5 shows demographic profile of the respondents. The average age of respondents is 26 which ranged between 19 years and 38 years and average monthly family income is Rs. 26,000, which varied between Rs. 18,000 and Rs. 1,200,000. The majority of the passengers (62%) frequently travelled by public transport corporation buses. Majority of the respondents (56%) were post graduates followed by graduates (34%), research scholars (06%) and others (04%).

Table 5
Summary of demographic profile of the sample participants (study 2)

Variable	% of total respondents	Variable	% of total respondents
Gender		State	
Male	416(66)	Tamil Nadu	427(89)
Female	215(34)	Other State	158(11)
Age		Average use of services	
Below 20	50(08)	Occasionally	123(11)
20 - 25	265(42)	Frequently	228(46)
25 -30	164(26)	Rarely	117(15)
Above 30	278(44)	Always	117(28)
Income		Purpose	
Below 25000	334(53)	work	111(25)
25000-50000	208(33)	Education	64(35)
50000-75000	57(09)	Family Visit	281(32)
Above 75000	32(05)	Leisure	129(08)
Education		Type of bus	
Graduate	353(56)	Deluxe Bus	187(36)
Post Graduate	215(34)	Ultra Deluxe Bus	158(24)
Research Scholar	38(06)	Air Conditioned Bus	135(22)
Others	(04)	Volvo Bus	105(18)

More than half of the respondents belongs to Tamil Nadu (89%) and remaining respondents (11%) were from other state and travelled in Tamil Nadu state transport corporation buses. Almost 35% of respondents reported traveling for the educational purposes. Majority of the respondents (36%) travelled by deluxe buses followed by 24% ultra-deluxe buses, 22% air conditioned buses and 18% Volvo buses.

Construct measurement

Service quality

Researcher has conducted study1 to refine the service quality measure in the context of public transport corporation by adapting the SERVQUAL scale (Parasuraman et al., 1988) and also transport service quality dimensions were taken into consideration based on previous literature (Wen et al., 2005). The scale was anchored between 1= strongly disagree to 7 = strongly agree. The scale comprised of 31 items in five dimensions namely - bus services, bus stand services, reliability, empathy and staff behaviour. All the items were positive and the internal consistency of the scale was established, Cronbach's alpha values were highly satisfactory (values range from .77 to .91).

Customer Satisfaction

Customer Satisfaction (four items) measures were adopted from Brady and Cronin (2001). In each case, 10-point bipolar scales (eg. happy/unhappy) were employed. Since the satisfaction is primarily an affective construct (Oliver, 1993) the selected adjective pairs were emotive in nature. The reliability of the scale was established through Cronbach's alpha was found to be α=.91.

Corporate Image

Corporate Image (four items) measures were adopted from Brady and Cronin (2001), each item was measured by using a 10-point semantic differential response format. Respondents were asked to provide a relative evaluation of the transport corporation on these items after reading the following instructions: ‘‘considering any experiences you may have had with other buses; what you may have heard from friends and colleagues about their experiences with various buses; what you may have heard about bus services from the media, please evaluate XYZ transport corporation relative to other buses.’’ An example item reads as follows: ‘‘Compared to other buses, XYZ buses are: poor (1)—excellent (10).’’ The reliability of the scale was established through Cronbach’s alpha and is found to be α=.91.

Customer trust

The scale used to measure customer trust (three item) was based on the scale proposed by Doney and Cannon (1997) and Wen et al. (2005) with subsequent modification. The scale was anchored between 1= strongly disagree to 7 = strongly agree. All the three items were positive and the internal consistency of the scale was established through Cronbach’s alpha which was found to be α=.86.

Perceived value

Perceived Value (three items) measures were adopted from Fornell, Johnson, Anderson, Cha, and Bryant (1996). The scale was anchored between 1= Much worse to 7 = Much better. Each item reflected perceived value relative to the focal buses of competitors. All the three items were positive and the internal consistency of the scale was established through Cronbach’s alpha which was found to be α=.85.

Attitudinal loyalty

Attitudinal loyalty (four items) was measured using behavioural intention of the respondents (Brady & Cronin, 2001). The scale was anchored between 1= very unlikely to 7 = very likely. All four items were positive and the internal consistency of the scale was established through Cronbach's alpha which was found to be α=.77.

Data analysis

The study analysed data from the study-2 using descriptive and inferential statistical procedures using SPSS 21.0 and Smart PLS-3 softwares. A reoccurring issue in data analysis of Likert or semantic differential response scales is the appropriateness of certain statistical techniques. DeVellis (2003) pointed out that data collected by Likert-type scales might be considered ordinal by some researchers; yet, also stated that a wealth of accumulated experience and prevailing viewpoints supported applying interval-based analytic methods to Likert scales (Brown & Swartz, 1989; Hampton, 1993; Parasuraman et al., 1988; Schwantz, 1996). However, according to DeVellis (2003), a majority of behavioural researchers subscribed to Nunnally (1978) suggestion that "it is permissible to treat most of the measurement methods in psychology and other behavioural sciences as leading to interval scales," and argued that "no harm is done in most studies in the behavioural sciences by employing methods of mathematical and statistical analysis which take intervals seriously". Data analysis was performed in three stages. In first stage, the integrated theoretical model on attitudinal loyalty was tested using PLS-SEM. Second stage comprised the validation of service quality as reflective-formative type construct and in the final stage, unobserved heterogeneity was discovered using FIMIX segmentation algorithm. The PLS-SEM approach is a better approach to accommodate formative

constructs. In this study, researcher has operationalized the service quality as reflective-formative higher-order construct, (Parasuraman et al., 2005). For testing the reflective-formative hierarchical latent variables, the repeated indicator approach with mode B and path weighting scheme was used. This approach is superior to other approaches, less biased, and therefore, more accurate parameter estimates and a more reliable higher-order construct score (Becker et al., 2012, p. 376).

In the present research, the study has tried to discover the unobserved heterogeneity in samples collected from the bus passengers (Becker, Rai, Ringle, & Völckner, 2013). This objective can be obtained using FIMIX. This feature is available in PLS-SEM based software's like SmartPLS. Finally the study attempts to perform importance performance analysis for the constructs tested in the theoretical model. This feature is also available with PLS-SEM based software like SmartPLS. For exploratory theory development, PLS-SEM is preferred instead of CB-SEM, because CB-SEM is used for confirming the model (David Gefen, Straub, & Rigdon, 2011). This research work intends to expand the theory using integrated model testing and parallel mediation.

Assessment of reflective-formative hierarchical model

The reflective-formative type indicates (formative) relationships between the Lower Order construct (LOC) and Higher Order Constructs (HOC), whereby each construct is measured by reflective indicators. Higher order construct is automatically to be formative construct to play a double explanation comprises of reflective and formative measurement model is structural model. The HOC has a measurement model with the same orientation (i.e., reflective or formative) as in the LOCs. To establish the HOC's measurement model, researchers usually assign all the indicators from the LOCs to the HOC in the form of a

repeated indicators approach. While the repeated indicators approach is easy to implement, it warrants attention in two respects. First, the number of indicators should be similar across the LOCs; otherwise, the relationships between the HOC and LOCs may be significantly biased by the inequality of the number of indicators per LOC (Becker et al., 2012). The different criterion for assessing formative construct is summarized in exhibit Table 6:

Table 6

Summary of the test criteria for formative construct

Purpose	Test criteria	Heuristics applied	Explanation
Indicator Validity	Indicator weight	Outer weight is significant and higher than .50. path coefficient (estimation) should be greater than .10 or .20 (Chin, 1998)	The reflective measurement model should be achieve their relevance.
Indicator Validity	Variance Inflaction Factor (VIF)	Should be higher than 0.20 but lower than 5.0. Otherwise, remove indicator, emerging in single index, or create higher order construct (Fornell & Larcker, 1981; Ringle, Sarstedt, Schlittgen, & Taylor, 2013)	Indicates how much of an indicators variance explained by other influences in a model.
Construct Validity	Inter-construct Correlations	Below .85 indicates that the constructs is differ sufficient from one another (Jarvis et al., 2003)	The difference sufficient provide an importance construct.

Assessment of measurement model reliability and validity

Assessment of reflective measurement models includes composite reliability to evaluate internal consistency, individual indicator reliability, and average variance extracted (AVE) to evaluate convergent validity. In addition, the Fornell-Larcker criterion and cross loadings were used to assess discriminant validity (Bagozzi & Yi, 1988; Chin, 1998; David Gefen & Straub, 2005). These tests are typically conducted by means of specific criteria and associated heuristics. The test criteria and their associated heuristics used to assess the quality of the measurement model in this study are summarized in Table 7.

Table 7

Summary of the test criteria for measurement model assessment

Purpose of evaluation	Test criteria	Heuristics applied	Explanation
Item liability	Item Loadings (λ) Target Constructs	Item Loadings of 0 70 or higher are recommended widely, For exploratory models or new measurement scales, a threshold value of 0 60 can be used (Bagozzi & Yi, 1988; Nunnally, 1978)	The item loadings on their target constructs represent the strength of substantive association between items and their constructs
Convergent Validity	Communality Index or Average Variance Extracted (AVE) for a Construct	Value of Communality Index or AVE should be greater than .50 (Chin, 1998; Fornell & Larcker, 1981)	Communality Index or AVE represents a measure of the proportion of variance captured by a construct from its indicators AVE of .50 or higher implies that a latent construct can account for at least 50 percent of the variance in the items
	Composite Reliability (CR)	Value of composite reliability should be greater than .60 (Bagozzi & Yi, 1988), or according to some researchers, it should be greater than .70 (Fornell & Larcker, 1981)	Composite reliability is a measure of internal consistency reliability of a construct as compared with other constructs in the model
	Cronbach's Alpha (α)	Value of Cronbach's alpha should exceed 0 70 (Chin, 1998; Cronbach, 1951; David Gefen & Straub, 2005; Nunnally, 1978)	Cronbach's alpha also measures the internal consistency reliability of a construct but only on the basis of a single construct, i.e. it is not a relative index like composite reliability
Discriminant Validity	Inter correlation among constructs cross tabulated with square roots of AVE	The square root of AVE should exceed the inter-correlations of a construct with other constructs in the model (Chin, 1998; Fornell & Larcker, 1981; David Gefen & Straub, 2005)	A construct should have discernible as a valid individual component within the overall model
	Item Cross-Loadings	Item Correlations with Target Construct should De higher as compared to its correlations with other constructs in the model (Chin, 1998)	Indicators that are meant to measure their target construct should be more strongly associated with them as compared to other constructs in the model

Note: AVE= Average variance extracted

Assessment of the structural model

In order to estimate the structural model, this study used a bootstrapping procedure to assess the significance of the path loading in the structural model (provided as t values). Bootstrap methods are nonparametric procedures, which are drawn from the original sample with replacement (e.g., 10,000). Replacement means that each time as an observation is drawn at random from the sampling population, it is returned to the sampling population before the next observation is drawn (i.e., the population from which the observations are drawn always contains all the same elements). The number of bootstrap samples must be larger than the number of valid observations in the original data set but should be higher; generally, 5,000 bootstrap samples are recommended (Hair et al., 2013). As a re-sampling technique that is meant to provide stable estimates for model parameters, bootstrapping is often preferred over other techniques such as jack-knifing (Efron & Tibshirani, 1997). Furthermore, as opposed to traditional t-tests, bootstrapping procedures allow the testing of the significance of parameter estimates from data which are not assumed to be multivariate normal (Chin, 2001; Fornell & Barclay, 1983). In addition to bootstrapping, the *blindfolding* procedure was used to generate cross validated construct redundancy that can help ascertain the quality of measurement blocks and structural equations, and subsequently helps to establish the *predictive relevance* of the structural model (Chin, 1998; Tenenhaus, Vinzi, Chatelin, & Lauro, 2005). In the context of this study, the cross-validated redundancy indices were used to calculate the *Stone-Geisser* Q^2 *coefficient* allowing the study to ascertain how well the observed values of manifest variables can be reconstructed from the model parameters (Chin, 1998; Tenenhaus et al., 2005).

Table 8

Summary of the test criteria for measurement model assessment

Purpose of evaluation	Test criteria	Heuristics applied	Explanation
Nomological Validity	Model Fit/ Predictability Variance Explained (R^2) for all constructs in the model	No specific heuristics available Value needs to be interpreted in comparison with other similar studies or norms in the discipline (David Gefen & Straub, 2005)	R^2 value for an endogenous variable represents the proportion of its variance that can be explained by the predictors in the model
	Path Validity Coefficients Significance (p values) and Magnitude (β) of all inner model paths	Inner model paths should be significant at $p < .05$ level to provide support for propositions in the theoretical model.	A significant path represents that an association between two latent variables was not a chance happening.
		The paths can also be interpreted relative to one another using the magnitude of relationship as represented by low or high coefficient values (β)	Paths with higher coefficients represent stronger associations between variables
Effect Size	Predictability Effect Size Effect Size (f^2) for criterion variables based on the exclusion of a predictor variable from the model	Predictor variables should ideally have a large or medium effect	f^2 value between a predictor and a criterion variable represents the effect of the predictor on the criterion variable Higher values imply that greater importance
		The following scheme can be used to determine effect sizes Small Effect .02 , Medium Effect .15, Large Effect .35 (Chin, 1998)	
Predictive Relevance	Predictive Relevance Stone-Geisser (Q^2) for all constructs in the model	Value of Q^2 should be greater than zero (Chin, 1998; Tenenhaus et al., 2005)	Q^2 value represents how well the observed values of manifest variables can be reconstructed from the model parameters

Analogous to the variance explained coefficient of determination (R^2), values of Q^2 need to be observed for each endogenous variable in the model. The test criteria and their associated heuristics used to assess the quality and relevance of the structural model in this study are summarized in Table 8.

Unobserved heterogeneity using FIMIX-PLS

In the present research, the study has tried to discover the unobserved heterogeneity in samples collected from the bus passengers (Becker et al., 2013). This objective can be obtained using FIMIX. This feature is available in PLS-SEM based software's like SmartPLS. Finally the study attempts to perform importance performance analysis for the constructs tested in the theoretical model. This feature is also available with PLS-SEM based software like Smart PLS. For exploratory theory development, PLS-SEM is preferred instead of CB-SEM, because CB-SEM is used for confirming the model (David Gefen et al., 2011). This research work intends to expand the theory using integrated model testing and parallel mediation.

A review conducted by Sarstedt (2008) suggests that FIMIX is one of the techniques to account for unobserved heterogeneity in the theoretical model. A major benefit of this method is that it does not require a priori knowledge or assumptions regarding segments, whereas in cluster analysis and neural networks it requires a priori knowledge. A simulation study conducted by Sarstedt and Ringle (2010) suggests that FIMIX performs relatively better than the other technique and recommended it to capture unobserved heterogeneity in the population.

The algorithm does not require a priori classifications of the population, although the number of segments *k* should be given in the PLS-SEM analysis. Thereby, iteratively *k* segments were derived and then based on the different fit indices, the final model would

be selected. The fit indices are Akaike information criterion (AIC), Bayesian information criterion (BIC), Consistent AIC (CAIC), lnl, Normed fit index (NFI) and normed entropy values (EN) (Sarstedt, Schwaiger, & Ringle, 2015). FIMIX analysis proceeded with the following steps: (1) Conducting a standard PLS-SEM analysis, (2) FIMIX-PLS analysis with 2 to *k* segments, (3) Identification of appropriate number of segments (AIC, BIC, CAIC, lnL, NFI and EN), (4) Partition of data sets into *k* segments using membership probabilities and (5) Validation by PLS-SEM. In FIMIX-PLS identifying an explanatory variable is tricky. This can be identified using an ex post analysis. There are numerous techniques available to identify the explanatory variable and one such technique is Chi-squared Automatic Interaction Detector (CHAID) and Exhaustive CHAID (Kass, 1980)

This chapter contains a description of the methods and statistical techniques that were used to ensure the reliability and validity of the instrument. This chapter incorporated an account of the methodology and procedures that were used in conducting the analysis of the data for the study. Finally, the justification and rationale for the statistical analysis procedure used to test the research questions were discussed in detail.

CHAPTER IV
RESULTS

CHAPTER IV

RESULTS

This chapter consists of three sections; the first section presents the adaptation of the modified SERVQUAL scale, the second section presents the development of measurement and structural models with parallel mediation analysis, and the third section presents the profiling unobserved heterogeneity in the research model.

In the first section, the adaptation of the modified SERVQUAL scale procedure is explained using study-1 samples. Initially, six dimensions of service quality (bus services, bus stand services, reliability, empathy, staff behaviour and ticketing) in the context of a Public Bus Transport Corporation were identified using Principle Component Analysis (PCA). Subsequently, the Confirmatory Factor Analysis (CFA) was performed to further validate service quality dimensions. In the process, the ticketing dimension is dropped, due to low factor loadings. Finally, the applicability of the modified SERVQUAL scale was tested using weighted and un-weighted gap scores.

In the second and third sections, analyses were performed using samples collected from study2. The second section assesses measurement (outer) and structural (inner) model using PLS-SEM (Hair et al., 2013). The mediation effect (indirect effect) of the research model is tested using PROCESS macro in SPSS (Hayes, 2013).

Finally, section three describes the unobserved heterogeneity in the research model using Finite mixture partial least squares (FIMIX) approach to investigate the bus travellers' perception and segmented the travellers on the basis of socio economic profiles (Ringle et al., 2013). The post hoc analysis performed using Chi-squared Automatic Interaction Detector (CHAID) to identify the explanatory variables in the homogeneous group without a priori information of group characteristics (Crone, Lessmann, & Stahlbock, 2006).

SECTION 1

Adaptation of modified SERVQUAL scale

This section presents the adaptation process of the modified SERVQUAL scale in a public bus transportation context. Scale adaptation refers to the addition or deletion of items based on their supposed suitability for a specific research context. Item suitability is typically asserted a priori, based on face validity, or exploratory research (Finn & Kayande, 2004). The procedure for the adaptation of the modified SERVQUAL scale follows accepted scale development procedures found in marketing and psychology literatures (Churchill, 1979; Gerbing & Anderson, 1988; Hinkin, 1998; Voss, Eric Spangenberg, & Grohmann, 2003; Walsh & Beatty, 2007). After the adaptation of the modified SERVQUAL scale, study purified the measures using coefficient alpha, communalities, and item-to-total correlations through pilot tests using 120 students as participants. Using the final set of items from the pilot tests, study surveyed 585 passengers who used the long-distance buses of the Tamil Nadu State Transport Corporation. Psychometric properties of measures (validity and reliability) were also summarized and explained, based on the statistical results. Finally, Gap analysis and multiple regression analysis were conducted to test the importance and prediction level of five extracted factors on the overall service quality score.

Adaptation process

Domain specification

The first step in the procedure requires specification of the construct. That is, to clearly define and outline the construct to be measured. A potential component of the service quality construct was initially identified by conducting a literature review (see chapter two). As a result of the literature review, the following definition of service quality is constructed: Service quality is a measure of a customer's evaluation of a service in five

dimensions; reliability, responsiveness, assurance, empathy, and tangibles (Parasuraman et al., 1994). The present study defines service quality as the customer's evaluation of the standard of the services received, bus stand services, bus services, staff behaviour, reliability and empathy.

Item generation

First, a pool of scale items were drawn from the literature review, and through conducting focus groups, interviews, and open-ended surveys. The service quality and bus transportation related studies were reviewed critically. This review generated 125 items that were included in the initial item pool. For the qualitative study, in-depth interviews were conducted with 10 passengers and four drivers and conductors. The blue colour drivers and conductors participated in this study. Passengers who travelled in the long distance buses of the Tamil Nadu State Transport Corporation participated in the interview. After the interviews were conducted, the interviews were transcribed and a content analysis was conducted. Based on this, fifteen new items were identified and added to the item pool. With the 125 items that were generated through past literature and with the inclusion of 15 items generated from the qualitative study, a total of 130 items were included in the item's pool. The study and supervisor reviewed the full list of items and eliminated those that could not be classified as adjectives, as well as redundant statements. A total of 90 statements were retained forming a scale that contained 130 items.

Determine the format for measurement

The service quality scale used a Likert format with seven response categories anchored by "strongly disagree" to "strongly agree". A neutral point ("neither agree nor disagree") was included to allow respondent equivocation (Sudman, Bradburn, & Schwarz, 1995).

The initial item pool reviewed by experts

A review of the initial item pool was conducted in two stages by two expert panels. The first expert panel comprised two professors who researched service quality and service marketing. They were asked to review whether each item clearly represented the construct it intends to measure. The second expert panel comprised of eight research scholars who work in the service quality domain. Each judge was provided with a definition of transparency and requested to rate each scale item as “clearly representative," or “somewhat representative," or “not representative” (Kulviwat, Bruner Ii, Kumar, Nasco, & Clark, 2007; Walsh & Beatty, 2007). A scale item was either deleted or modified, if it was not consistently rated “clearly representative." There were several cases where a scale item was rated by half of the judges as “clearly representative” and by the other half of the judges as “somewhat representative." Specifically, these experts ensured that the wording and flow of the items were free from biasness. Their suggestions were considered, and appropriate corrections were made to the scale items before proceeding further.

Inclusion of face validity items

Face validity, also referred to as construct validity, concerns the degree to which a variable is theoretically related to a specific construct being measured (DeVellis, 2012). This step ensures that each measurement item clearly reflected the construct being examined. In addition, these validation items can provide support for validity claims within the scale. In this study, the inclusion of relevant statements from previous scales served as validation items. Rather than including separate validation items, prior items were included as they served to measure similar relationships (DeVellis, 2012).

Preliminary analysis of the service quality scale

Questionnaire development

A questionnaire was constructed to test the actual scale. The final questionnaire contained 68 service quality items. Each item was evaluated using a seven-point Likert scale ranging from “strongly disagree” to “strongly agree." Single item scale is used to measure overall service quality using the seven-point Likert scale ranging from “strongly disagree” to “strongly agree." The second part of the questionnaire reflected respondents’ demographic information (sex, age, education, family income, and travel purpose).

Data cleaning and purification process

Non-response to the questionnaire surveys may potentially results in biasness, as those who responded may differ in some systematic way from the one who did not responded. Examination of the data suggested that non-response bias was not present in the data set. Fifty five (55) respondents were removed as they missed some data in the questionnaire, and 30 responses were deleted as they did not answer the questions accurately or did not read the items carefully.

Item analysis

An individual item analysis (Table 9) of the scale showed that the expectation items had a mean scores ranging from 5.42 for item E11, which says - “Special attention is given to the passengers from other cities, states, etc." to 5.98 for item E13, which says - “Special care is taken for senior citizens & physically challenged persons." Item E23 says - “Bus stop toilets are well maintained” had the largest standard deviation of 1.75. The item to total scale (Pearson) correlations for the expectations items ranged from .54 to .81. Item E1, which says - “Ticket office is located at an easily accessible place” had the lowest correlation coefficient of .54

Table 9

Summary of item-total correlations, means and standard deviations of expectation scale

Expectation Items		Item-total Correlation	M	SD
Ticket booking				
E1	Ticket office is located at an accessible place	.54	5.80	1.44
E2	I can book tickets for my journey without difficulty	.57	5.87	1.47
E3	Information given at the reservation counters is understandable	.58	5.70	1.49
E4	Employees of the ticket office are responsive	.63	5.75	1.49
Bus services				
E5	Buses are in good condition	.74	5.88	1.56
E6	The interiors of the buses are clean & hygienic	.72	5.88	1.56
E7	Buses have adequate lighting facilities inside	.65	5.59	1.38
E8	Bus windows are in good condition	.77	5.70	1.50
E9	Bus engine is smooth and doesn't make much noise	.69	5.67	1.50
E10	Buses have comfortable and spacious seats	.74	5.82	1.46
Empathy				
E11	Special attention is given to passengers from other cities, states, etc.	.61	5.42	1.67
E12	Adequate response is provided in emergencies	.73	5.88	1.45
E13	Special care is provided for senior citizens & physically challenged persons	.75	5.98	1.47
E14	Special care is provided for women & children	.77	5.78	1.48
Reliability				
E15	Buses depart on time	.76	5.75	1.50
E16	Buses reach the destinations on time	.79	5.81	1.50
E17	The emergency exits are visually appealing in buses	.71	5.74	1.57
E18	Buses have adequate safety/security measures	.77	5.91	1.50
E19	Buses travel at a normal speed	.59	5.53	1.51
Bus stand services				
E20	Infrastructure/ Facilities are well maintained at bus stops	.80	5.64	1.60
E21	Bus stops have adequate shelter and chairs	.78	5.65	1.48
E22	Bus stops have adequate facilities (toilets, water, parking etc.)	.79	5.74	1.63
E23	Bus stops toilets are well maintained	.78	5.76	1.75
E24	Bus stops have adequate facilities for food and beverages	.71	5.62	1.51
E25	Bus stops have adequate safety/ security measures (Video monitors, security personnel, etc.)	.74	5.61	1.57
Staff behaviour				
E26	The staff satisfy passengers' requests the first time	.76	5.56	1.49
E27	The staff are willing to help passengers	.81	5.70	1.44
E28	The staff answer passenger queries politely	.81	5.72	1.42
E29	The staff are always polite	.76	5.67	1.52
E30	The staff understand passengers' needs	.77	5.65	1.45
E31	The staff behaviour is courteous	.75	5.68	1.39

Table 10

Summary of item-total correlations, means and standard deviations of perception scale

Perception Items		Item-total Correlation	M	SD
Ticket booking				
P1	Ticket office is located at an accessible place	.34	4.40	1.67
P2	I can book tickets for my journey without difficulty	.33	4.41	1.76
P3	Information given at the reservation counters is understandable	.42	4.25	1.75
P4	Employees of the ticket offices are responsive	.51	3.99	1.73
Bus services				
P5	Buses are in good condition	.58	3.67	1.75
P6	The interiors of the buses are clean & hygienic	.56	3.39	1.74
P7	Buses have adequate lighting facilities inside	.52	4.41	1.56
P8	Bus windows are in good condition	.60	3.59	1.72
P9	Bus engine is smooth and doesn't make much noise	.58	3.66	1.63
P10	Buses have comfortable and spacious seats	.60	3.72	1.67
Empathy				
P11	Special attention is given to passengers from other cities, states, etc.	.54	3.54	1.79
P12	Adequate care is provided during emergencies	.56	3.88	1.75
P13	Special care is provided for senior citizens & physically challenged persons	.54	3.96	1.84
P14	Special care is provided for women & children	.55	4.06	1.81
Reliability				
P15	Buses depart on time	.53	3.87	1.80
P16	Buses reach destinations on time	.56	3.79	1.79
P17	The emergency exits are visually appealing in buses	.52	3.66	1.83
P18	Buses have adequate safety/ security measures	.57	3.50	1.68
P19	Buses travel at a normal speed	.48	4.22	1.65
Bus stand services				
P20	Infrastructure/ Facilities are well maintained at bus stops	.62	3.07	1.71
P21	Bus stops have adequate shelter and chairs	.56	3.56	1.76
P22	Bus stops have adequate facilities (toilets, water, parking etc.)	.61	3.11	1.84
P23	Bus stops toilets are well maintained	.63	2.52	1.76
P24	Bus stops have adequate facilities for food and beverages	.49	3.88	1.76
P25	Bus stops have adequate safety/ security measures (Video monitors, security personnel, etc.)	.56	3.15	1.75
Staff behaviour				
P26	The staff satisfy passengers' requests right at the first time	.67	3.61	1.63
P27	The staff are willing to help passengers	.68	3.65	1.62
P28	The staff answer the passenger queries politely	.65	3.65	1.64
P29	The staff are always polite	.65	3.33	1.67
P30	The staff understand passengers' needs	.70	3.57	1.66
P31	The staff behaviour is courteous	.66	3.63	1.66

An individual item analysis (Table 10) of the scale showed that the perception items had mean scores ranged from 2.52 for item P23, which says "Bus stops toilets are well maintained" to 4.41 for item P2, which says - "I can book tickets for my journey without any difficulty" and item P7, i.e., "Buses have adequate lighting facilities inside." Item P13, i.e., "Special care is provided for senior citizens & physically challenged persons" and item P22, i.e., "Bus stops have adequate facilities (toilets, water, parking, etc.)" had the largest standard deviation of 1.84. The item to total scale (Pearson) correlations for perceptions items ranged from .33 to .70. Item P2, which says - "I can book tickets for my journey without any difficulty" had the lowest correlation coefficient of .33.

Sample adequacy

The sample consisted of 585 passengers who travelled in the long-distance buses of the Tamil Nadu State Transport Corporation. (Nunnally, 1978), as cited by DeVellis (2003), who suggested that 300 individuals is a large and enough sample, but DeVellis (2003) points out that effective scales have been developed with smaller samples. However, he advises that the study must ensure that sample size is not too small as there are several risks associated with such small sample size, like unstable covariation and "non-representativeness". The other test to check sample appropriateness is the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy statistic, which indicates the proportion of variance in variables that might be due to underlying factors. This index ranges from 0 to 1, reaching 1 when each variable is perfectly predicted without error by the other variables. The KMO value must exceed .50 for both overall fit and each individual variable, and a value above .8 is considered meritorious (Hair et al., 2010). The KMO measure values for expectation and perception scales were .93 and .96 respectively.

Measures of inter-correlation

The inter item correlation analysis was performed on both perception and expectation scales of service quality. The results shown in Tables 13 and 14 reveal that inter correlations of all the items are statistically significant.

Principal component analysis

Similar to the approach of Parasuraman et al., (2005) in their study of developing E-S-QUAL (multiple-item scale for assessing electronic service quality), principal component analysis was used as the extraction method to identify the underlying dimensions in the present study. The underlying dimensions for the set of perception and expectation statements were identified through principal components analyses of the passengers' responses. Each group of variables was analysed using a varimax rotation, with a factor loading of .5 or above. The criterion of an eigenvalue above 1 for each factor was used to determine the initial number of factors to be retained. After examining the scree plot, it was evident that only two factors could be extracted from the data. A series of iterations was then conducted to eliminate items with low factor loadings on all factors or high cross-loadings on two or more factors. The remaining items were considered for factor analysis. This iterative process resulted in the final service quality scale, consisting of 31 items on six dimensions, which study labelled as follows: (1) staff behaviour, (2) bus stand services, (3) bus services, (4) reliability, (5) empathy and (6) ticket booking. The percentage of variance explained by the six factors (see Table 9 & 10) in the expectation and perception scales are 64.4% and 59.6% respectively. The computation of the Cronbach alpha, composite reliability, and AVE (Average Variance Extracted) was performed separately for the six dimensions to ascertain the extent to which items making up each dimension shared a common core.

Table 11

Factor loadings, construct reliability, and convergent validity of the service quality expectation scale

Dimensions and Indicators	Loadings	Alpha	CR	AVE
Staff behaviour		.93	.93	.70
The staff satisfy passengers' requests right at the first time	.65			
The staff are willing to help passengers	.72			
The staff answer passenger queries properly	.74			
The staff are always polite	.72			
The staff understand passengers' needs	.68			
The staff behaviour is courteous	.65			
Bus stand services		.92	.93	.69
Infrastructure/ Facilities are well maintained at bus stops	.58			
Bus stops have adequate shelter and chairs	.66			
Bus stops have adequate facilities (toilets, water, parking etc	.78			
Bus stops toilets are well maintained	.72			
Bus stops have adequate facilities for food and beverages	.63			
Bus stops have adequate safety/ security measures (Video monitors, security personnel, etc.)	.62			
Bus services		.90	.87	.53
Buses are in good condition	.70			
The interiors of the buses are clean & hygienic	.76			
Buses have adequate lighting facilities inside	.67			
Bus windows are in good condition	.71			
Bus engine is smooth and do not make much e noise	.63			
Buses have comfortable and spacious seats	.60			
Reliability		.85	.89	.61
Buses depart on time	.76			
Buses reach destinations on time	.80			
The emergency exits are visually appealing in buses	.59			
Buses have adequate safety/security measures	.56			
Buses travel at a normal speed	.58			
Empathy		.84	.86	.62
Special attention is given to passengers from other cities, states, etc.	.57			
Adequate care is provided during n emergencies	.70			
Special care is provided for senior citizens & physically challenged	.79			
Special care is provided for women & children	.73			
Ticket booking		.78	.78	.50
Ticket office is located at an accessible place	.67			
I can book tickets for my journey without difficulty	.69			
Information given at the reservation counters is understandable	.63			
Employees of the ticket offices are responsive	.65			

Note: CR= Composite Reliability, AVE= Average Variance Extracted

Table 12

Factor loadings, construct reliability, and convergent validity of the service quality perception scale

Dimensions and Indicators	Loadings	Alpha	CR	AVE
Staff behaviour		.89	.91	.64
The staff satisfy passengers' requests right at the first time	.65			
The staff are willing to help passengers	.72			
The staff answer passenger queries properly	.74			
The staff are always polite	.72			
The staff understand passengers' needs	.68			
The staff behaviour is courteous	.65			
Bus stand services		.83	.88	.54
Infrastructure/ Facilities are well maintained at the bus stops	.58			
Bus stops have adequate shelter and chairs	.66			
Bus stops have adequate facilities (toilets, water, parking etc.)	.78			
Bus stops toilets are well maintained	.72			
Bus stops have adequate facilities for food and beverages	.63			
Bus stops have adequate safety/ security measures (Video monitors, security personnel, etc.)	.62			
Bus services		.83	.88	.55
Buses are in good condition	.70			
The interiors of the buses are clean & hygienic	.76			
Buses have adequate lighting facilities inside	.66			
Bus windows are in good condition	.71			
Bus engine is smooth and does not make much noise	.63			
Buses have comfortable and spacious seats	.60			
Reliability		.70	.81	.50
Buses depart on time	.76			
Buses reach destination on time	.80			
The emergency exits are visually appealing in buses	.59			
Buses have adequate safety/ security measures	.56			
Buses travel at a normal speed	.58			
Empathy		.77	.85	.59
Special attention is given to passengers from other cities, states, etc.	.57			
Adequate care is provided in emergencies	.70			
Special care is provided for senior citizens & physically challenged	.79			
Special care is provided for women & children	.73			
Ticket booking		.64	.79	.51
Ticket office is located at an accessible place	.67			
I can book tickets for my journey without difficulty	.68			
Information given at the reservation counters is understandable	.63			
Employees of the ticket offices are responsive	.65			

Note: CR= Composite Reliability, AVE= Average Variance Extracted

Table 13 *Correlation matrix of the perception scales of service quality indicators*

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30
Q1																														
Q2	.34																													
Q3	.24	.27																												
Q4	.30	.29	.42																											
Q5	.22	.22	.28	.37																										
Q6	.19	.22	.24	.31	.62																									
Q7	.17	.16	.22	.24	.47	.43																								
Q8	.20	.15	.23	.30	.47	.55	.46																							
Q9	.18	.14	.23	.28	.41	.44	.42	.55																						
Q10	.15	.20	.24	.24	.41	.39	.39	.42	.43																					
Q11	.14	.11	.18	.18	.22	.24	.22	.28	.30	.28																				
Q12	.12	.13	.18	.18	.24	.20	.25	.27	.28	.33	.39																			
Q13	.08	.10	.16	.19	.20	.18	.24	.23	.23	.30	.39	.53																		
Q14	.15	.12	.17	.24	.24	.18	.19	.23	.24	.27	.37	.44	.60																	
Q15	.20	.18	.22	.24	.31	.28	.24	.25	.27	.29	.24	.26	.24	.25																
Q16	.19	.17	.18	.21	.34	.31	.30	.33	.33	.32	.24	.25	.23	.23	.65															
Q17	.13	.14	.14	.24	.23	.21	.22	.30	.26	.29	.22	.40	.35	.31	.26	.27														
Q18	.20	.18	.22	.27	.28	.30	.23	.37	.36	.34	.36	.34	.29	.29	.28	.34	.29													
Q19	.12	.13	.12	.20	.26	.22	.15	.24	.29	.30	.33	.30	.31	.30	.26	.30	.25	.32												
Q20	.15	.10	.23	.24	.27	.27	.26	.34	.31	.32	.30	.27	.27	.28	.26	.31	.32	.34	.26											
Q21	.07	.10	.11	.16	.21	.22	.23	.31	.28	.28	.27	.27	.27	.23	.18	.22	.31	.27	.25	.47										
Q22	.12	.15	.19	.24	.25	.28	.24	.29	.33	.33	.29	.27	.28	.28	.23	.27	.25	.30	.24	.51	.54									
Q23	.14	.09	.12	.24	.28	.34	.19	.34	.34	.31	.34	.28	.31	.28	.25	.32	.24	.38	.27	.48	.48	.61								
Q24	.10	.11	.16	.25	.22	.21	.21	.21	.19	.24	.17	.20	.14	.23	.26	.26	.16	.25	.17	.31	.34	.41	.38							
Q25	.10	.10	.17	.21	.21	.21	.22	.19	.27	.22	.29	.30	.24	.25	.20	.25	.31	.29	.19	.42	.40	.47	.49	.41						
Q26	.14	.13	.25	.25	.28	.30	.25	.33	.29	.35	.30	.35	.34	.34	.32	.34	.34	.28	.23	.41	.37	.41	.43	.38	.46					
Q27	.16	.15	.21	.30	.30	.29	.31	.32	.29	.38	.30	.36	.34	.39	.30	.30	.34	.27	.23	.42	.37	.39	.40	.33	.41	.66				
Q28	.19	.15	.28	.34	.27	.24	.33	.31	.28	.35	.32	.34	.30	.32	.28	.31	.30	.29	.26	.38	.35	.30	.35	.35	.40	.55	.61			
Q29	.20	.16	.20	.29	.30	.34	.29	.36	.31	.31	.36	.29	.31	.33	.28	.28	.29	.25	.26	.39	.35	.33	.41	.24	.38	.51	.56	.59		
Q30	.15	.16	.21	.29	.31	.29	.32	.34	.35	.39	.40	.34	.37	.33	.29	.34	.30	.33	.30	.43	.43	.40	.41	.33	.37	.53	.60	.57	.63	
Q31	.14	.12	.26	.33	.34	.33	.34	.32	.29	.37	.35	.33	.33	.33	.36	.33	.30	.31	.28	.38	.32	.36	.39	.33	.31	.50	.50	.52	.57	.62

Note: Q1, Q2….Q31= Perception scale items, All inter item correlation values are significant (p<.001)

Table 14 *Correlation matrix of the expectation scales of service quality indicators*

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30
Q1																														
Q2	.50																													
Q3	.40	.50																												
Q4	.44	.46	.49																											
Q5	.43	.45	.46	.60																										
Q6	.37	.43	.45	.60	.72																									
Q7	.35	.39	.41	.46	.52	.53																								
Q8	.39	.40	.44	.53	.64	.71	.57																							
Q9	.33	.36	.38	.46	.59	.59	.56	.65																						
Q10	.38	.42	.41	.48	.63	.62	.51	.68	.63																					
Q11	.29	.31	.34	.36	.39	.36	.32	.42	.36	.39																				
Q12	.30	.39	.38	.50	.56	.49	.46	.53	.48	.53	.50																			
Q13	.33	.41	.39	.43	.49	.44	.44	.49	.48	.52	.52	.65																		
Q14	.34	.41	.41	.43	.52	.49	.48	.55	.48	.55	.45	.62	.67																	
Q15	.36	.40	.38	.44	.54	.51	.47	.57	.55	.54	.41	.57	.59	.60																
Q16	.37	.43	.44	.44	.57	.52	.47	.55	.49	.54	.41	.59	.61	.65	.75															
Q17	.36	.37	.36	.40	.46	.43	.40	.47	.40	.49	.43	.52	.55	.58	.56	.57														
Q18	.39	.44	.42	.45	.59	.54	.50	.58	.57	.64	.45	.58	.63	.60	.58	.62	.53													
Q19	.28	.28	.35	.31	.34	.40	.40	.45	.40	.42	.40	.37	.44	.43	.40	.40	.38	.47												
Q20	.35	.38	.41	.39	.51	.49	.44	.58	.49	.53	.43	.55	.62	.61	.62	.66	.61	.63	.48											
Q21	.38	.39	.45	.40	.50	.49	.45	.55	.50	.51	.45	.51	.55	.58	.58	.65	.55	.61	.46	.70										
Q22	.35	.40	.40	.45	.49	.53	.43	.58	.46	.53	.42	.50	.56	.59	.60	.65	.53	.60	.41	.69	.70									
Q23	.35	.39	.36	.40	.53	.52	.38	.55	.45	.50	.44	.50	.52	.57	.59	.65	.55	.58	.42	.67	.69	.77								
Q24	.36	.36	.33	.35	.49	.42	.43	.48	.44	.49	.36	.47	.48	.55	.53	.55	.55	.49	.42	.58	.60	.60	.62							
Q25	.37	.32	.34	.35	.49	.46	.41	.52	.47	.46	.40	.48	.56	.59	.57	.58	.56	.57	.36	.62	.63	.62	.63	.61						
Q26	.37	.37	.36	.42	.50	.47	.44	.57	.43	.51	.44	.52	.53	.60	.55	.56	.52	.52	.36	.65	.61	.65	.59	.60	.62					
Q27	.37	.39	.38	.42	.52	.50	.49	.56	.50	.58	.48	.57	.60	.63	.59	.60	.59	.62	.44	.65	.61	.64	.63	.58	.63	.68				
Q28	.41	.44	.44	.44	.56	.52	.49	.56	.49	.50	.49	.57	.61	.62	.59	.63	.56	.57	.46	.66	.63	.59	.63	.55	.60	.64	.73			
Q29	.37	.37	.38	.40	.50	.48	.42	.52	.45	.50	.49	.51	.57	.57	.52	.57	.53	.53	.43	.59	.58	.62	.61	.55	.59	.66	.68	.69		
Q30	.35	.35	.39	.40	.49	.46	.46	.56	.48	.51	.52	.52	.58	.56	.54	.57	.51	.54	.45	.61	.61	.59	.61	.52	.57	.67	.71	.73	.71	
Q31	.37	.39	.40	.37	.48	.45	.44	.52	.44	.49	.46	.53	.56	.57	.53	.58	.52	.47	.43	.59	.58	.57	.56	.56	.59	.62	.66	.68	.71	.75

Note: Q1, Q2….Q31= expectation scale items, All inter item correlation values are significant (p<.001)

Reliability

The most commonly accepted reliability measure is internal consistency reliability using Cronbach's Alpha and composite reliability values. Cronbach's Alpha values are highly satisfactory for service quality expectation (.78 to .93) and perception measures (.64 to .89) exceeding the common threshold of .70 except ticketing dimension (.64) in the perception scale. Constructs' composite reliability is also highly satisfactory for service quality expectation (.78 to .93) and perception measures (.79 to .91), exceeding the common threshold of 0.70. (Roldán & Sánchez-Franco, 2012).

Validity

To achieve the convergent validity, all standardized factor loadings should be greater than .70 and the average variance extracted (AVE) for measures should be greater than .50 (Fornell & Larcker, 1981). In the present study, the standardised factor loadings for expectation scale ranged from .56 to .80 and AVE values ranged between .50 and .70. Similarly, standardised factor loadings for the perception scale ranged from .56 to .80 and AVE values ranged between .50 and .64. Hence, the study established the convergent validity for the latent constructs.

Confirmatory factor analysis (CFA)

The results of the confirmatory factor analysis enable the study to estimate the associations between factors and their measured variables. The hypothesized model was assessed using Amos 21.0. The remaining items, drawn from principal component analysis were subjected to confirmatory factor analysis to further assess the factor structure of service quality scale. Based on this analysis, four items in ticketing, two items in bus stand services, and one item from each bus services, reliability and staff behaviour were deleted due to lower factor loadings. In CFA, reliability and validity were assessed using adjustments for measurement errors (Schumacker & Lomax,

2004). This analysis attempts to define the observed variables with similar variance and covariance characteristics, defining constructs, latent variables, and factors. The dataset in the current study was thus used to populate the observed variables, and an analysis was performed to confirm variables that related to the factors and to establish adjustments for measurement errors. Figure5, depicts the factor model for CFA. There are five factors (Bus services (BS), Empathy (EM), Reliability (RL), Bus stand services (BT) and Staff behaviour (SB)) indicated by medium-sized circles and 22 observed variables indicated by rectangles.

Measurement model fit results

The CFA results indicated (Table 15 and Figure 5) that the measurement model fits the data well (χ^2 = 517.50, p = .00, df = 307, χ^2/df = 1.92, GFI = .95, AGFI = .93, NFI = .93, TLI = .96, CFI = .97, RFI = .92, IFI = .97 and RMSEA = .04). According to L. t. Hu and Bentler (1999) and Hair, Black, Babin, Anderson, and Tatham (2006), results for the CFA analysis suggested a good model fit. Collectively, these findings provided good support for the robustness of both the scale and factor structure.

Table 15

Summary of goodness-of-fit statistics of the measurement model

Model fit indexes	
χ^2	368.47
df	192.00
χ^2/df	1.92
GFI	.95
AGFI	.93
NFI	.93
TLI	.96
CFI	.97
RFI	.92
IFI	.97
RMSEA	.04

Note: χ^2 = Chi square, df = degrees of freedom, χ^2/df = Ratio of chi-square to degrees of freedom, GFI = Goodness of Fit Index, AGFI = Adjusted Goodness of Fit Index, NFI = Normed Fit Index, TLI = Tucker Lewis Index, CFI = Comparative Fit Index, RFI = Relative Fit Index, IFI = Incremental Fit Indices, RMSEA = Root Mean Square Error of Approximation.

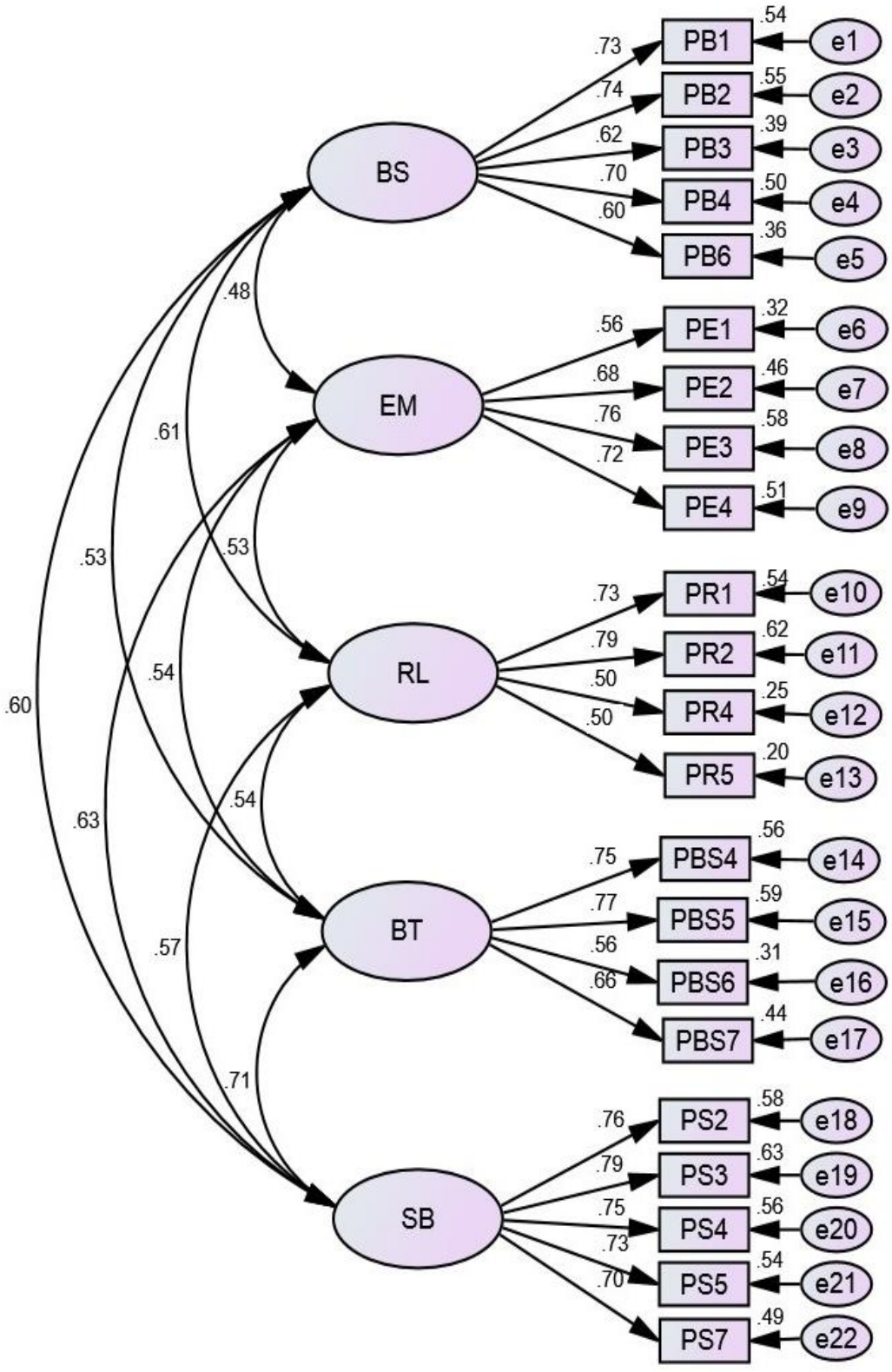

Figure 5 Result of service quality measurement model

Note: BS=bus services, EM= empathy, RL=reliability, BT=bus stand services and SB=staff Behaviour

Reliability and validity assessment

Table 10 presents the CFA results for service quality scale as well as the coefficient Cronbach's alpha value for the five dimensions and item loadings from the confirmatory factor analysis. Coefficient alpha value ranges between .70 and .89, and exceeding the conventional minimum values of .70 (Nunnally & Bernstein, 1994) demonstrating high internal consistency and thus the reliability of each dimension.

Discriminant validity

To assess the discriminant validity of the scales, we constrained each of these correlations parameter (one at a time) to unite in the measurement model (leaving other parameters free) and repeated the CFA (Jöreskog, 1971; Parasuraman et al., 1994). In every case, the constrained CFA produced an increase in the chi-square statistic ($\Delta\chi 2$ with 1 df) that was significant at $p < .01$. These results supported the distinctiveness of each scale's component dimensions (Table 16).

Table 16

Pairwise discriminant analyses

Original Model (χ^2_{585}=368.47)	Constrained correlation
Bus services and	
Empathy	366.31
Reliability	363.22
Bus stand services	363.62
Staff behavior	363.93
Empathy and	
Reliability	362.72
Bus stand services	362.71
Staff behavior	362.55
Reliability and	
Bus stand services	362.84
Staff behavior	364.93
Bus stand services and	
Staff behavior	365.55

Table 17
Summary of confirmatory factor analysis results for service quality scale

	Loadings	S.E.	C.R.	p
Bus Services (coefficient alpha = .84)				
PB1	.73	.06	16.18	***
PB2	.74	.06	16.18	***
PB3	.62	.06	13.74	***
PB4	.70	.06	15.39	***
PB6	.60	.06	13.28	***
Empathy (coefficient alpha = .77)				
PE1	.56	.07	11.53	***
PE2	.68	.10	11.53	***
PE3	.76	.11	12.24	***
PE4	.72	.11	11.90	***
Reliability (coefficient alpha = .70)				
PR1	.73	.06	15.15	***
PR2	.79	.07	15.15	***
PR4	.50	.06	10.62	***
PR5	.50	.06	9.44	***
Bus stand services (coefficient alpha = .83)				
PBS4	.75	.06	16.50	***
PBS5	.77	.06	16.50	***
PBS6	.56	.06	12.26	***
PBS7	.67	.06	14.54	***
Staff behaviour (coefficient alpha = .89)				
PS2	.76	.05	19.14	***
PS3	.79	.05	19.14	***
PS4	.75	.06	18.06	***
PS5	.73	.06	17.63	***
PS7	.70	.06	16.66	***

Note: ***Probability level of 0.001, S.E = Standard Error, CR = Critical Ratio.

In addition, the global measure of the overall quality of transportation was rated by respondents on a 10-point scale (1 = *poor,* 10 = *excellent*). To assess the predictive validity of the service quality scales, study correlated the global measures with summed dimensional scores for each of the five dimensions of modified SERVQUAL. This analysis revealed positive and statistically significant ($p < .01$) correlations in all instances. The correlations of the modified SERVQUAL dimensions with the overall measures ranged from .52 to .65. These results were indicative of the predictive validity of each scale's dimensions. The model fit, reliability and validity tests show evidences that the measurement model of service quality is considerably fit and the variables are significant measures of the respective factors.

Comparison of factor loadings of the PCA and CFA of service quality dimensions

Initially, the modified SERVQUAL consists of 31 items in six dimensions (bus services, bus stand services, reliability, empathy, staff behaviour and ticketing). Four items in ticketing, two items in bus stand services, one item from each of bus services, reliability and two items from staff behaviour in bus stand services were discarded during the process of validation through CFA. The final service quality scale consists of 22 items grouped into five dimensions. The comparison of factor loadings of principal component analysis and confirmatory factor analysis of the service quality are shown in Table 18**.** It can be seen that except a few items, all items were explained by these factors.

Table 18

Comparison of factor loadings of the PCA and CFA of service quality dimensions

Dimensions and indicators	PCA	CFA
Staff behaviour		
The staff are willing to help passengers	.72	.76
The staff answer the passenger queries politely	.74	.79
The staff are always polite	.72	.75
The staff understand passengers' needs	.68	.73
The staff behaviour is courteous	.65	.70
Bus stand services		
Bus stops have adequate facilities (toilets, water, parking etc.)	.78	.75
Bus stops toilets are well maintained	.72	.77
Bus stops have adequate facilities for food and beverages	.63	.56
Bus stops have adequate safety/security measures (Video monitors, security personnel, etc.)	.62	.67
Bus services		
Buses are in good condition	.70	.73
The interiors of the buses are clean & hygienic	.76	.74
Buses have adequate lighting facilities inside	.66	.62
Bus windows are in good condition	.71	.70
Buses have comfortable and spacious seats	.60	.60
Reliability		
Buses depart on time	.76	.73
Buses reach destination on time	.80	.79
Buses have adequate safety/security measures	.56	.50
Buses travel at a normal speed	.58	.50
Empathy		
Special attention is given to passengers from other cities, states, etc.	.57	.56
Adequate care is provided during emergencies	.70	.68
Special care is provided for senior citizens & physically challenged	.79	.76
Special care is provided for women & children	.73	.72

Note: PCA =Principal Component Analysis, CFA = Confimatory Factor Analysis

Relationship among service quality dimensions and overall service quality

The Correlation coefficients were carried out to examine the inter relationship among service quality dimensions (Ticketing, Bus services, Empathy, Reliability, Bus stand services and Staff behaviour) and overall service quality, and the results are presented in Table 19.

Table 19

Correlations measures among service quality dimensions and overall service quality

	M	SD	(1)	(3)	(4)	(5)	(6)
(1) Overall service quality	3.83	1.05					
(3) Bus services	3.21	1.07	.42**				
(4) Empathy	2.21	.79	.45**	.43**			
(5) Reliability	2.72	.85	.45**	.56**	.55**		
(6) Bus stand services	2.76	1.11	.45**	.48**	.46**	.52**	
(7) Staff Behaviour	3.06	1.13	.47**	.53**	.55**	.55**	.64**

Note: N=585, *p<.05, **p<.01.

Significant positive correlation was found between overall service quality and ticketing, r (583) = .34, p<.01, bus services r (583) = .42, p<.01, empathy r (583) = .45, p<.01, reliability r (583) = .45, p<.01, bus stand services r (583) = .45, p<.01, and staff behaviour r (583) = .47, p<.01.

Multiple regression analysis

To find out the combined effect of service quality dimensions (Ticketing, Bus services, Empathy, Reliability, Bus stand services and Staff behaviour) as predictors of overall service quality, multiple linear regression analysis was used. The results are presented in Table 20.

Table 20

Summary of the multiple regression analysis for service quality dimensions predicting overall service quality

		B	SEB	β	t	VIF
Bus Services		.01	.01	.10	2.23*	1.76
Empathy		.04	.01	.19	4.29**	1.66
Reliability		.02	.01	.10	2.18*	1.94
Bus Stand Services		.02	.01	.16	3.53**	1.86
Staff behaviour		.02	.01	.11	2.20*	2.16
R^2	.34					
C	1.46					
F(6,579)	48.77**					

Note: B = Unstandardized Beta Coefficients, SEB = Standardized Error of Beta, β = Standardized Beta Coefficients, C= Constant, t = t-values of Beta, VIF= Variance Inflation Factor, Adjusted R^2=.34, N=585, ***p*<.01, **p*<.05,

Table 20 revealed that the combined predictors explained 34% of variance in service quality, R^2 = .34, adjusted R^2 = .34, F (6, 579) = 48.77, p<.01. Ticketing (β=.02, p<.01), Bus Services (β=.01, p<.05), Empathy (β=.04, p<.01), Reliability (β=.02, p<.05), Bus Stand Services (β=.02, p<.01) and Staff behaviour (β=.02, p<.05) were significant predictors for overall service quality. The results of collinearity statistics showed that no collinearity exists between the independent variables in the model. The tolerance values were more than .2 and the VIF values were less than 5. All the independent variables have a statistically significant effect on the assessment of overall service quality.

Gap scores among the service quality dimensions

To calculate the difference in the scores among the 22 statements, the SERVQUAL method was used (Parasuraman et al., 1988). The negative scores indicated the level of passenger's perception for service provided by the transport corporation which does not met their expectations. Table 21 revealed that there were some differences in magnitude of the gap score among the dimensions of service quality i.e., ticket booking, bus

services, empathy, reliability, bus stand services and staff behaviour. The results also showed that none of the items of service quality had a positive gap score. Hence, it is evident that passengers were generally not satisfied with the service provided by the public transport corporation. The service quality dimensions were ranked based on the size of the gap score and priority of service quality. The results are presented in Table 21.

Table 21

Gap score among the service quality dimensions

Dimensions	P		E		Gap	t	Priority
	M	SD	M	SD	(P-E)		
Bus Services	22.38	7.47	34.51	7.37	-12.12	27.12**	3
Empathy	15.44	5.54	23.06	4.98	-7.62	24.07**	5
Reliability	19.06	6.45	28.73	5.98	-9.67	26.02**	4
Bus Stand Services	19.13	7.84	34.02	8.04	-14.90	30.38**	1
Staff Behaviour	21.45	7.90	33.98	7.49	-12.54	26.78**	2

Note: P=perception score, E=expectation score, **p<.001

From Table 21, it is inferred that bigger the gap score, the more serious the service quality shortfall exists from the passenger's viewpoint. The most important dimension was ''bus stand services" (-14.90), the second most important dimension was ''staff behaviour '' (-12.54). Finally, the least important dimension was ''empathy" (-7.62). The un-weighted gap score among the five service quality dimensions indicated that the public transport corporation fell short of the customer's expectation on each dimension. Considering the un-weighted gap score, the service quality dimensions were ranked based on the size of the gap score. The bigger the gap, the more important the dimensions from the passengers' view. Based on the gap score, the service quality dimensions were ranked in the following order: bus stand services, staff behaviour, bus services, reliability and empathy.

Weighted gap score among the Service Quality dimensions

From Table 22, the ‘‘bus stand services’’ dimension had the biggest weighted gap score of -10.65, followed by ‘‘bus services’’ (-9.47), ‘‘staff behaviour’’ (-6.68), ‘‘reliability’’ (-4.66), and “empathy” (-2.86). Table 22 reveals that there was a significant difference in priority or ranking between un-weighted and weighted scores from passenger’s perspective.

Table 22

Weighted gap score among the Service Quality dimensions

Dimensions	p		E		Gap	t	Priority
	M	SD	M	SD	P-E		
Bus Services	15.12	5.09	24.59	4.35	-9.47	33.24**	2
Empathy	10.84	3.90	13.69	2.95	-2.86	13.77**	5
Reliability	12.54	4.32	17.20	3.56	-4.66	19.73**	4
Bus Stand Services	12.67	5.26	23.32	5.53	-10.65	31.97**	1
Staff Behaviour	14.84	5.47	21.52	4.75	-6.68	21.46**	3

Note: P=perception score, E=expectation score, **p<.001

From Table 23, it is observed that there is a difference between weighted and un-weighted Gap scores in ranking the service quality dimensions. The weighted gap score of service quality is a better approach to rank service quality dimensions. To compare passengers’ actual perceptions of service quality with their expectations, the paired t-test was conducted and the results showed a statistically significant difference in all five dimensions as displayed in Table 3. Finally, it can be summarized that passengers’ perception of the public transport corporation service quality did not meet their expectations.

Table 23

Comparison of the weighted and un-weighted gap scores among the six service quality dimensions

Dimension	Weighted Gap Score	Un weighted Gap Score
Bus Services	-9.47	-12.12
Empathy	-2.86	-7.62
Reliability	-4.66	-9.67
Bus Stand Services	-10.65	-14.90
Staff Behaviour	-6.68	-12.54

The highly competitive market conditions in the bus transport sector pressurises public transport corporations to deliver high-quality services. To provide this, public transport corporations must first understand passengers' needs and expectations. Next, they should focus on how to deliver the most convenient service to meet passengers' needs. This study develops a new structure to define public transport corporation's service quality dimensions. The service quality dimensions are almost similar to those presented in earlier studies (Eboli & Mazzulla, 2008; Philip & Hazlett, 1997; Ryus, 2003; Vanniarajan & Alleswari, 2010). The results of Gap analyses showed that passengers' perceptions of the bus transport corporations in India were consistently lower than their expectations. Hence, negative gaps, especially pertaining to "bus stand services", "bus services", and "staff behaviour" were important to consider regarding improving efforts. The bigger the gap, the more serious the level of service quality that needed to be improved, from the customers' point of view. These results provide powerful information for future policymaking due to the fact that once the transport planners know the variables that users value the most they can ensure more efficient strategies for improvement.

SECTION 2

Assessment of Measurement and Structural Models

This section deals with the evaluation of measurement and structural models. Smart PLS 3.0 is used to compute the path model (Ringle et al., 2013), and parameter estimation was conducted based on the path weighting scheme (Henseler, Ringle, & Sinkovics, 2009). The recommendations of Chin (2010). and Hair et al. (2013) were followed for evaluating and resulting the measurement and structural models using PLS-SEM. The mediation effect of the research model was tested using PROCESS macro available with SPSS software (Hayes, 2013). Finally, the important performance matrix (IPMA) was undertaken to identify the extent to which the strength of the relationship between independent and dependent variables can be derived. It is also shown that the benefits factor is a major importance and performance for establishing customer satisfaction and attitudinal loyalty.

Data collection

An on-site survey was conducted at the central bus stand of the state capital on both weekdays and weekends using the purposive sampling technique. This technique was employed, as the population of public transit passengers was not available (Lai & Chen, 2011). Of the 800 questionnaires that were distributed, 631 were returned; that accounted a response rate of 78.88%.

Data analysis

The study has used latent constructs with several measurement items to explain the predictors of the key outcome (Attitudinal loyalty). When the study tests this model, he needs to simultaneously consider the measurement and structural components. For testing this kind of structural model, the study can use covariance based structural equation modelling (CB-SEM) or Partial least squares structural equation modelling

(PLS-SEM), where the study has to simultaneously estimate the factor loadings of the measurement model and path coefficients of the structural model. CB-SEM assumes multivariate normal distributions (Hair, Ringle, & Sarstedt, 2011). But studies in marketing have frequently indicated that loyalty and satisfaction measures are indeed skewed (Peterson & Wilson, 1992) and will not meet the multivariate normality assumptions required by the CB-SEM techniques. Under such conditions, Chin, Peterson, and Brown (2008) advocated the use of PLS structural equation modelling (PLS-SEM) over the traditional CB-SEM approach. As noted by Shah and Goldstein (2006), the average number of latent variables in a CB-SEM is only 4.4, while we have seven latent variables in this model. Chin et al. (2008), advocated the use of PLS-SEM when researchers have to estimate a larger complex model. Also, CB-SEM is full of information procedures. So, even if one wrongly specified structural path (be it an omission or commission) or one construct with weak measure is reported, all other estimates throughout the CB-SEM will be affected (Chin et al., 2008). PLS-SEM, being a component-based least square alternative, is more robust to these issues.

Also, Hair, Ringle, and Sarstedt (2011) recommended PLS-SEM when study has formative constructs. In the present research, the study has conceptualised service quality as a reflective-formative type construct. For this type of construct, PLS-SEM is most preferred with CB-SEM.

Data cleaning and purification process

Non-response to questionnaire surveys may potentially bias results as those who respond may differ in some systematic way from the non-respondents. Examination of the data suggested that non-response bias was not present in the data set. Fifty five respondents were removed because they did not filled the questionnaire completely, and 25 responses were deleted as they did not answer the questionnaire accurately or

read the items correctly. One of the important steps in a quantitative analysis is to assess the nature and quality of the data. In this regard, there are several important issues to consider. They include addressing any missing values and potential outliers in the data set. It includes addressing any common method bias issues. It is also important to assess whether the data violates any assumptions regarding the expected distribution pattern, or more generally, whether there are any violations of the multivariate assumptions associated with the particular mode of analysis.

Common method bias

The possibility of common methods bias was addressed in this study. This biasedness occurred when data was collected using the same procedures at different times. The concern was that, the common variance undergoes upward inflation. In this study, data was collected through a self-reported survey, conducted as part of a cross-sectional study. Therefore, the potential presence of common methods bias cannot be dismissed and should be examined. However, it is worth noting that there is no universal agreement on the prevalence and impact of the common methods bias (Spector, 2006). A statistical method to assess this bias is Harman's one factor test was propounded by Podsakoff et al., (2003). In this approach, an exploratory factor analysis was conducted including all the factors. Common methods bias was assumed to exist even if a single dominant factor emerges from the un-rotated factor solutions or if the first factor in a principal components analysis explains the majority of the variance in the variables (Podsakoff et al., 2003). An examination of the principal components analysis and the factor analysis indicated that the evidence did not support common methods bias. No single dominant factor emerged. No single factor accounted for a majority of variances in the dataset. Therefore, study can exclude the possibility of a common methods bias. Finally, it should be noted that the correlation matrix did not exhibit high correlations

between constructs (r value > .90), which would have supported the existence of common methods bias (Pavlou, Liang, & Xue, 2007).

Descriptive statistics

An individual item analysis (Table 24) of the scale showed that service quality items had mean scores ranging from 2.39 for Bus stand service(Bst5) item to 4.12 for reliability item (Rel5) and Empathy item (EMP4). Empathy Item (Emp3 and Emp4) had the largest standard deviation of 1.78. An analysis of skewness and kurtosis was conducted for the indicators and is noted in Table 24. The results of this analysis indicated that the data was, in general, normally distributed. There was no skewness in the dataset and a degree of kurtosis was ideal in all cases of service quality dimensions.

Table 24

Summary of means and standard deviations skewness and kurtosis of the service quality dimensions

Dimensions	Items	M	SD	Skewness	Kurtosis
Bus Services	Bus1	3.39	1.66	.14	-.94
	Bus2	3.15	1.56	.31	-.66
	Bus3	3.89	1.59	-.07	-.73
	Bus4	3.41	1.63	.18	-.81
	Bus6	3.77	1.67	-.02	-.89
Reliability	Reli1	3.77	1.69	-.11	-.92
	Reli2	3.56	1.67	.10	-.90
	Reli4	3.52	1.56	.10	-.67
	Reli5	4.12	1.50	-.20	-.62
Empathy	Emp1	3.67	1.67	.07	-.83
	Emp2	4.01	1.61	-.15	-.54
	Emp3	3.98	1.78	-.08	-.99
	Emp4	4.12	1.78	-.16	-.97
Bus stand Services	Bst4	3.05	1.76	.47	-.79
	Bst5	2.39	1.57	1.07	.41
	Bst6	3.53	1.68	.06	-.88
	Bst7	3.39	1.71	.18	-.91
Staff Behaviour	Staff2	3.83	1.59	-.08	-.69
	Staff3	3.81	1.52	-.01	-.65
	Staff4	3.88	1.51	-.04	-.48
	Staff5	3.55	1.53	.02	-.60
	Staff7	3.84	1.38	-.10	-.17

Table 25

Summary of means and standard deviations skewness and kurtosis of latent constructs

Constructs	Items	M	SD	Skewness	Kurtosis
Corporate Image	Image1	4.96	1.57	.25	.01
	Image2	5.10	1.58	.20	.01
	Image3	5.15	1.63	.20	.03
	Image4	5.33	1.60	-.07	.01
Customer Trust	Trust1	4.10	1.38	-.17	-.21
	Trust2	4.25	1.32	-.18	-.23
	Trust3	4.50	1.22	-.20	-.13
Perceived Value	PV1	4.47	1.37	-.11	-.38
	PV2	4.42	1.31	-.20	-.32
	PV3	4.54	1.28	-.22	-.24
Customer Satisfaction	Sat1	5.33	1.76	.07	-.28
	Sat2	5.30	1.69	-.05	-.28
	Sat3	5.36	1.63	.07	-.27
	Sat4	5.52	1.79	-.08	-.14
Attitudinal Loyalty	Loy1	4.40	1.39	-.13	-.24
	Loy2	4.20	1.48	-.24	-.47
	Loy3	4.40	1.38	-.24	-.17
	Loy4	4.43	1.37	-.24	-.38

In table 25, an individual item analysis of the latent constructs showed that the customer satisfaction items (Sat3) had highest mean score of 5.36 and customer trust item (Trust1) had lowest mean score of 4.10. Customer satisfaction Item (Sat4) had the largest standard deviation of 1.79. An analysis of skewness and kurtosis was conducted for the indicators and it is noted in Table 25. The results of this analysis indicated that the data was, in general, normally distributed. There was no skewness in the dataset and a degree of kurtosis was ideal in all cases of latent variables. The below Table 26 shows the summary of the correlation measures of latent constructs.

Table 26

Summary of mean, standard deviation and correlation measures of the service quality dimensions and other latent constructs

	M	SD	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1) Bus Services	3.52	1.22	-									
(2) Reliability	3.74	1.26	.40**	-								
(3) Empathy	3.95	1.32	.30**	.36**	-							
(4) Bus Stand Services	3.09	1.30	.30**	.39**	.35**	-						
(5) Staff Behaviour	3.78	1.20	.36**	.44**	.42**	.45**	-					
(6) Service Quality	3.62	.89	.69**	.72**	.68**	.69**	.77**	-				
(7) Customer Trust	4.29	1.15	.42**	.44**	.43**	.44**	.57**	.65**	-			
(8) Corporate Image	5.13	1.41	.38**	.39**	.37**	.36**	.42**	.54**	.51**	-		
(9) Perceived Value	4.48	1.16	.34**	.35**	.33**	.35**	.41**	.50**	.47**	.57**	-	
(10) Customer Satisfaction	5.37	1.52	.37**	.43**	.39**	.41**	.47**	.59**	.55**	.73**	.65**	-
(11) Attitudinal Loyalty	4.36	1.08	.40**	.43**	.39**	.40**	.50**	.60**	.61**	.53**	.54**	.59**

Partial Least Squares (PLS) Path Modelling

To test the model, a partial least squares (PLS) path methodology was used. Partial Least Squares path analysis is a modelling technique that enables analysts who possess data sets previously not amenable to other causal modelling techniques, like covariance-based structural equation models (Haenlein & Kaplan, 2004; Hulland, 1999). The essence of the analytical approach of this variance-based technique lies in the creation of a weighted approach to maximize the explained variance of the dependent variables. While in the more traditional path modelling methodology, SEM, there are strict assumptions on the nature of the data as well as target recommendations on the sample size, in PLS, due to its limited-information approach (Dijkstra, 1983) stipulations like assumptions about the scale of measurement, or the scale of measurement are not set into effect (Fornell & Bookstein, 1982). Further, as these assumptions are not made in PLS, the methodology is robust against skewness, multicollinearity, and specification error (Cassel, Hackl, & Westlund, 1999).

In order to perform a PLS estimation model, the process is begun by calculating the case values where the latent, "unobservable variables were estimated as exact linear combinations of their empirical indicators"(Dijkstra, 1983; Haenlein & Kaplan, 2004). After this, the next step was to formulate weights for each case value, in an attempt to capture the greatest swath of explained variance of each of the dependent variables in the model. The next step of the technique was to formulate values for the latent constructs, made up of a weighted average of the construct's indicators. The most crucial aspect of PLS stems is the estimation of case value weights and their subsequent implementation in creating latent construct values (Haenlein & Kaplan, 2004).

Partial least squares analysis is a unique alternative to the most common forms of SEM, and a more generally accepted covariance-based approach. As opposed to the covariance-based approach of traditional structural equation modelling, the variance based PLS approach is more appropriate when dealing with a smaller sample size, conducting exploratory research, or when the number of indicators that exist per latent variable are excessively large. The standard PLS procedure recommended by Hair et al. (2013) was followed to test our inner and outer models. The entire theoretical model was tested using PLS algorithm and path loading significance was estimated through bootstrap estimation with 5000 samples.

Measurement model

Measurement model is examined by assessing the reliability and validity to ensure that the indicators accurately and significantly measure the construct (Aibinu & Al-Lawati, 2010; Hair et al., 2010). The purpose of this assessment was to determine whether the indicators can still be included in the model. Since the model comprises two layers of construct, reliability and validity of the lower order construct need to be assessed. Then, latent construct scores obtained from the lower order construct by running the software can be used to assess the higher order construct.

Table 27

Factor loadings, construct reliability, and convergent validity of service quality scale

Items	loading	T Statistics	Alpha	CR	AVE
Bst4	.84	62.35**			
Bst5	.70	22.11**			
Bst6	.76	34.76**	.78	.86	.60
Bst7	.80	43.61**			
Bus1	.82	52.54**			
Bus2	.79	39.72**			
Bus3	.71	26.14**	.81	.87	.57
Bus4	.73	30.47**			
Bus6	.72	32.54**			
Emp1	.73	29.70**			
Emp2	.76	37.24**			
Emp3	.83	50.80**	.77	.85	.59
Emp4	.77	32.50**			
Reli1	.81	48.94**			
Reli2	.77	38.23**			
Reli4	.78	47.27**	.79	.86	.62
Reli5	.77	39.27**			
Staff2	.77	38.87**			
Staff3	.82	46.56**			
Staff4	.84	56.05**	.86	.90	.64
Staff5	.80	48.29**			
Staff7	.76	37.86**			

**p<.001.

Table 28

Factor loadings, construct reliability, and convergent validity of latent variables

Items	loading	T Statistics	Alpha	CR	AVE
Image1	.87	61.57**			
Image2	.90	109.59**	.91	.93	.78
Image3	.88	77.10**			
Image4	.88	90.06**			
Trust1	.86	61.49**			
Trust2	.91	88.63**	.86	.92	.78
Trust3	.89	75.50**			
PV1	.86	73.65**			
PV2	.90	111.08**	.85	.91	.78
PV3	.87	82.04**			
Sat1	.87	71.67**			
Sat2	.89	98.45**	.91	.93	.78
Sat3	.89	90.51**			
Sat4	.89	93.89**			
Loy1	.70	20.72**			
Loy2	.83	54.65**	.77	.86	.60
Loy3	.84	55.83**			
Loy4	.74	31.00**			

**p<.001.

The results from the measurement (outer) model testing are displayed in Table 27 and 28. An analysis of the statistical significance of the indicator or outer loadings suggest that all indicators are statistically significant in their respective latent construct at $p <$ .001.

Reliability

The evaluation of the reflective measurement model examines its reliability and validity (Henseler et al., 2009). Reliability of the measure is ensured with Cronbach's Alpha values and composite reliability values. Cronbach's Alpha values ranging from .77 to .91exceeding the common threshold of .70. The constructs' composite reliability values ranges from .86 to .93 exceeding the common threshold of .70. (Roldán & Sánchez-Franco, 2012). These results indicate that all reflective measures in the research model are sufficiently reliable.

Convergent validity

Convergent validity is the extent to which the survey items for a given construct converge (i.e. strongly correlate) compared to survey items measuring different constructs. To achieve convergent validity, all standardised factor loadings should be greater than .70 and the average variance extracted (AVE) for measures should be greater than .50 (Fornell & Larcker, 1981). In the present study, the standardised factor loadings ranges from .70 to .91 and AVE values range between .57 and .78. Hence, the study established the convergent validity for the latent constructs.

Discriminant validity

Discriminant validity examines the degree to which the survey items of a given construct unintentionally do not measure a different construct. Table 29 shows the results of discriminant validity assessment, providing evidence that each reflective construct relates more strongly to its own measure than to the rest of other constructs. This was achieved through comparison of the square root of AVE and correlations. The diagonal elements should be significantly greater than the off-diagonal elements in the corresponding rows and columns (Roldán & Sánchez-Franco, 2012).

Table 29

Measurement model discriminant validity using the Fornell-Larcker criterion

	1	2	3	3	5	6	7	8	9	10	11
(1) Bus Stand Services	.78										
(2) Bus Services	.30	.76									
(3) Empathy	.36	.30	.77								
(4) Reliability	.40	.40	.38	.78							
(5) Staff Behaviour	.45	.37	.42	.45	.80						
(6) Corporate Image	.36	.38	.37	.40	.42	.88					
(7) Customer Trust	.45	.42	.43	.45	.57	.51	.89				
(8) Perceived Value	.35	.35	.33	.35	.42	.57	.47	.88			
(9) Service Quality	.67	.65	.65	.70	.81	.57	.68	.54	-		
(10) Customer Satisfaction	.41	.38	.39	.44	.47	.73	.55	.65	.60	.88	
(11) Attitudinal Loyalty	.40	.40	.40	.44	.50	.52	.61	.54	.62	.59	.77

Note: Diagonal elements are the square root of AVE and highlighted in bold. Off-diagonal elements are simple bivariate correlations between the constructs.

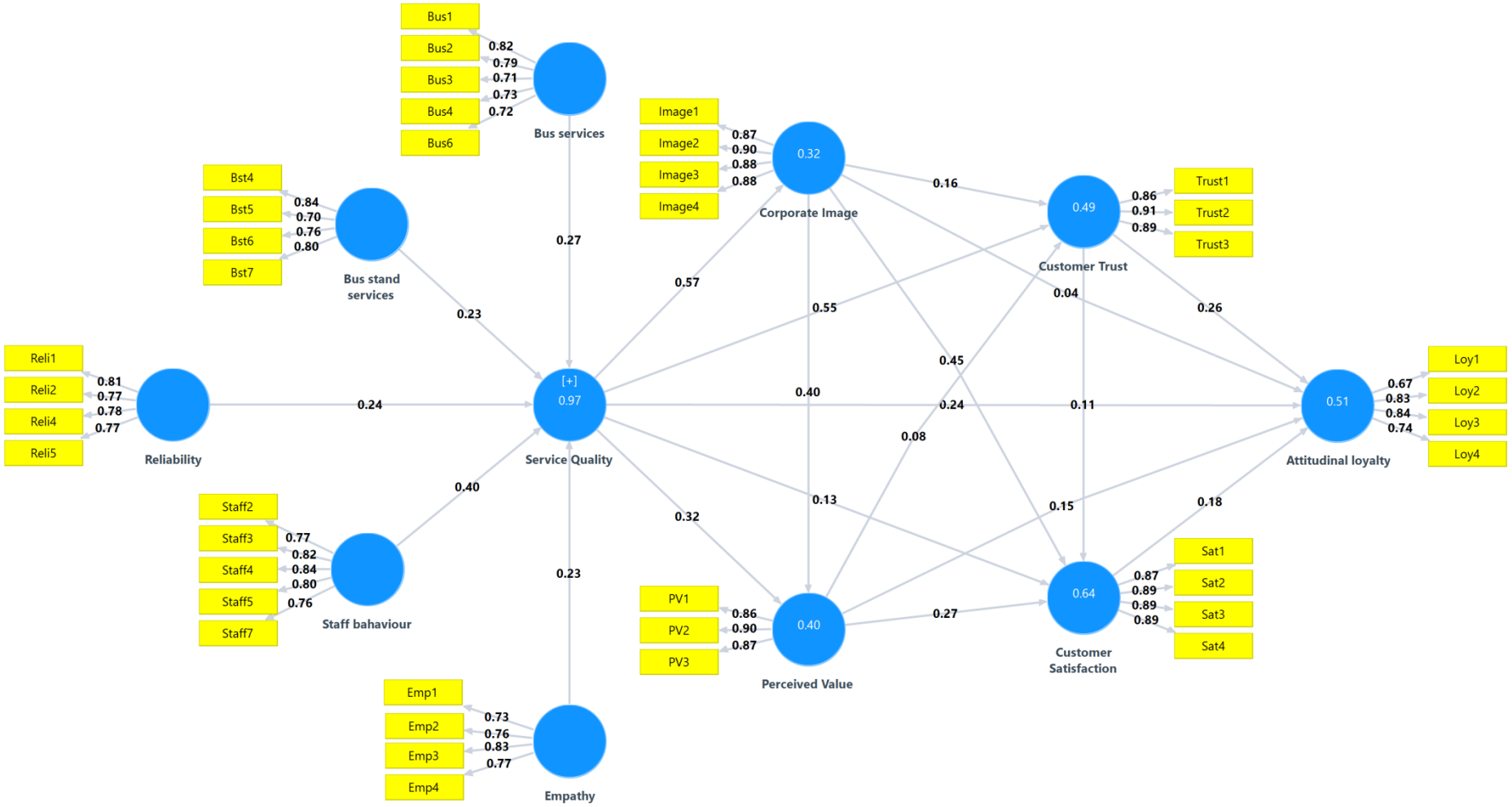

Figure 6 The results of measurement (outer) model with PLS algorithm

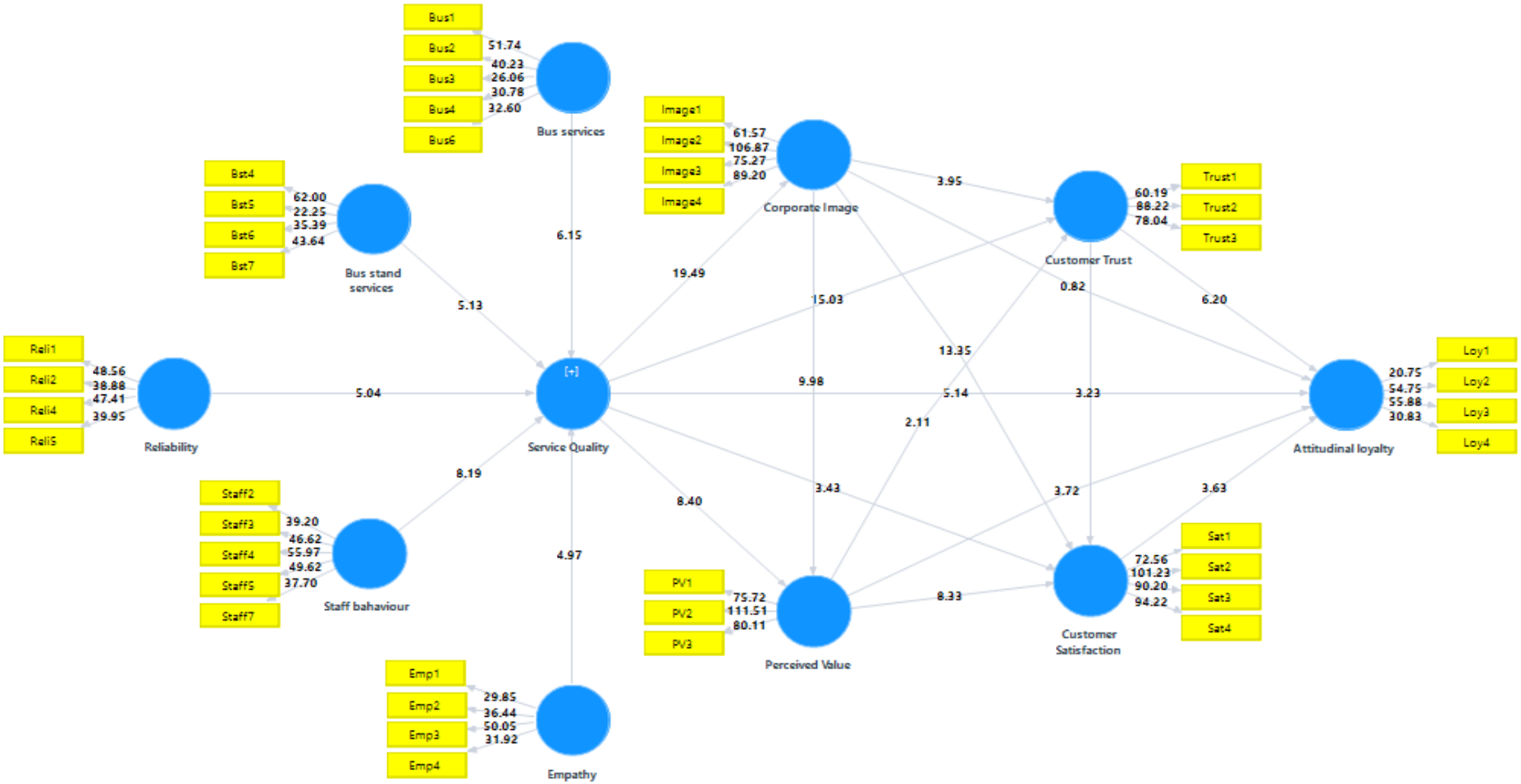

Figure 7 The results of measurement (inner) model with 5000 bootstrapping samples

Structural model

After confirming that the measurement model is sufficiently reliable and valid, the structural model is tested using PLS-SEM. The purpose of this step was to evaluate the ability of the model to predict the relationship between the constructs (Ringle et al., 2013). These evaluations include assessing the collinearity of the structural model, significance of the path coefficient (β), coefficient of determination (R^2), predictive relevance (Q^2), Global fit indices and effect size. A bootstrap analysis was performed with 5000 subsamples to assess the significance of the path estimates. The results of these analyses were used to test the hypotheses of the research model. Figure 8 presents the results of the structural model analysis using PLS-SEM.

Collinearity assessment

The collinearity assessment starts by using the latent variables scores from running Smart PLS software (Ringle, Wende, & Will, 2005). These latent variable scores were used to run multiple regressions with a set of predictor constructs as independent variables and any other latent variable, which does not serve as the dependent variable by using PLS-SEM software. Table 30 shows the results of variance inflation factor (VIF) for higher order constructs.

All VIF values are below 5, which indicated that there is no collinearity issue. In other words, these constructs do not have the same information to measure the same variables. Therefore, there are no redundant constructs in the model. Thus, all the constructs measured in the present study can be included in the structural model.

Table 30

Collinearity Statistic (VIF)

	SQ	CI	CT	PV	CS	AL
Bus Services	1.28					
Bus Stand Services	1.38					
Empathy	1.34					
Reliability	1.47					
Staff Behaviour	1.53					
Corporate Image			1.73	1.47	1.78	2.34
Customer Trust					1.97	2.00
Perceived Value			1.66		1.67	1.88
Service Quality		1.00	1.64	1.47	2.22	2.27
Customer Satisfaction						2.78

Note: SQ= service quality, CI=corporate image, CT=customer trust, PV=perceived value, CS= customer satisfaction, AL= attitudinal loyalty

4.1.1.1 Significance of the path coefficient (β)

The structural model path estimates are displayed in Table 31 and Figure 8. The results showed that a significant relationship exists between service quality to corporate image (β=.57, p<.01), perceived value (β=.32, p<.01), customer trust (β=.55, p<.01), customer satisfaction (β=.13, p<.01) and attitudinal loyalty (β=.24, p<.01). Similarly, corporate image significantly correlates with perceived value (β=.40, p<.01), customer trust (β=.16, p<.01) and customer satisfaction (β=.45, p<.01). However, the relationship between corporate image and attitudinal loyalty (β=.04, p>.05) was not significant. Perceived value significantly correlates with customer trust (β=.08, p<.05), customer satisfaction (β=.27, p<.01) and attitudinal loyalty (β=.15, p<.01).

The relationship between customer trust to customer satisfaction (β=.11, p<.01) and attitudinal loyalty (β=.26, p<.01) were significant. Finally, customer satisfaction to an attitudinal loyalty relationship ((β=.18, p<.01) was also significant. Except the corporate image to attitudinal loyalty relationship, all other relationships were significant.

Table 31

Results of PLS path analysis

	B	(M)	SE	t Statistic
BS -> SQ	.27	.27	.04	6.13**
BT -> SQ	.23	.23	.05	5.11**
EY-> SQ	.23	.22	.05	4.98**
RL-> SQ	.24	.23	.05	4.97**
SB -> SQ	.40	.40	.05	8.19**
SQ -> CI	.57	.58	.03	19.67**
SQ -> PV	.32	.33	.04	8.37**
SQ -> CT	.55	.56	.04	15.10**
SQ -> CS	.13	.13	.04	3.40**
SQ -> AL	.24	.24	.05	5.08**
CI -> PV	.40	.39	.04	9.93**
CI -> CT	.16	.15	.04	3.90**
CI -> CS	.45	.45	.03	13.14**
CI -> AL	.04	.04	.05	.83
PV -> CT	.08	.08	.04	2.11*
PV -> CS	.27	.27	.03	8.31**
PV -> AL	.15	.15	.04	3.70**
CT -> CS	.11	.11	.03	3.18**
CT -> AL	.26	.25	.04	6.25**
CS -> AL	.18	.18	.05	3.76**

Note: BS= bus services, BT=bus stand services, EY=empathy, RL=reliability, SB=staff behaviour, SQ= service quality, CI=corporate image, CT=customer trust, PV=perceived value, CS= customer satisfaction, AL= attitudinal loyalty, *p<.05, **p<.001.

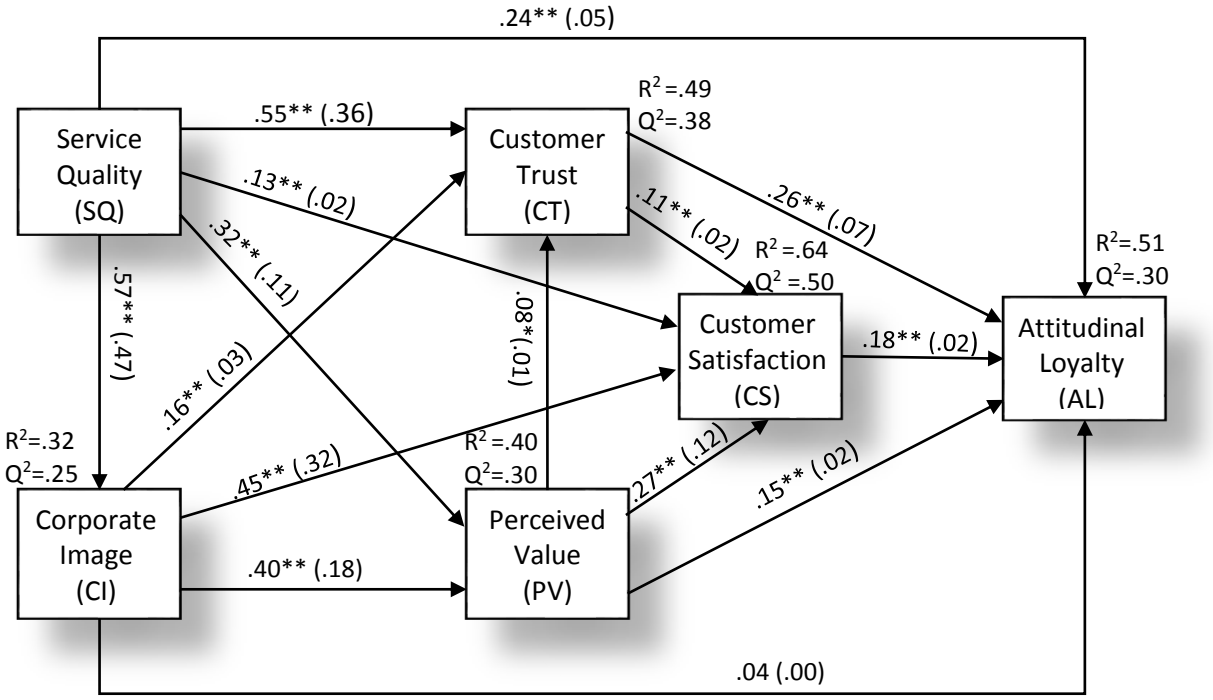

Figure 8 Research Model

Fourteen of the fifteen hypothesized path coefficients provide strong statistical evidence of positive relationships among the variables under study. Hypotheses 1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 13, 14 and 15 are supported by statistically significant path coefficients, significant f^2 values, and significant effect coefficients on the dependent variable. The significant path coefficients supported the hypothesized linkages among the variables. Finally, it was also worth noting that all indicator loadings were statistically significant and the overall model fit was satisfactory (Table 30).

Table 32

Results of hypotheses testing on direct relationship of the research model

	Hypothesized relationship	β	t	Result
H1	Service Quality → Corporate Image	.57	19.67	Supported
H2	Service Quality → Perceived Value	.32	8.37	Supported
H3	Service Quality → Customer Trust	.55	15.10	Supported
H4	Service Quality → Customer Satisfaction	.13	3.40	Supported
H5	Service Quality →Attitudinal Loyalty	.24	5.08	Supported
H6	Corporate Image → Perceived Value	.40	9.93	Supported
H7	Corporate Image → Customer Trust	.16	3.90	Supported
H8	Corporate Image → Customer Satisfaction	.45	13.14	Supported
H9	**Corporate Image → Attitudinal Loyalty**	**.04**	**.83**	**Not supported**
H10	Perceived Value → Customer Trust	.08	2.11	Supported
H11	Perceived Value → Customer Satisfaction	.27	8.31	Supported
H12	Perceived Value → Attitudinal Loyalty	.15	3.70	Supported
H13	Customer Trust → Customer Satisfaction	.11	3.18	Supported
H14	Customer Trust → Attitudinal Loyalty	.26	6.25	Supported
H15	Customer Satisfaction → Attitudinal Loyalty	.18	3.76	Supported

Coefficient of determination (R^2)

The most commonly used measure to evaluate the structural model was the coefficient of determination (R^2) to predict the model accuracy. The coefficient of determination for the research model is given in Figure 8. The co-efficient of determination for attitudinal loyalty is .51. The research model explained that 51 % of the variance from its antecedents is moderately higher (Hair et al., 2011; Henseler et al., 2009). Similarly, the coefficient of determination for customer satisfaction is R^2=.64, customer trust R^2=.49, perceived value R^2=.40 and corporate image R^2=.32.

Effect size

In addition to evaluating the R^2 values of all endogenous constructs, the change in the R^2 value, when a specified exogenous construct is omitted from the model can evaluate whether the omitted construct has a substantive impact on the endogenous constructs. The effect size of the PLS structural model can be assessed using Cohen's f^2 (Cohen, 2013). This can be obtained by a change in the co-efficient of determining whether an exogenous latent construct has substantial influence on endogenous latent constructs. Thus, the change has been computed with exogenous latent variable and one without the exogenous latent construct. In the present research model, the overall effect size was .30 (Table 33). It can be concluded that service quality has substantial influence on attitudinal loyalty via perceived value, customer trust and customer satisfaction.

Table 33

Summary of Predictive relevance (Q^2) and effect size (f^2)

	SQ	CI	CT	PV	CS	AL	Q^2
Bus Services	1.86						
Bus Stand Services	1.29						
Empathy	1.24						
Reliability	1.23						
Staff Behaviour	3.42						
Service Quality		.47	.36	.11	.02	.05	.30
Corporate Image			.03	.18	.32	.00	.25
Customer Trust					.02	.07	.38
Perceived Value			.01		.12	.02	.30
Customer Satisfaction						.02	.50
Attitudinal Loyalty							.30

Note: SQ= service quality, CI=corporate image, CT=customer trust, PV=perceived value, CS= customer satisfaction, AL= attitudinal loyalty

Predictive relevance (Q^2)

The predictive relevance (Table 33) of the model is assessed using the guidelines provided by Henseler et al. (2014). The predictive relevance of the manifest variables to its latent construct is assessed through Q^2 measure. The Q^2 measure can be obtained using the blindfolding algorithm available in the Smart PLS software. The index of Cross Validated-Redundancy was used to represent the Q^2 measure. The predictive relevance of anything above zero ($Q^2>0$) is considered as acceptable (Chin, 2010). For the present model the Q^2 value ranged from .25 to .50 (Table 33). Overall, all the values are in the cut off limit. So the model has predictive relevance.

In this section, both the measurement and structural models were evaluated and the results are satisfactory in terms of all assessment criteria. Interesting results were found while analysing the hypothesized relationships of research model. Except the hypothesis 9 (corporate image→ attitudinal loyalty), all other hypotheses were significant.

Mediation model

The parallel mediation assumes that all four variables (corporate image, customer trust, perceived value and customer satisfaction) mediate the relationship between service quality and attitudinal loyalty. The proposed parallel mediation model is tested using (Model 4) PROCESS macro available with SPSS software (Hayes, 2013) with 5000 bootstrap samples that generated 95% bias corrected and adjusted confidence intervals for the indirect effect (Preacher & Hayes, 2008). The mediation effect (indirect effect) was significant when confidence intervals do not contain zero.

Table 34

Summary of means, standard deviations and correlation measures of latent constructs

	M	SD	(1)	(2)	(3)	(4)	(5)
(1) Service Quality	3.62	.89	-				
(2) Customer Trust	4.29	1.15	.65**	-			
(3) Corporate Image	5.13	1.41	.54**	.51**	-		
(4) Perceived Value	4.48	1.16	.50**	.47**	.57**	-	
(5) Customer Satisfaction	5.37	1.52	.59**	.55**	.73**	.65**	-
(6) Attitudinal Loyalty	4.36	1.08	.60**	.61**	.53**	.54**	.59**

Note: **p<.001.

Pearson correlation analysis for the latent constructs revealed that all the relationships were statistically significant at p<0.001 (Table 32). Service quality was positively correlated with customer trust (r=.65) as well as corporate image (r=.54), perceived value (r=.50), customer satisfaction (r=.59) and attitudinal loyalty (r=.60). Customer trust was positively correlated with corporate image (r=.51), perceived value (r=.47), customer satisfaction (r=.55) and attitudinal loyalty (.61). Corporate image was positively correlated with perceived value (r=.57), customer satisfaction (r=.73) and attitudinal loyalty (.53). Perceived value was positively correlated with customer satisfaction (r=.65) and attitudinal

loyalty (r=.54). Finally, customer satisfaction was positively correlated with attitudinal loyalty (r=.59). The results revealed that inter relationship exists among service quality, corporate image, customer trust, perceived value, customer satisfaction and attitudinal loyalty. Except for the relationship between corporate image to attitudinal loyalty (β=.04, p=.40) all other relationships were significant at p<.05 significance level (Figure 9).

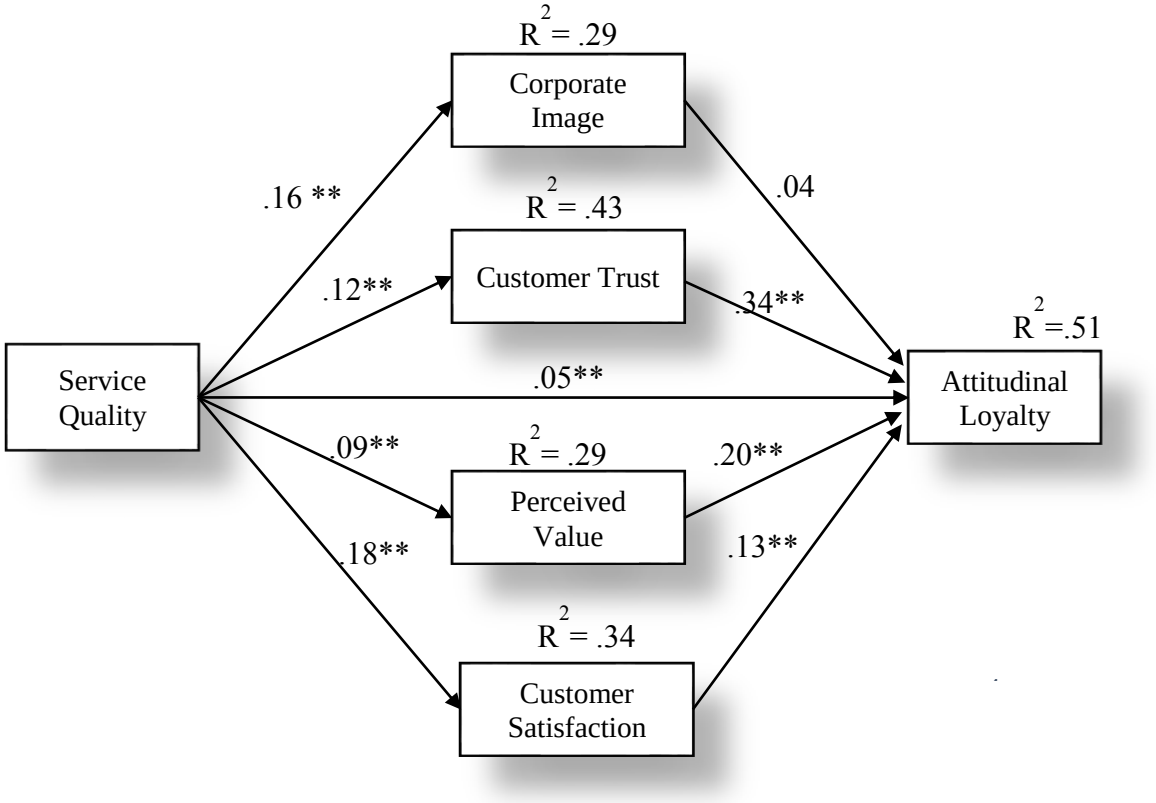

Figure 9 Results of parallel mediation model

Individual mediation effect presented in Table 33 shows that no mediation effect was found for corporate image (β = .03, SE = .03, 95% CI = [-.03, .08], p>.05). The relationship between service quality and attitudinal loyalty was mediated by an individually perceived value (β = .08, SE = .02, 95% CI = [.04, .12], p<.05), customer trust (β = .18, SE = .03, 95% CI = [.12, .23], p<.05) and customer satisfaction (β = .10, SE = .03, 95% CI = [.05, .16], p<.05).

Table 35

Summary of parallel mediation tests result

Total effect of SQ on AL (c)			Direct effect of SQ on AL (c')			Indirect effect of SQ on AL				
β	SE	t value	β	SE	t value		β	SE	Bias corrected bootstrap confidence intervals (95%)	
									LLCI	ULCI
.13**	.01	18.77	.05	.01	5.22**	Total	.39	.03	.32	.45
						H16= SQ→CI→AL	.03	.03	-.03	.08
						H17= SQ→PV→AL*	.08	.02	.04	.12
						H18= SQ→CT→AL*	.18	.03	.12	.23
						H19= SQ→CS→AL*	.10	.03	.05	.16

Note: SQ= service quality, CI=corporate image, CT=customer trust, PV=perceived value, CS= customer satisfaction, AL= attitudinal loyalty, SE= standard error, LLCI=Lower limit confidence Interval, ULCI=Upper limit confidence interval, **p<.001.

The total effect of service quality on attitudinal loyalty (c) was statistically significant (B=.13, p<.001, SE=.01, t=18.77). Similarly, the direct effect of service quality on attitudinal loyalty (c') was also statistically significant (B=.05, p<.001, SE=.01, t=5.22). Finally, results evidenced that the relationship between service quality and attitudinal loyalty was partially mediated by the perceived value, customer trust and customer satisfaction in parallel.

Serial mediation (supplementary analysis)

The serial mediation assumes "a casual chain linking the mediators, with a specific direction of casual flow" (Hayes, 2012). In the previous section, the partial mediation effect exists in the relationship between service quality and attitudinal loyalty. Therefore, the study further investigated the serial mediation effect of the corporate image, perceived value, customer trust and customer satisfaction without any theoretical and empirical support. Serial mediation effect is tested using PROCESS macro in SPSS recommended by Hayes (2013). It tested all possible variable combinations for the specified order (service quality → corporate image→ perceived value→ customer trust→ customer satisfaction→ attitudinal loyalty). In this study 5000 resamples were generated at 95% confidence intervals (Bias-Corrected) for the mediators. PROCESS evaluated 11 serial mediation models (3, 4 and 5 path) and all models were significant (Table 34). In all the cases, the partial mediation existed because the direct and indirect effects were significant. Of the all models, the three path model (service quality → corporate image→ customer satisfaction→ attitudinal loyalty) has highest beta coefficient (B=.0432 p<.001, SE=.013, 95% CI = [.02, .07]). In summary the results showed that the corporate image and customer satisfaction were partially mediated between service quality and attitudinal loyalty.

Table 36

Results of serial mediation effect (supplementary analysis)

Total effect of SQ on AL (c)			Direct effect of SQ on AL (c')			Indirect effect of SQ on AL				
β	SE	t value	β	SE	t value		β	SE	Bias corrected bootstrap confidence intervals (95%)	
									LLCI	ULCI
.13**	.01	18.77	85	.01	5.22**	Total	.3888	.0324	.3247	.4518
						SQ→CI→PV→AL**	.0373	.0103	.0191	.0605
						SQ→CI→CT→AL**	.0258	.0079	.0126	.0443
						SQ→CI→CS→AL**	.0432	.0130	.0193	.0707
						SQ→CI→PV→CT→AL**	.0072	.0029	.0025	.0139
						SQ→CI→PV→CS→AL**	.0111	.0037	.0049	.0198
						SQ→CI→CT→CS→AL**	.0018	.0009	.0006	.0044
						SQ→CI→PV→CT→CS→AL**	.0005	.0003	.0002	.0013
						SQ→PV→CT→AL**	.0085	.0036	.0028	.0172
						SQ→PV→CS→AL**	.0132	.0047	.0055	.0241
						SQ→PV→CT→CS→AL**	.0006	.0003	.0002	.0016
						SQ→CT→CS→AL**	.0095	.0038	.0036	.0188

Note: SQ= service quality, CI=corporate image, CT=customer trust, PV=perceived value, CS= customer satisfaction, AL= attitudinal loyalty, **p<.001. SE= standard error, LLCI=Lower limit confidence Interval, ULCI=Upper limit confidence interval, **p<.001.

Importance performance analysis

Importance-performance matrix analysis (IPMA) is useful in extending the findings of the basic PLS-SEM outcomes using the latent variable scores (Kristensen, Martensen, & Gronholdt, 2000; Ringle, Sarstedt, & Mooi, 2010; Völckner, Sattler, Hennig-Thurau, & Ringle, 2010). The results permit the identification of determinants with a relatively high importance and relatively low performance. These are major areas of improvement that can subsequently be addressed by marketing or management activities. In this study, the author intended to identify to what extent the importance and performance for each variables is provided in a research model. This analysis has become crucial to identify the critical factors that determine attitudinal loyalty.

Prior to the importance performance matrix analysis (IPMA), the measurement and structural model assessments should be carried out. Since the direct and indirect effect of the research model is already tested in the preceding sections, the study directly performed the IPMA using Smart PLS V3.0 and the results are presented in Table 37.

Table 37

Results of the importance performance analysis

	Importance	AL Performances
Bus services	3.52	41.93
Bus stand services	3.12	35.31
Empathy	3.95	49.09
Reliability	3.75	45.91
Staff behavior	3.78	46.38
Service quality	3.71	48.05
Corporate image	5.13	48.55
Perceived value	4.48	55.42
Customer trust	4.30	52.58
Customer satisfaction	5.37	50.06

Note: AL= attitudinal loyalty

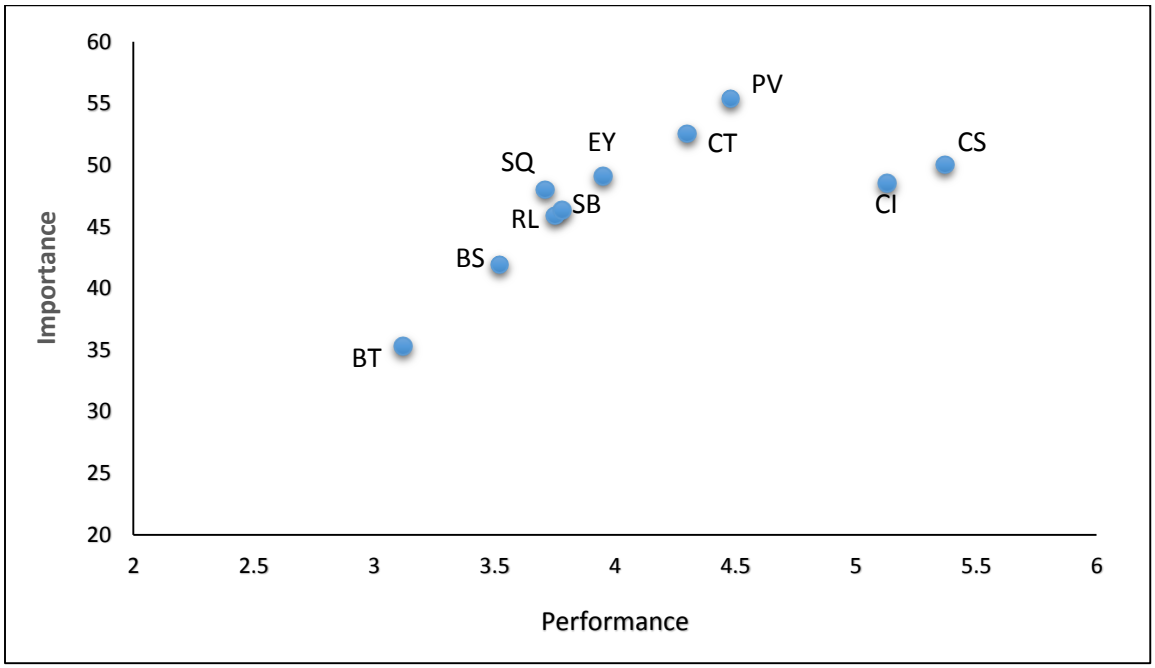

Figure 10 Graph of importance performance matrix representation of attitudinal loyalty

Note: SQ= service quality, CI=corporate image, CT=customer trust, PV=perceived value, CS= customer satisfaction

As shown in Table 37 and Figure 10, IPMA of the research model revealed that perception is of primary importance for establishing attitudinal loyalty. However, its performance is slightly below average when compared to other constructs. The corporate image carried similar importance but has a considerably higher performance. Customer trust and service quality, on the other hand, have little relevance due to its low importance even though it has relatively high performance. Consequently, managerial activities to improve customer satisfaction should focus on the service quality and corporate image construct. Managerial action may also focus on improving performance of the service quality construct on the basis of an IPMA of the construct's indicators.

SECTION 3

Profiling Unobserved Heterogeneity in the Research Model

This section briefly explains how to identify and treat unobserved heterogeneity in research model approaches like finite mixture PLS (FIMIX-PLS). In empirical research, the study should consider the importance of treating unobserved heterogeneity in the analysis. Specially, one of the key assumptions in employing the structural equation modelling is that data collection samples should be homogenous in nature (Hair Jr et al., 2009). In many instances, we may not be able to establish homogeneity of the samples. Recently, marketing scholars have given importance to treating unobserved heterogeneity in the theoretical model. Hutchinson, Kamakura, and Lynch (2000), discussed the numerous problems arising from unobserved heterogeneity in behavioural research and recommended solutions to avoid this problem. Several approaches existed to treat this problem like typological regression, genetic algorithms, latent profile analysis and FIMIX. One of the best ways to treat this problem is by using Finite mixture modelling approach (FIMIX) (Hair et al., 2013). Based on a mixture regression concept, FIMIX simultaneously estimates the path coefficients and ascertains data's heterogeneity by calculating the probability of the observations' segment membership so that they fit into a predetermined number of groups.

Unobserved heterogeneity using FIMIX-PLS

The FIMIX-PLS framework in Figure 5 analysed the entire data set. The best number of segment solutions were identified using AIC, CAIC, BIC, NFI and EN. The lowest value in AIC, CAIC, BIC and highest value in EN and NFI are preferred as best segment solutions. Subsequently, the highest conditional probabilities are assigned to the respective

segments. The values of AIC, CAIC, BIC, NFI and EN for k = 2,…7 for the entire data set are presented in Table 36. The lowest values of BIC and CAIC and highest values of NFI and EN values are in k = 2. Based on the different criteria mentioned in the Table 38 k = 2, a segment solution was recommended. The percentage of observations in each segment was 94% (Segment 1) and 6 % (Segment 2).

Table 38

FIMIX-PLS evolution criteria and relative group sizes

S	AIC	BIC	CAIC	EN	NFI	Relative segment sizes						
						g=1	g=2	g=3	g=4	g=5	g=6	g=7
S=2	6472.80	6708.51	6761.51	.91	.93	.94	.06					
S=3	6443.58	6799.37	6879.37	.86	.85	.85	.08	.07				
S=4	6401.32	6877.18	6984.18	.89	.87	.81	.04	.11	.05			
S=5	6401.43	6997.37	7131.37	.68	.59	.50	.36	.04	.04	.06		
S=6	6403.05	7119.06	7280.06	.70	.61	.35	.48	.07	.05	.02	.03	
S=7	6382.07	7218.16	7406.16	.78	.71	.61	.09	.05	.13	.05	.03	.04

Note:

The probability of I belonging to segment k estimated by selected FIMIX-PLS model was used to classify the observation into the segments identified. k = 2 segments provide the best depiction of the dataset. Now the trickiest task is to identify the explanatory variable that explains the unobserved heterogeneity in the dataset. For this, the study performed CHAID to detect the best classifying or explanatory variable that explains the unobserved heterogeneity. In CHAID analysis, the study found that frequency of travel classified the segments better and no other socio-graphic variable classified the segment solution. In CHAID analysis, segment membership was given as a dependent variable and other socio-graphic variables as independent variables. The classification tree result revealed that

frequency of travel explained the segment memberships. So low frequency of travel belongs to segment 1 and high frequency travel belongs to segment 2.

Post segment analysis of the theoretical model

Separate PLS-SEM models were fitted (300 iterations) for the two segments identified and the results are presented in Table 37. The structural path significance was estimated using 5000 bootstrap samples. After estimation of the two PLS-SEM models, a multi group analysis was performed using SmartPLS-3 software. The R^2 for the segment 1 (low frequent traveller) and segment 2 (high frequent traveller) are presented in Table 39.

Table 39

FIMIX-PLS results of two latent groups

	S1 n1=515	S2 n2=116	|diff|
Service Quality → Customer Satisfaction	.11 (2.71)	.25 (2.19)	.14
Service Quality → Corporate Image	.61 (20.92)	.34 (3.63)	.27**
Service Quality → Customer Trust	.54 (12.61)	.60 (9.64)	.06
Service Quality → Perceived Value	.35 (8.08)	.27 (2.95)	.08
Service Quality →Attitudinal Loyalty	.20 (4.17)	.51 (4.00)	.30
Corporate Image → Perceived Value	.36 (7.94)	.50 (5.10)	.14
Corporate Image → Customer Trust	.17 (3.76)	.08 (.78)	.08
Corporate Image → Customer Satisfaction	.46 (12.68)	.38 (3.80)	.09
Corporate Image → Attitudinal Loyalty	.05 (.84)	.06 (.66)	.02
Perceived Value → Customer Trust	.07 (1.59)	.15 (1.63)	.09
Perceived Value → Customer Satisfaction	.28 (8.26)	.22 (2.07)	.06
Perceived Value → Attitudinal Loyalty	.14 (3.32)	.15 (1.47)	.01
Customer Trust → Customer Satisfaction	.12 (3.57)	-.02 (.21)	.15
Customer Trust → Attitudinal Loyalty	.28 (6.13)	.07 (.64)	.21**
Customer Satisfaction → Attitudinal Loyalty	.20 (3.43)	.08 (.88)	.13

Note: **p<.001

The R^2 for the low frequent traveller model ranges from .37 to .66 (Table 40) and for the high frequent traveller, it is between .13 and .85. Much difference exists between the global model R^2 (.32 to .64) and the two segment model R^2. Especially for attitudinal loyalty in second segment (high frequent traveller) model, R^2 value was .85. This value is very high as compared to the global and segment 1 (low frequent traveller) model. In low frequent traveller model, the relationship between corporate image and attitudinal loyalty was not significant (beta=.05, t-value =.84). Similarly, the relationship between perceived value and customer trust was not significant (beta=.07, t-value=1.59). Except these two relationships, all other relationships among the construct in the model were significant.

Table 40

Comparison of two segment models

	Segment=1 n_1=515			segment=2 n_2=116		
	M	SD	R^2	M	SD	R^2
Service Quality	3.62	.92	-	3.64	.77	-
Customer Trust	4.25	1.19	.50	4.46	.97	.39
Corporate Image	5.10	1.45	.37	5.28	1.19	.13
Perceived Value	4.46	1.19	.40	4.57	1.04	.83
Customer Satisfaction	5.34	1.57	.66	5.53	1.27	.62
Attitudinal Loyalty	4.33	1.08	.55	4.47	1.12	.85

In high frequent traveller model, the relationship between corporate image and attitudinal loyalty (β=.06, t-value=.66), corporate image and customer trust (β =.08, t-value=.78), customer satisfaction and attitudinal loyalty (β =.08, t-value=.88), customer trust and attitudinal loyalty (β =.07, t-value=.64), customer trust and customer satisfaction (β =-.02, t-value=.21), perceived value and attitudinal loyalty (β =.15, t-value=1.47) and perceived value and customer trust (β =.15, t-value=1.63) were not β significant. Except for these

relationships, all other relationships among the constructs in the model were significant. In multi group analysis, there exists a significant difference between service quality and corporate image.

Overall, the study adapted the modified SERVQUAL scale containing 22 items under five dimensions (bus services, bus stand service, empathy, reliability and staff behaviour). The modified SERVQUAL scale has sound psychometric property in terms of validity and reliability. The direct and indirect relationship of the integrated research model was tested and the results showed that except corporate image→ attitudinal loyalty relationship, all other direct relationships were significant. In addition, perceived value, customer trust and customer satisfaction were mediating the relationship between service quality and attitudinal loyalty relationship. Finally, the unobserved heterogeneity was captured in the study sample and segmented it as high and low frequent travellers. The detailed discussion of the results are presented in the following chapter.

CHAPTER V
DISCUSSION AND CONCLUSION

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DISCUSSION AND CONCLUSION

This chapter draws upon the empirical research outputs to answer the research questions that formulated based on the past literature. Additionally, this chapter highlights the contributions of this research to theory and practice. Next, the limitations of this study and directions for future research are discussed. Finally, the conclusion section marks the culmination of ideas, insights and outcomes of this dissertation.

Adaptation of modified SERVQUAL scale

The highly competitive market conditions in the bus transport industry pressurizes public transporter to deliver high-quality services. To provide this, public transport corporations must first understand customers' needs and expectations. Next, they should emphasize on how to provide the most appropriate service to meet customers' needs. This study develops a new structure to define bus passenger's service quality dimensions. The present study intends to modify the existing scale to measure service quality of bus passengers in Tamil Nadu. The final version of the service quality assessment scale (modified SERVQUAL) contains 22 items under five dimensions namely, bus services (5 items), bus stand services (4 items), reliability (4 items), empathy (4 items) and staff behaviour (5 items). Unlike most of the similar scales that are currently used in assessing service quality, the modified SERVQUAL has sound psychometric property in terms of validity and reliability. The merit of the modified SERVQUAL over the SERVQUAL is that the modified SERVQUAL includes both the physical (e.g., tangibles like bus services and bus stand

services) and human (e.g., staff behaviour) factors of the SERVQUAL, yet it is specific enough to pin point the area(s) of improvement for the bus transport corporations.

The initial scale adaptation process was done on the basis of SERVQUAL (Parasuraman et al., 1988) and transport service quality dimensions were taken into consideration based on previous literature (Hu & Jen, 2006; Lai & Chen, 2011; Vanniarajan & Alleswari, 2010; Wen et al., 2005). The procedure for adaptation of modified SERVQUAL scale follows accepted scale development procedures found in marketing and psychology literatures (Churchill, 1979; DeVellis, 2003).

The generation of constructs and selection of items were compatible to the public bus transport setting. Furthermore, the modified SERVQUAL has convincing content validity since all the items were evaluated by a panel of experts, a focus group and transport authorities. In addition, a pilot study was carried out before the actual study to optimize the quality of the scale. Besides, the current scale was developed using the data collected from 585 passengers, thus enabling the modified SERVQUAL with superior generalization.

Unlike most of the publications in scale development that use merely Exploratory Factor Analysis (EFA). Whereas in the present study the study has modified the SERVQUAL scale by means of using both the Principal Component Analysis (PCA) and Confirmatory Factor Analysis (CFA). The confirmatory factor analysis in this study supported every aspect of the scale examined by the PCA in terms of the structure of the constructs and their respective items.

Initially, principal component analysis was performed to identify the underlying structure. The results yielded a six factor solution, composed of internally consistent factors. The factors were labelled as bus services, bus stand services, reliability, empathy, staff

behaviour and ticketing. These factors are similar to the existing literatures on transport related studies (Lai & Chen, 2011; Randheer et al., 2011; Vanniarajan & Alleswari, 2010). The test reliability and validity showed satisfactory results that are consistent with different service quality scales (Parasuraman et al., 1988; 2005). Further, the psychometric properties of the modified SERVQUAL is tested using confirmatory factor analysis (CFA).

Based on the CFA results, the ticketing dimension was discarded. The final service quality multi-dimensional scale has sound psychometric property in terms of validity and reliability. The modified SERVQUAL scale (relevant for bus transport passenger) is a five dimensional, 22-item scale. We hope that this scale will stimulate and facilitate additional scholarly research on bus transport service quality and also assist practitioners in systematically assessing and improving the scale.

The multiple regression analysis was performed by considering the final service quality dimensions as antecedents to predict the overall service quality (single item global measure). The results evidenced that the five dimensions of transport service quality namely, bus services, bus stand services, empathy, reliability and staff behaviour are good predictors for the overall services quality.

Gap analysis

The study has measured the existing service quality of Tamil Nadu public transport corporation using perception vs expectation scores (gap analysis), using the modified SERVQUAL. Gap analysis results reveal that all the five dimensions of the service quality have obtained negative scores. It further suggests that the current level of service provided by the Tamil Nadu public transporters was not adequate and not meeting the expectation level of the passengers. Two types of gap analysis were carried out, one with un-weighted score and another with weighted score. The findings from both the analyses reveal that there was a huge shortfall of service quality in "Bus stand services". It includes toilet facility, drinking water facility, parking, food, beverages and adequate security measures in the bus stand. The second one is being the "Bus services" in weighted score analysis and "Staff behaviour" in un-weighted score analysis. Bus services include condition of windows, hygiene, lighting facilities, spaciousness of the seats and cleanliness. Staff behaviour includes courteous behaviour, helping tendency, answering passenger's queries, politeness and understanding the passenger's needs. Both these dimensions were considered as second level of poor service dimension.

Third, in un-weighted score gap analysis, "Bus services" was positioned as a poor service and in weighted score gap analysis "Staff behaviour" was positioned as poor service. Fourth, in both the analyses "Reliability" was positioned as somewhat a better service quality dimension next to prioritization of bus stand services, bus services and staff behaviour. Reliability includes speed of the bus, visibility of the emergency window and punctuality in arrival as well as departure. Finally "Empathy" being positioned as a better service quality dimension next to reliability. In fact all the dimensions obtained negative

scores in the gap analysis, but reliability and empathy were considered as better service quality dimensions as compared to the bus stand services, bus service and staff behaviour. Empathy includes special attention given to other state passengers, adequate care taken in emergency situations, special care taken towards senior citizens, physically challenged, women and children. Overall the gap analysis result reveals that the present level of service given by the Tamil Nadu public transport corporation is not adequate and not meeting the expected service level of the passengers. Overall there exists a huge gap between passengers' perceived level of service on bus stand services with their expectations. These results are consistent with previous studies (Rita & Ganesan, 2010; Sezhian, Muralidharan, Nambirajan, & Deshmukh, 2011; Vanniarajan & Alleswari, 2010) conducted in Tamil Nadu. This problem needs to be addressed on high priority to improve the overall service quality of the Tamil Nadu public transport corporation. Further there is a need to formulate policies to improve the bus quality and staff behaviour. The public transport authorities can also conduct training program to improve staff behaviour.

Finally the public transport authorities can deliberately propose a service quality improvement project to address the gaps identified in the present study. Also they can use the modified and proposed scale in the present study to periodically measure the service quality level. Thus the public transport corporation can gain a competitive advantage over private bus transporters. The findings of this study and scale are not only useful to the Tamil Nadu public transport corporation, they can be well suited to other state public transport corporations in India; because the modified scale in the present study produced adequate validity and reliability. Also the findings from gap analysis supported the previous research findings in Indian context (Das & Pandit, 2013; Rita & Ganesan, 2010).

Integrated research model

The study focus on services continue to devote considerable attention to service quality, customer satisfaction, perceived value and loyalty intentions (Heskett & Schlesinger, 1994; Lynch & Ariely, 2000; Rust & Oliver, 2000). The present study is drawn from the signalling theory to investigate the process through which service quality and corporate image affect attitudinal loyalty. Based on the research frame work and signalling theory, the integrated research model and hypotheses are proposed.

The service quality has positive impact on corporate image, the findings suggest that the customer who received high service quality during the service delivery would form a favourable corporate image of the transport corporation. Therefore, it is a fundamental requirement for transport authorities to improve their service quality, particularly in bus services, bus stand services, reliability, empathy and staff behaviour. The service quality has positive impact on perceived value, this implies that the value of a service is largely defined by perceptions of quality. Thus, service consumers seem to place greater importance on the quality of a service than they do on the costs associated with its acquisition. These results add further evidence that service quality is an important decision-making criterion for customers. Passengers are concerned about ticket prices, and that concern is reflected in passengers' assessment of perceived value. Therefore, providing passenger-value-oriented quality services is crucial for transport authorities. Study further established the significant role that service quality plays in forming customer trust. More specifically, the quality of service delivered by Transport Corporation has a significant and positive effect on consumers' trust-building towards the corporation. The transport authority can ensure safety and security of bus journey by controlling over speed, and

thereby minimising accidents which in turn builds trust among the passengers. In addition, the study suggests that service quality perceptions are also an important determinant of customer satisfaction and attitudinal loyalty. This finding supports previous research (Amy & Amrik, 2003; Barich & Kotler, 1991; Bell et al., 2005; Harris and Goode (2004); Hu et al., 2009; Johnson et al., 2001; Parasuraman & Grewal, 2000; Zeithaml, 1988). It means that the bus transport service quality was found to have an influence on corporate image, perceived value, customer trust, customer satisfaction and attitudinal loyalty. Therefore, the bus transport corporation should monitor their sensitivity to changes in bus transport service quality and passenger satisfaction and thus, gain valuable insight on why and how to improve the transport corporation service performance.

Corporate image reflects passengers' beliefs and feelings of Transport Corporation. Favourable image enables Transport Corporation to attract new customers and retain old customers. The direct relationship between corporate image and perceived value, customer trust, customer satisfaction and attitudinal loyalty were tested. Findings indicate that corporate image has a positive influence on perceived value, customer trust and passenger satisfaction. This implies that passengers who form a positive overall impression of the image of the corporation are more likely to travel in the same buses again and also recommend to others. The results are consistent with previous studies (Andreassen & Lindestad, 1998; Hu et al. (2009); Jha et al., 2013; Lai et al., 2009; Nguyen & LeBlanc, 1998; Wang, 2010). Unexpectedly the relationship between corporate image and attitudinal loyalty relationship was not supported. However, the study finding is consistent with other research (Aydin and Ozer, 2005). Unlike private players, public transport corporations are not focusing on image building activities.

Perceived value reflects the trade-off between service costs and received value. The cost for travel includes both time and prices passenger pay for the service. The connection between perceived value and customer trust, customer satisfaction and attitudinal loyalty has been established in some previous studies (Harris & Goode, 2004; Singh & Sirdeshmukh, 2000; Lai et al., 2009) (Chen, 2008; Cronin et al., 2000; Gotlieb et al., 1994; Hu et al., 2009; Lai et al., 2009; Patterson & Spreng, 1997; Petrick, 2004; Petrick & Backman, 2002). This current study also supports the significant and positive effect of perceived value on customer trust, customer satisfaction and attitudinal loyalty. Practically, it is important for transport authorities to understand how passengers evaluate "value worthy of prices" of the service encounters for overall travel.

A significant positive relationship exists between customer trust and customer satisfaction and attitudinal loyalty. The results revealed that both the hypotheses are supported and it is consistent with past literature (Benedicktus, 2011; Harris & Goode, 2004; Tsai et al., 2006). The importance of building consumer trust to create an emotional, lasting, and loyal relationship with the customer is well-documented. Social Exchange Theory (SET) provides theoretical foundations for the role of trust in transactional relationships. SET, from a socio-political perspective, serves as one explanation for justifying relational exchanges (Luo and Donthu, 2007). SET posits that trusted relationships are likely to reduce the risk of opportunistic behaviour (Moorman et al., 1993), and increase the likelihood of a long-term relationship (Luo and Donthu, 2007). Accordingly, loyalty programs should be implemented to build such strong, favourable and unique associations with the corporate image.

Customer satisfaction is the most significant and important determinant of attitudinal loyalty. This strong relationship stated the importance of customer satisfaction to loyalty, and in turn, to profitability. Prior studies have established that increasing customer loyalty is highly correlated to organization profitability (Heskett et al., 1997; Cronin & Taylor, 1992; Harris & Goode, 2004).

Customer attitudinal loyalty is ultimate determinant of profitability of organisation. The results revealed that the attitudinal loyalty can be built through excellent service quality, favourable corporate image, perceived value, customer trust and customer satisfaction. From a managerial standpoint, this emphasizes the importance of quality as an operational tactic and strategic objective. For theory, these results add further evidence that service quality and attitudinal loyalty relationship is an important criterion for service organisations.

Table 41

Summary of hypotheses testing

Research hypotheses	β	Conclusion
H1: There is a positive relationship between service quality and corporate image	.57	Supported
H2: There is a positive relationship between service quality and corporate image	.32	Supported
H3: There is a positive relationship between service quality and customer trust	.55	Supported
H4: There is a positive relationship between service quality and customer satisfaction	.13	Supported
H5: There is a positive relationship between service quality and attitudinal loyalty	.24	Supported
H6: There is a positive relationship between corporate image and perceived value.	.40	Supported
H7: There is a positive relationship between corporate image and customer trust.	.16	Supported
H8: There is a positive relationship between corporate image and customer satisfaction	.45	Supported
H9: There is a positive relationship between corporate image and attitudinal loyalty	.04	Not supported
H10: There is a positive relationship between perceived value and customer trust	.08	Supported
H11: There is a positive relationship between perceived value and customer satisfaction.	.27	Supported
H12: There is a positive relationship between perceived value and attitudinal loyalty.	.15	Supported
H13: There is a positive relationship between customer trust and customer satisfaction.	.11	Supported
H14:There is a positive relationship between customer trust and attitudinal loyalty	.26	Supported
H15: There is a positive relationship between customer satisfaction and attitudinal loyalty	.18	Supported
H16: Corporate image mediates the relationship between service quality and attitudinal loyalty	.03	Not supported
H17: Customer trust mediates the relationship between service quality and attitudinal loyalty.	.18	Supported
H18: Perceived value mediates the relationship between service quality and attitudinal loyalty.	.08	Supported
H19: Customer satisfaction mediates the relationship between service quality and attitudinal loyalty	.10	Supported

Note: β= beta coefficient.

The results of the parallel mediational analysis showed that perceived value, customer trust and customer satisfaction partially mediate the relationship between service quality and attitudinal loyalty and the findings are supported by previous researcher (Akbar & Parvez, 2009; Brady & Robertson, 2001; Cronin et al., 2000; Jha et al. (2013); Nguyen & LeBlanc, 1998; Peyrot et al., 1992; Söderlund, 2006). The service quality and attitudinal loyalty path is complex and the partial mediating effect suggests that there should be some other variables (like customer commitment, switching cost) included in the path to strengthen the service quality and attitudinal loyalty relationship. Surprisingly, the indirect effect of corporate image is not significant. Therefore, corporate image is not mediating the relationship between service quality and attitudinal loyalty.

FIMIX-Unobserved heterogeneity

The present study intended to test the integrated model on service quality and loyalty through image, satisfaction, value, trust and commitment, assuming that the collected data through survey-based method are homogenous and represent a single population. In reality, there may be a significant presence of heterogeneity in the data across unobserved groups and it may bias the parameter estimates. Also it may lead to Type I and Type II errors and result in invalid conclusions (Becker et al., 2013). Yet, evidence to account for the unobserved heterogeneity in causal models is often avoided by researchers.

The present study has tried to account for the unobserved heterogeneity in the data. This was done using FIMIX approach. In any approach to detect unobserved heterogeneity, the study may obtain k=1 to I solutions. Based on the fit indices and entropy value, there can exist two sub populations in the present data collected from the bus passengers. To identify the sub population, additional analysis was carried out using CHAID algorithm. This result

suggests that the first group or sub population is that of low frequency travellers and the second group, high frequency travellers.

The theoretical model is validated using two samples (Sub population 1 = 515, Sub population 2 = 116). Based on the results, the relationship between service quality and corporate image was obtained; significant difference in regression coefficient values was found. For low frequent travellers the perception of image from service quality is very high than high frequent travellers. So, image perception of low frequent travellers was highly influenced by service quality than for high frequent travellers. For high frequent travellers some other factors may play greater role in image perception.

Similarly, the relationship between customer trust and attitudinal loyalty showed significantly different regression coefficient values. For low frequent travellers this relationship was significant but not for high frequent travellers. So, low frequent traveller's loyalty was highly influenced by customer trust. The loyalty of high frequent travellers may be determined by some factors other than customer trust. Even if high frequent travellers have customer loyalty towards a particular service offered by the public transport authority, it may be due to reasons other than attitudinal loyalty.

The variance explained for perceived value and loyalty in high frequent travellers sample was very high. Especially for perceived value, the explained variance for service quality was 82 % and for loyalty 85 % by different factors including service quality. This results further derives that various relationships exist in the sample of high frequent travellers that influence loyalty, unlike low frequent travellers.

The results suggest that Tamil Nadu public transport authorities need to develop and offer differential strategies to attract both segment travellers. In today's world of intense competition, satisfying customers may not be sufficient. Management should not only focus on improving customer satisfaction but also target on improving customer perceptions of overall service quality, customer trust, corporate image and increasing consumer perceived value. Greater competitiveness is associated with higher levels of quality, greater perceived value and customer satisfaction building a successful image and improving customer retention. Therefore, service providers should continuously improve service quality and perceived value, customer trust and corporate image.

Overall the results suggest that there exists two sub population in the existing data. Future studies need to address this unobserved heterogeneity factor as an observed heterogeneity factor by modelling low frequent travellers and high frequent travellers as moderators. This would enable the understanding of the contingent nature of the relationship among the constructs.

Finally the above mentioned relationships are however subject to heterogeneity. The results of the present study have shown that both low frequent travellers and high frequent travellers can influence the performance of the model to varying degrees.

Theoretical implications

Although many studies have conducted studies designed to understand the concept of and develop a reliable and valid measurement of service quality in traditional business areas, the conceptual gap of service quality still exists in the academic domain. Moreover, few studies have been conducted to develop the theoretical framework for measuring the consumers' perceptions of service quality in the bus transport corporations. This study

extended the general evaluation of service quality, used in traditional research, to a more detailed evaluation of integrated service quality applied to the bus transport services. This is the first study to conceptualize service quality as Reflective-Formative type latent construct. The present study integrated the past theoretical models on service quality and attitudinal loyalty. Therefore, the theoretical model developed and tested in the present study can be utilized as a conceptual background in future studies in the area of service quality research. The present study applied Parallel Mediation Technique to advance the theory on the relationship between service quality and attitudinal loyalty. Based on the parallel mediation result, the strength of the relationship between service quality and loyalty is very high through customer trust. So customer trust is an important factor and which transmits the effect from service quality to loyalty. Overall, based on the FIMIX-PLS result, there exist two homogenous populations in the existing data. Future studies can address this unobserved heterogeneity factor as an observed heterogeneity factor by modelling low frequent travellers and high frequent travellers as moderators.

Practical implications

The present study suggests to the transport authorities that there is a need to improve the service level of bus stand services, staff behaviour and bus services. Management should give much importance to build customer trust to improve attitudinal loyalty. The transport authority should understand how corporate image, perceived value, customer trust and customer satisfaction interrelate in the formation of customer attitudes and intentions. The modified SERVQUAL scale adopted in this study is useful for examining passengers' perceptions of service quality in the bus transport service as a diagnostic and prescriptive

tool. It helps practitioners by conducting periodic consumer survey, thereby, to identify specific problematic areas.

Limitation and scope for future research

Despite many unique advantages and contributions of the present study, it has a few limitations. The present study has used cross-sectional data to test the cause and effect relationship among the constructs by assuming the proposed model to be causal. But in practical sense cross-sectional data is not useful to detect the true causality among the theoretical constructs. So future studies are required to use longitudinal studies to test theoretical model proposed in the present study. In addition, the passengers sample was geographically restricted to Tamil Nadu. The study results may not be generalized to other states of India. Future studies are required to test this model using different state samples across India.

Another limitation of the present study was usage of purposive sampling technique to collect the responses. However to overcome the sampling bias, future studies can use systematic sampling method to collect responses. In the present study the theoretical model has been tested by conceptualizing service quality as a Reflective-Formative type construct. Based on this conceptualization the relationship among value, image, satisfaction, commitment, trust and loyalty were tested. The relationship among the constructs was not compared by conceptualizing service quality as a Reflective-Reflective type and the direct and indirect influence of each service quality dimensions on image, value, commitment, trust, satisfaction and loyalty. Future studies are required to address this limitation.

The present study has collected responses using self-report data. It may lead to common source of variance or common method bias. Though we have adopted a few methodological remedies (ordering the items dependent variable to independent variable, clear verbal explanation for the constructs and different response formats like likert and semantic differential scale, bipolar response format) to control this bias, there may be a presence of common method bias (Podsakoff et al., 2003). Harman's single factor test was also carried out. This test revealed a positive result that the present study is free from common method bias. However the common method bias may not disprove the study conclusions (Spector, 2006). Future studies can avoid this problem by collecting the responses from different sources and at different points of time.

In the present study, a partial mediation in both the models (Integrated model and parallel mediation model) is obtained. Future studies need to identify some of the variables which may be included in the relationship between service quality and loyalty.

Another limitation of the present study is that, in the first study, only the service quality measures/items were included. Due to this, the discriminant validity of the initially developed measures are warranted. But in the second study, the service quality measures were best converged with their constructs and also there were no problems with the discriminant validity. In the present study the "ticket booking" dimension was removed. Future studies can include this dimension to understand the different relationships among the constructs.

Final limitation of the present study is that in supplementary analysis significant relationship is found for the serial mediational effect; but this relationship is neither developed nor tested. In this, the relationship between service quality and loyalty was

mediated by image satisfaction in serial. Future studies can address this limitation by developing a serial mediational hypothesis. In the mediation analysis insignificant relationship is found between service quality and loyalty through image. Future studies can specifically test this relationship.

Conclusion

The present study adapted the modified SERVQUAL scale containing 22 items under five dimensions (bus services, bus stand service, empathy, reliability and staff behaviour) to evaluate service quality of bus Transport Corporation. The study tested the integrated model on service quality and attitudinal loyalty. Also, the study has advanced the theory using parallel mediation effect of service quality on loyalty through corporate image, perceived value, customer trust and customer satisfaction. Another important advancement is to conceptualisation of service quality as reflective-formative type latent construct. Finally, the study identified the unobserved heterogeneity in the research model and segmented it into high and low frequent travellers' models. The Tamil Nadu state and other state transport authorities can be benefited by the present study findings and they may use the scale adapted in the present study to measure the service quality of bus transport.

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APPENDICES

Annexure 1

Survey Instrument for study 1

The purpose of this survey is to study the passengers' perception of the quality of Public Transport Services (PTS) of Tamil Nadu State Transport Corporation (TNSTC) Buses. Following is a questionnaire designed to collect data on the various features associated with the services. The data will be used for the academic (Doctoral Research) purpose. This survey is anonymous and strictly confidential. The statements given below are related to certain aspects of the service that you experienced in the long distance Public Transport Services (PTS).

Service Quality Scale

Direction: For each of the following statements, please circle the number which best reflects your opinion of such service. The opinion survey scale ranges from 1 to 7.

Expectation: Please select the number 1-Most unimportant, 2-unimportant, 3-Somewhat unimportant, 4-Neither Important nor unimportant, 5-Somewhat Important, 6-Important and 7-Most Important.

Perception: Please select the number 1-Strongly Disagree, 2-Disagree, 3-Somewhat Disagree, 4-Neither Agree nor Disagree, 5-Somewhat Agree, 6-Agree and 7-Strongly Agree.

	Expectation	Perception
Ticket booking	1 2 3 4 5 6 7	1 2 3 4 5 6 7
Ticket office is located at an accessible place	1 2 3 4 5 6 7	1 2 3 4 5 6 7
I can book tickets for my journey without difficulty	1 2 3 4 5 6 7	1 2 3 4 5 6 7
Information given at the reservation counters is understandable	1 2 3 4 5 6 7	1 2 3 4 5 6 7
Employees of the ticket office are responsive	1 2 3 4 5 6 7	1 2 3 4 5 6 7
Bus Services		
Buses are in good condition	1 2 3 4 5 6 7	1 2 3 4 5 6 7
The interiors of the buses are clean & hygienic	1 2 3 4 5 6 7	1 2 3 4 5 6 7
Buses have adequate lighting facilities inside	1 2 3 4 5 6 7	1 2 3 4 5 6 7
Bus windows are in good condition	1 2 3 4 5 6 7	1 2 3 4 5 6 7
Bus engine is smooth and doesn't make much noise	1 2 3 4 5 6 7	1 2 3 4 5 6 7
Buses have comfortable and spacious seats	1 2 3 4 5 6 7	1 2 3 4 5 6 7
Empathy		
Special attention is given to passengers from other cities, states, etc.	1 2 3 4 5 6 7	1 2 3 4 5 6 7
Adequate response is provided in emergencies	1 2 3 4 5 6 7	1 2 3 4 5 6 7
Special care is provided for senior citizens & physically challenged persons	1 2 3 4 5 6 7	1 2 3 4 5 6 7
Special care is provided for women & children	1 2 3 4 5 6 7	1 2 3 4 5 6 7
Reliability		
Buses depart on time	1 2 3 4 5 6 7	1 2 3 4 5 6 7
Buses reach the destinations on time	1 2 3 4 5 6 7	1 2 3 4 5 6 7
The emergency exits are visually appealing in buses	1 2 3 4 5 6 7	1 2 3 4 5 6 7
Buses have adequate safety/security measures	1 2 3 4 5 6 7	1 2 3 4 5 6 7
Buses travel at a normal speed	1 2 3 4 5 6 7	1 2 3 4 5 6 7
Bus Stand Services		
Infrastructure/ Facilities are well maintained at bus stops	1 2 3 4 5 6 7	1 2 3 4 5 6 7
Bus stops have adequate shelter and chairs	1 2 3 4 5 6 7	1 2 3 4 5 6 7
Bus stops have adequate facilities (toilets, water, parking etc.)	1 2 3 4 5 6 7	1 2 3 4 5 6 7
Bus stops toilets are well maintained	1 2 3 4 5 6 7	1 2 3 4 5 6 7
Bus stops have adequate facilities for food and beverages	1 2 3 4 5 6 7	1 2 3 4 5 6 7
Bus stops have adequate safety/ security measures (Video monitors, security personnel, etc.)	1 2 3 4 5 6 7	1 2 3 4 5 6 7
Staff Behaviour		
The staff satisfy passengers' requests the first time	1 2 3 4 5 6 7	1 2 3 4 5 6 7
The staff are willing to help passengers	1 2 3 4 5 6 7	1 2 3 4 5 6 7
The staff answer passenger queries politely	1 2 3 4 5 6 7	1 2 3 4 5 6 7
The staff are always polite	1 2 3 4 5 6 7	1 2 3 4 5 6 7
The staff understand passengers' needs	1 2 3 4 5 6 7	1 2 3 4 5 6 7
The staff behaviour is courteous	1 2 3 4 5 6 7	1 2 3 4 5 6 7

Annexure 2

Survey Instrument for study 2

Direction: Please indicate your agreeableness on the following statements. Please circle the appropriate number. 1-Strongly Disagree, 2-Disagree, 3-Somewhat Disagree, 4-Neutral, 5-Somewhat Agree, 6-Agree and 7-Strongly Agree

Dimensions and indicators							
Staff Behaviour							
The staff are willing to help passengers	1	2	3	4	5	6	7
The staff answer the passenger queries politely	1	2	3	4	5	6	7
The staff are always polite	1	2	3	4	5	6	7
The staff understand passengers' needs	1	2	3	4	5	6	7
The staff behaviour is courteous	1	2	3	4	5	6	7
Bus Stand Services							
Bus stops have adequate facilities (toilets, water, parking etc.)	1	2	3	4	5	6	7
Bus stops toilets are well maintained	1	2	3	4	5	6	7
Bus stops have adequate facilities for food and beverages	1	2	3	4	5	6	7
Bus stops have adequate safety/security measures (Video monitors, security personnel, etc.)	1	2	3	4	5	6	7
Bus Services							
Buses are in good condition	1	2	3	4	5	6	7
The interiors of the buses are clean & hygienic	1	2	3	4	5	6	7
Buses have adequate lighting facilities inside	1	2	3	4	5	6	7
Bus windows are in good condition	1	2	3	4	5	6	7
Buses have comfortable and spacious seats	1	2	3	4	5	6	7
Reliability							
Buses depart on time	1	2	3	4	5	6	7
Buses reach destination on time	1	2	3	4	5	6	7
Buses have adequate safety/security measures	1	2	3	4	5	6	7
Buses travel at a normal speed	1	2	3	4	5	6	7
Empathy							
Special attention is given to passengers from other cities, states, etc.	1	2	3	4	5	6	7
Adequate care is provided during emergencies	1	2	3	4	5	6	7
Special care is provided for senior citizens & physically challenged	1	2	3	4	5	6	7
Special care is provided for women & children	1	2	3	4	5	6	7

Corporate Image

Direction: Considering any experiences you may have had with other bus travels; what you may have heard from friends and colleagues about their experiences with various travels; what you may have heard about transport services from the media, please evaluate XYZ buses relative to other travels.

Lower quality	1	2	3	4	5	6	7	8	9	10	Higher quality
Lower standard	1	2	3	4	5	6	7	8	9	10	Higher standards
Poor	1	2	3	4	5	6	7	8	9	10	Excellent
Inferior	1	2	3	4	5	6	7	8	9	10	Superior

Perceived Value

Direction: Please rate the XYZ buses relative to other bus travels (1=much worse to 7=much better)

The quality of service given the ticket I pay	1	2	3	4	5	6	7
The ticket I pay for the quality of service I receive	1	2	3	4	5	6	7
Overall value from the service I receive	1	2	3	4	5	6	7

Customer Trust

Direction: The following statements are related to your feelings about the quality of XYZ. Please circle the appropriate number. 1-Strongly Disagree, 2-Disagree, 3-Somewhat Disagree, 4-Neutral, 5-Somewhat Agree, 6-Agree and 7-Strongly Agree.

The XYZ provided the best service	1	2	3	4	5	6	7
The XYZ offered a constant quality of service	1	2	3	4	5	6	7
Overall, I trusted the XYZ service	1	2	3	4	5	6	7

Customer Satisfaction

Direction: Please rate your feelings about the experience with the XYZ buses relative to other bus travels.

Unhappy	1	2	3	4	5	6	7	8	9	10	Happy
Displeased	1	2	3	4	5	6	7	8	9	10	Pleased
Terrible	1	2	3	4	5	6	7	8	9	10	Delighted
Dissatisfied	1	2	3	4	5	6	7	8	9	10	Satisfied

Attitudinal Loyalty

Direction: Please indicate your agreeableness on the following statements. Please circle the appropriate number. 1-Strongly Disagree, 2-Disagree, 3-Somewhat Disagree, 4-Neutral, 5-Somewhat Agree, 6-Agree and 7-Strongly Agree.

I Would recommend XYZ buses to others	1	2	3	4	5	6	7
I Would say good things about XYZ buses to others	1	2	3	4	5	6	7
Encourage friends and relatives to do travel with XYZ buses	1	2	3	4	5	6	7
Would choose XYZ bank if you had to choose a bank again	1	2	3	4	5	6	7

Demographic Informations

1. Gender: ☐ Male ☐ Female
2. Age: _____ (yrs)
3. Marital Status: ☐ Single ☐ Married
4. Family Size: _____
5. Family annual Income_____
6. State you belong to_____
7. Highest level of education completed:
   - ☐ SSLC ☐ Graduate
   - ☐ HSC ☐ Post Graduate
   - ☐ Others_____
8. Employment status:
   - ☐ Unemployed ☐ Private Employee
   - ☐ Student ☐ Govt. Employee
   - ☐ Own Business
9. Since how long you are experiencing TNSTC bus travels? _____ (e.g. six month, 1year, 2 years, etc.)
10. How often do you travel?
    - ☐ Occasionaly ☐ Frequently
    - ☐ Rarely ☐ Always
11. Main purpose of the trip:
    - ☐ Work ☐ Education
    - ☐ Family Visit ☐ Leisure
    - ☐ Others_____
12. Most important reasons for selecting TNSTC Bus services are (tick as many as)
    - ☐ Affordable price ☐ Comfortable Journey
    - ☐ Connectivity ☐ No other alternative
    - ☐ Time Saving ☐ Others_____

Annexure 3

Publications

1. Mahesh R., and Raja Shekhar B., "Service Quality in Public Bus Transport Services: Weighted Gap Score Approach" International Journal of Applied Management Research (IJAMR), Accepted.
2. Mahesh R., and Raja Shekhar B., "Unobserved heterogeneity in the service quality – attitudinal loyalty relationship: Finite mixture partial least squares (FIMIX) approach", Tourism Management Journal (Science Direct), Under Review.
3. Mahesh, R., and Raja Shekhar B., (2014) Service Quality of IRCTC Website: An Assessment of a Hierarchical Model with Mediating Effect Using Partial Least Squares (PLS). 15th International Conference on "Advances & Challenges in Global Business, Management, Economics, Tourism and Information Technology". Organized by Research Development Association and Research Development Research Foundation in collaboration with the Rajasthan Chamber of Commerce & Industry at Puducherry during 21st & 22nd November, 2014.
4. Mahesh, R., and Raja Shekhar B (2014). The Role of Corporate Image and Customer Satisfaction in the Relationship between Service Quality and Attitudinal Service Loyalty: A Serial Mediation Approach. Third international Marketing conference MARCON 2014, organized by Indian Institute of Management Calcutta, December 18-20, 2014.