

## PASSENGERS' PERCEIVED SERVICE QUALITY: A CONSTRUCT VALIDATION

Ritu Dhawan<sup>1</sup> and H.S. Sandhu<sup>2</sup>

**Purpose-** *The main objective of the study was to explore the critical determinants of service quality in transport sector and to propose a reliable and valid scale for measuring passengers' perceived service quality.*

**Design/methodology/approach-** *The instrument was designed with specific reference to the public bus transport system. Primary data was collected from 585 passengers for the purpose. To analyze the data and validate the proposed instrument, exploratory factor analysis (using SPSS 10.0) was conducted to extract critical factors, followed by confirmatory factor analysis (using AMOS 5.0) to further purify and validate the scale.*

**Findings-** *The final scale/instrument comprised of 28 items that span through five dimensions, viz., tangibility, responsiveness, reliability, assurance, and empathy. The instrument was, further, empirically tested for unidimensionality, reliability, and construct validity using Confirmatory Factor Analysis. It was found reliable and valid.*

**Research limitations/implications-** *The limitation of the study was that the sample drawn was limited that might be collected from large number of the respondents spread in the wider area. Rather it can be extended cross culturally that may give more generalized conclusions. Besides, the study was confined to bus transport sector only.*

**Practical implications-** *Research focusing on the relative impact of identified critical factors on passengers' service expectations, within as well as across service categories will have useful managerial implications. The major insights gained through the research suggest a conceptual service quality scale that will hopefully spawn both academic and practitioner interest in service quality and serve as a framework for further empirical research in this important area.*

**Originality/value-** *The present study offered a systematic procedure that could form the cornerstone for providing further insights into the conceptual and empirical*

---

<sup>1</sup> Assistant Prof., Department of Commerce and Business Management, Khalsa College for Women, Amritsar -143005 (Punjab), India. E-Mail: mehtaritu2001@yahoo.com

<sup>2</sup> Professor, CKD, Punjab Technical University, Amritsar -143005 (Punjab), India

*comprehension of passengers perceived service quality.*

**Key words:** Service Quality, Passengers, Public Bus Transport, Reliability, Validity, India.

## INTRODUCTION

Service organizations are playing an increasingly important role in the overall development of any economy. In today's world of global competition, rendering quality service is a key for success and many experts concur that the most powerful competitive trend currently shaping marketing and business strategy is service quality (Abdullah, 2005). Over the last twenty years or so, a great deal of research attention has been devoted to the field of service quality (Crosby and Stephens, 1987; Silvestro *et al.*, 1990; Cronin and Taylor, 1992; Avkiran, 1994; Brady and Robertson, 2001; Robledo, 2001). As a result of this widespread belief, service organizations have placed service quality at the top of the list of strategic constructs. Interest in the measurement of service quality is Service quality is considered as “a measure of how well the service delivered matches customer's expectations” (Lewis and Booms, 1983), or “providing the customer with what he wants, when he wants it, at acceptable cost, within the operating constraints of the business”, and “providing a better service than the customer expects” (Lewis, 1987). A more recent research by Abdullah (2005) concurs that service quality is an attitude of overall judgment about service superiority, although the exact nature of this attitude is still hazy. Some suggest that it stems from a comparison of performance perceptions with expectations (Parasuraman *et al.*, 1988), while others argue that it is derived from a comparison of performance with ideal standards (Teas, 1993) or from perceptions of performance alone (Cronin and Taylor, 1992). Effective delivery of quality services involves finding customers, identifying their needs, and meeting or exceeding their expectations (Kundu and Vora, 2004). Service quality can be measured in terms of customer perception, customer expectation, customer satisfaction and customer attitude (Sachdev and Verma, 2004).

Service quality has been discussed in number of writings (Granroos, 1982; Lehtinen and Lehtinen, 1982; Lewis and Booms, 1983; Sasser, *et al.*, 1978; Bolton and Drew, 1991; Cronin and Taylor, 1992; Teas, 1993; Chumpiatz and Papparoidamis, 2004; Abdullah, 2005). Examination of these writings and other literature on services suggests three underlying themes:

- Service quality is more difficult for the consumer to evaluate than goods.
- Service quality perceptions result from a comparison of consumer expectations with actual service performance. Service quality is a form of attitude, related but not equivalent to satisfaction that result from the comparison of expectations with performance.
- Quality evaluations are not made solely on the outcome of a service; they also involve evaluations of process of service delivery.

## IMPORTANCE AND OBJECTIVES OF THE STUDY

The most recent trend in many service organizations is to consider quality service as a critical factor in enabling them to achieve a differential advantage over their competitors. Provision of high quality service aids in meeting several requirements such as customer satisfaction and its consequent loyalty and market share, soliciting new customers, improved productivity, financial performance and profitability (Jullian and Ramaseshan, 1994; Lewis, 1993). It has become an important research topic because of its important relationship to corporate marketing and financial performance.

In today's world of fierce competition, rendering quality service is a key for subsistence and success. Rather, it has become essential for survival of service companies in the emerging world without borders (Kundu and Vora, 2004). Service firms find it difficult to envision and understand what aspects connote high quality to consumers. Service quality is considered an essential determinant that allows an organization to differentiate itself from the competition and, therefore, gain a substantainable competitive advantage. Hence, service quality is at the forefront of both the marketing literature in general and the service marketing literature in particular (Lassar *et al.*, 2001).

The purpose of the present study reported here was to develop and validate a service quality scale for the passengers of the public buses (public passengers transport). Besides, introduction, the rest of the paper is organized as follows. Section 2 presents the review of literature on service quality. The methodology used and the purification, refinement and validation of the scale are discussed in section 3, and 4 respectively. Finally, we conclude by identifying study limitations and proposing future research directions.

- Service quality is more difficult for the consumer to evaluate than goods.
- Service quality perceptions result from a comparison of consumer expectations with actual service performance. Service quality is a form of attitude, related but not equivalent to satisfaction that result from the comparison of expectations with performance.
- Quality evaluations are not made solely on the outcome of a service; they also involve evaluations of process of service delivery.

### **IMPORTANCE AND OBJECTIVES OF THE STUDY**

The most recent trend in many service organizations is to consider quality service as a critical factor in enabling them to achieve a differential advantage over their competitors. Provision of high quality service aids in meeting several requirements such as customer satisfaction and its consequent loyalty and market share, soliciting new customers, improved productivity, financial performance and profitability (Jullian and Ramaseshan, 1994; Lewis, 1993). It has become an important research topic because of its important relationship to corporate marketing and financial performance.

In today's world of fierce competition, rendering quality service is a key for subsistence and success. Rather, it has become essential for survival of service companies in the emerging world without borders (Kundu and Vora, 2004). Service firms find it difficult to envision and understand what aspects connote high quality to consumers. Service quality is considered an essential determinant that allows an organization to differentiate itself from the competition and, therefore, gain a substantainable competitive advantage. Hence, service quality is at the forefront of both the marketing literature in general and the service marketing literature in particular (Lassar *et al.*, 2001).

The purpose of the present study reported here was to develop and validate a service quality scale for the passengers of the public buses (public passengers transport). Besides, introduction, the rest of the paper is organized as follows. Section 2 presents the review of literature on service quality. The methodology used and the purification, refinement and validation of the scale are discussed in section 3, and 4 respectively. Finally, we conclude by identifying study limitations and proposing future research directions.

## LITERATURE REVIEW

The issue of service quality has received considerable attention in marketing literature (Berry *et al.*, 1985; Bolton and Drew, 1991; Brown and Swartz, 1989; Carman, 1990; Cronin and Taylor, 1992; Parasuraman *et al.*, 1985, 1988; Bahia and Nantel, 2000; Sureshchandran *et al.*, 2002; Gounaris *et al.*, 2003; Ozer *et al.*, 2006; Geetika and Nandan, 2010; Akhtar, 2011; Dukic and Kijevcin, 2012; ). The research literature on service quality and satisfaction was copious with various contributions from numerous researchers over the past few years (Cronin and Taylor, 1992; Parasuraman *et al.*, 1994; Teas, 1994; and Zeithaml *et al.*, 1996). Researchers have developed conceptualizations of the dimensions of service quality. Berry (1980) and Booms and Bitner (1981) argued that due to intangible nature of services, customers used elements associated with physical environment when evaluating service quality. Lehitnen and Lehitnen (1982) proposed three major determinants of service quality: (i) institutional quality, i.e. corporate image; (ii) physical quality, which corresponds to the physical environment associated with the service-producing system; and (iii) interactive quality, which involves the interactions between contact personnel and customers as well as interaction among the customers themselves.

However, the credit for heralding the service quality research went to Parasuraman *et al.*, 1985; and Zeithaml *et al.*, 1985. They offered the most widely reported set of service quality dimensions. Parasuraman *et al.* (1985) observed that service firms found it difficult to anticipate and comprehend what aspects insinuated high quality to consumers and the levels of those aspects that were required to deliver high-quality service. Parasuraman *et al.*, 1985 suggested that the criteria used by consumers fit ten dimensions: tangibility; reliability; responsiveness; communication; credibility; security; competence; courtesy; understanding/ knowing the customer; and access.

Subsequent research scrutiny by Parasuraman *et al.* (1988) condensed these ten dimensions of service quality into five, which resulted in a 22-item scale called 'SERVQUAL'. The five dimensions were tangibility (physical facilities, equipment, and appearance of personnel); reliability (ability to perform the promised service dependably and accurately); responsiveness (willingness to help customers and provide prompt service); assurance (knowledge and courtesy of employees and their ability to inspire trust and confidence); and empathy (caring and individualized attention to the customers). Rust and Oliver (1994) noted that the SERVQUAL instrument captured the crux of what service quality might mean i.e. a comparison to excellence in service by the

customer. More specifically, Kangis and Passa (1997) observed that consumers' perceptions of service quality were influenced by factors such as communications from salespeople and social referents, various types of information collected, and the credence consumers develop towards a service organization.

The conceptualization, measurement, and applications of SERVQUAL across different industrial settings were not bereft of controversies (Buttle, 1996). Limitations with SERVQUAL were highlighted by the authors themselves (Parasuraman *et al.*, 1991; 1994) and in other research studies (Babakhus and Boller, 1992; Lewis, 1991; Carman, 1990; Lewis and Mitchell, 1990). In their empirical work, Cronin and Taylor (1992) controverted the framework of Parasuraman *et al.* (1988) with respect to conceptualization and measurement of service quality, and propounded a performance-based measure of service quality called 'SERVPERF' by illustrating that service quality was a form of consumer attitude. They argued that the performance-based measure was an enhanced means of measuring the service quality construct. In another empirical work, Teas (1993) investigated conceptual and operational issues associated with a 'perceptions-minus-expectations (P-E) service quality model. He developed alternative models based on evaluated performance (EP) and normated quality (NQ).

Parasuraman *et al.* (1994) revamped the SERVQUAL's structure to embody not only the discordance between perceived service and desired service (labeled as measure of service superiority or MSS), but also the discrepancy between perceived service and adequate service (labeled as measure of service adequacy or MSA). Zeithmal *et al.* (1996) observed that the consequences of the service quality perceptions on individual level behavioral intentions could be viewed as signals of retention and defection. Tax *et al.* (1998) suggested that firms should reassess the fairness and appropriateness of the existing processes, outcomes, and employee-customer communications.

Sureshchanderan *et al.* (2002) gave a model to measure the perceptions of customers towards service quality in banks. They modified certain items from the original SERVQUAL scale. Gounaris *et al.* (2003) investigated the influence of customers' perceptions of service quality in the banking sector and provided a comprehensive model. The findings revealed that the greater the degree of market orientation adoption by banks the higher the perceived quality of its offerings by its customers. Bahia and Nantel (2000) developed an alternative six dimensional service quality scale for retail banking which covered a broader range of marketing variables than the original SERVQUAL dimensions. Akhtar (2011) categorized the determinants of service quality

into product features, physical aspects, customer service, and technology & security aspects to study the relationship between service quality, satisfaction and loyalty in private commercial banks. Reliability, assurance, empathy, tangibles, employee behavior, safety, security and maintenance has been identified as important factors by the researchers in transportation sector (Eboli and Mazzulla, 2007; Vanniarajan and Stephen, 2008; Aggarwal, 2008; Gitika and Nandan, 2010).

The concerns raised in the above-mentioned works clearly indicated that there was still scope for further research in the subject of service quality, which was, by nature, an abstract concept that was difficult to comprehend. Moreover, there was not much empirical evidence to determine what made a quality service in public buses from passengers' point of view. In India, particularly a very few studies (Gunaseelan, 1998; Mekokh, 1997; Moorthy and Murugeson, 1996; Umigar, 1989; Eboli and Mazzulla, 2007) were available in this context. Therefore, the present study was undertaken to:

- develop an instrument to measure passengers perceived service quality with a specific focus on public bus transport system;
- identify the critical factors of service quality from passengers' perspective; and
- empirically test the proposed instrument for internal consistency and validity.

## RESEARCH METHODOLOGY

### *Sample Selection*

The sample of passengers' responses was drawn from the Punjab State (India). Data was collected using the "personal contact in group" approach whereby the interviewer approached the respondents in groups and explained to them the survey in detail (including its purpose, the meaning of the items and what was expected of the respondents. The respondents were selected in groups of 10-15 passengers on the basis of randomly selected day, place, and time. A total of 650 respondents were contacted. Out of these, responses in respect of 585 questionnaires were found usable, thereby yielding a response rate of 90.00 per cent. The survey and the interviews were conducted at different locations and on different days, as well as at uniformly distributed time intervals, in order to reduce location, date and time related response bias. An analysis of the respondents' demographic characteristics is presented in Table 1.

**Table1. Sample and demographic characteristics**

Characteristics	No. of Respondents	Percentage
<b>Age (in years)</b>		
• 25-40	317	54.19
• 41-60	148	25.30
• Above 60	120	20.51
<b>Education Level</b>		
• Graduate	315	53.85
• Post graduate	160	27.35
• Professional/Ph.D.	110	18.80
<b>Gender</b>		
• Male	315	53.85
• Female	270	46.15
<b>Marital Status</b>		
• Married	402	68.72
• Unmarried	183	31.28
<b>Place of Residence</b>		
• Rural	243	41.54
• Urban	342	58.46
<b>Occupation</b>		
• Servicemen	270	46.15
• Businessmen	101	17.26
• Student	214	36.59
<b>Monthly Income(in Rs.)</b>		
• Upto 10000	357	61.03
• 10001-20000	166	28.38
• Above 20000	62	10.59
<b>Frequency of Travel</b>		
• Daily	144	24.62
• Frequently	186	31.79
• Occasionally	255	43.59

The majority of respondents (54.19%) were aged between 25-40 yrs. Of the respondents, 25.30% were 41 to 60 yrs and 20.51% are over 60 yrs. As regards education level, it appeared that most of the respondents were simply graduates (53.85%), while 18.80% of the respondents had Ph.D. degree or other professional qualifications and remaining 27.35% were postgraduates. Table 1 revealed that there were almost as many women (46.15%) as men (53.85%). It was evident from Table 1 that majority of the



respondents (58.46%) belonged to urban area. Further, an analysis of marital status of the respondents revealed that majority of respondents (68.72%) was married. As far as occupation was concerned, it was observed that 46.15% of the respondents were servicemen. As against this, 36.59% were students and remaining (17.26%) belonged to business category. Statistics of monthly income of the respondents showed that most of the respondents (61.03%) belonged to the salary group of Rs. 10,000, followed by 28.38% in the group of Rs. 10,001 to 20,000 and remaining 10.59% were in the salary group of Rs. 20,001 and above. The concern of frequency of travel revealed that most of the respondents (43.59 %) traveled occasionally followed by those who traveled frequently (31.79%) and only 24.62% of the respondents traveled daily.

#### *Research instrument*

Researchers and practitioners seemed to generally agree that the 22 items of the SERVQUAL scale developed by Parasuraman *et al.* (1988) was a good predictor of overall evaluation of service quality by consumers. However, the point worth mentioning here was that the completeness of the scale in addressing the critical dimensions of service quality is a subject of further investigation (Sureshchandar *et al.*, 2002).

Thus, to operationalize our scale, we ran through an extensive review of working definitions and measurement scales in the previous studies. An initial list of 44 items was generated that sought to evaluate the concept of service quality. The researchers carefully evaluated the list of items to ensure that the wording of the items was as precise as possible. Some statements were recast to be positively slanted while others were negatively worded to reduce the possibility that the respondents would simply agree or disagree with all the statements without providing adequate attention to reading and comprehending the questions. The items were mainly inspired by and adapted from Gunaseelan (1998).

Finally, a questionnaire was drafted in which each item was presented beside a seven-point Likert scale. The respondents were asked to give their perception of the level of service quality delivered by the employees of public buses on a seven-point Likert scale ranging from 1= 'very strongly disagree' to 7= 'very strongly agree'.

The draft questionnaire was eventually subjected to pilot testing with a total of 50 passengers and they were asked to comment on any perceived ambiguities, omissions or

errors concerning the draft questionnaire. The feed back received was rather ambiguous and thus, only minor changes were made accordingly. For instance, technical jargons were rephrased to ensure clarity and simplicity. This process produced a final list of 30 statements that were included in the study to identify the critical factors (see Appendix 1). Further, while purifying and validating the scale, the list was reduced to 28 statements.

### *Statistical techniques*

To analyze the data and validate the proposed instrument, exploratory factor analysis (using SPSS 10.0) was conducted to extract critical factors, followed by confirmatory factor analysis (using AMOS 5.0) to further purify and validate the scale.

## **EMPIRICS AND ANALYSIS**

### *Measurement refinement and validation*

A thorough measurement analysis on instruments used in empirical research is essential for several reasons. First, it provides confidence that the empirical findings accurately reflect the purposed construct. Secondly, empirically validated scales can be used directly in other studies in the field for different populations. They also yield valid tools to practitioner for assessment, bench marking, and longitudinal evaluation of their programmes (Flynn, *et al.*, 1994).

A scale for a construct was useful for application only if it possessed the following properties i.e. internal consistency; face validity; content validity; convergent validity; and discriminant validity (Netemeyer, *et al.*, 2003). The basic choice for the assessment of measurement properties was between the use of Exploratory Factor Analysis – EFA (i.e., a scheme for exploring the underlying factor structure without prior specifications of the number of factors and their loadings) and the Confirmatory Factor Analysis – CFA (i.e., with precise specifications concerning the factor-structure and their loadings).

Conventionally, EFA is designed for the situation where the relationships between the observed and latent (factors) variables are unascertained or uncertain. The approach proceeds in an exploratory mode to discover the underlying factors, thereby illustrating the relationship between the factors and the observed variables. The purpose is to identify the minimum number of factors that account for the co-variation among the

observed variables. In contrast, the CFA approach addresses the situation wherein the researcher specifies a model in priori, and test the hypothesis that a relationship between the observed and latent variables does in fact exist. In other words, the hypotheses that form constraints are an integral part of the CFA approach. This is because the researcher is aware of the number of factors that are required to explain the inter correlations among the measured variables (Sureshchandran *et al.*, 2002). Thus, exploratory factor analysis is used when there is little knowledge about the underlying structure of factor model. On the other hand, in confirmatory factor analysis the main objective is to empirically confirm or verify a given factor model (Sharma, 1996). Therefore, given the fact that this study entailed scale for which the relationship between the observed and latent variables was unknown or uncertain, we had to employ both the approaches.

### *Exploratory factor analysis*

Exploratory factor analysis was carried out in order to identify the critical factors affecting passengers perceived service quality. The general purpose of factor analytic technique is to find a way to condense the information contained in a number of original variables into a smaller set of new, composite dimensions or factors with a minimum loss of information – that is, to search for and define the fundamental constructs or dimensions assumed to underlie the original variables (Hair *et al.*, 2005). However, the adequacy of data for factor analysis was examined beforehand. The correlation matrix may be seen through Appendix 2. The mean correlation was 0.198 and it varied from 0.385 to 0.641, which revealed that there were enough correlations to go ahead with factor analysis. *Bartlett's test of Sphericity* and *Kaiser-Meyer-Olkin (KMO)* measure of sampling adequacy were also employed to test the appropriateness of the data for factor analysis (Bagozzi and Yi, 1998). The KMO value was higher than the suggested level of 0.60 at 0.688. The Bartlett's  $\chi^2$  value of 12046.218 (df = 435) and significance level of 0.000 showed that there were enough relationships between variables.

After determining the data were reducible, Principal Component Method coupled with Varimax rotation was performed as a factor extraction method. Individual items where factor loading was higher than the chosen cut-off value of 0.40 were selected as cut-off point to determine the elements of the factors. The result was a 30-item scale, in which first factor was represented by eight items, second by seven, third by six, fourth by five and fifth by four. The five factors so generated have eigen values between 4.503 to 2.853. Appendix 3 showed the extracted five factors along with the loadings for all statements, eigen values, and percentage of variance explained by each factor. The five factors

extracted were, namely, tangibility, responsiveness, reliability, assurance, and empathy.

## MEASUREMENT PURIFICATION

In order to purify the measure employed in this study and assess its psychometric properties, we employed Confirmatory Factor Analysis (CFA).

*Unidimensionality Analysis:* A highly mandatory condition for construct validity and reliability checking is the unidimensionality of the measure. It refers to the existence of a single construct/ trait underlying a set of measures. In the absence of unidimensionality, a single number cannot be used to represent the value of a scale (Venkatraman, 1989).

For unidimensionality checking, a measurement model was specified for each construct and CFA was run for all the constructs. Individual items in the model constituting the construct were examined to see how closely they represent the same construct. A goodness of fit index (GFI) of 0.90 or higher for the model suggested that there was no evidence of a lack of unidimensionality (Ahire *et.al.*, 1996). Because it was suggested that GFI might suffer from inconsistencies from sampling characteristics (Bollen, 1989; Hoyle and Panter, 1995), so, there was also reported two fit indices that had been viewed as robust to sampling characteristics. These are adjusted goodness of fit index (AGFI) and Bentler's (1990) comparative fit index (CFI). Value of 0.90 or above has been noted as designating adequate fit for these indices.

All the five dimensions were evaluated through a confirmatory factor analysis using AMOS 5.0 for unidimensionality checking and it was revealed that the model fit was not adequate. An examination of the modification indices of the specific dimensions revealed that several items loaded on different exogenous factors. These included items 11 and 20 for *tangibility*. Thus, we re-ran the confirmatory factor analysis model by deleting the seemingly confusing items, which eventually resulted in good fit.

**Table 2. Scale unidimensionality indices**

Construct (1)	No. of Items (2)	GFI <sup>a</sup> (3)	AGFI <sup>b</sup> (4)	CFI <sup>c</sup> (5)
• Tangibility	6	0.926	0.889	0.912
• Responsiveness	7	0.955	0.911	0.919
• Reliability	6	0.968	0.926	0.945
• Assurance	5	0.986	0.957	0.965
• Empathy	4	0.995	0.997	0.992

*Goodness of Fit Index (GFI)<sup>a</sup> value of 0.90 and above indicates strong scale unidimensionality.*

*Adjusted Goodness of Fit Index (AGFI)<sup>b</sup> value of .90 and above indicates strong scale unidimensionality.*

*Comparative Fit Index (CFI)<sup>c</sup> value of 0.90 and above testifies strong unidimensionality*

Table 2 showed the fit indices using goodness of fit index (GFI), adjusted goodness of fit index (AGFI), and Bentler's comparative fit index (CFI). All the values exceeded the minimum requirements, thereby demonstrating that all the five scales had adequate fit for these indices.

*Internal consistency:* Unidimensionality alone, although a prerequisite is not sufficient *per se* to establish the usefulness of a scale. Once the unidimensionality of the scales is established, an assessment of the reliability is necessary before any further validation analysis can be performed. Several measures of reliability can be ascertained in order to establish the reliability of a measuring instrument. These include test-retest method, equivalent forms, split-halves method and internal consistency method. Of all the above methods, the internal consistency method requires only one administration and consequently is supposed to be the most effective, especially in field studies. Moreover, this method is considered to be the most general form of reliability estimation. In this method, reliability was operationalised as internal consistency, which was the degree of inter correlations among the items that constitute a scale (Nunnally, 1988). Internal

consistency was estimated using a reliability coefficient called Cronbach's alpha (Cronbach, 1950). An alpha value of 0.60 and 0.70 or above was considered to be the criterion of demonstrating internal consistency of new scales and established scales respectively. The Cronbach's alpha values for all the five sub scales were shown in Table 3 (column 3). All the values exceeded the minimum requirements, thereby demonstrating that all the five sub-scales were internally consistent and had acceptable reliability values in their original form.

## MEASUREMENT VALIDATION

*Face validity:* Face validity was the mere appearance that a measure was valid (Kaplan and Sacuzzo, 1993). In face validity one looked at the measure and saw whether "on its face" it seemed a good reflection of the construct. Some argued that face validity was more akin to what a respondent might infer about what an item was intended to measure (Nevo, 1985) and was referred to as the mere appearance that a measure had validity. As all the items for the scale were identified from the literature, their selection was justified, thereby ensuring high face validity of the instrument.

*Content validity:* Content validity was the degree to which the instrument provided an adequate representation of the conceptual domain that it was designed to cover. Apart from face validity, content validity was the only type of validity for which the evidence was subjective and logical rather than statistical (Kaplan and Sacuzzo, 1993). Assurances of content validity were based upon a priori theoretical item generations and judging efforts (Netemeyer *et al.*, 2003). The discussion in the preceding section on development of the instrument reflected the genesis of our construct in relevant literature, and thus, established the content validity of our instrument.

*Construct Validity:* The construct validity refers to the degree to which presumptions can legitimately be made from procedures in the current study to the theoretical constructs on which those procedures were based (Akhtar, 2011). Explicitly, it generalize the measures proposed for the current research to the concept available in the existing literature (Churchill, 1979). In the present study, convergent and discriminant validity of the scale were analysed in order to measure the construct validity.

*Convergent validity analysis:* A measure was said to possess convergent validity if independent measures of the same construct converged, or were highly correlated.

Evidence of convergent validity was offered by significant and strong correlations between different measures of the same construct (Netemeyer *et al.*, 2003). At the one extreme, the various approaches might include completely different methods of administering the scale (e.g. mail surveys, interviews). At the other extreme, each item in the scale could be treated as a different approach to measuring the construct (Ahire *et al.*, 1996). This was the more commonly used approach. It checked the convergent validity of a scale using the Bentler-Bonett ( $\Delta$ ) coefficient (Bentler and Bonett, 1980). The Bentler Coefficient ( $\Delta$ ) was the ratio of difference between the chi-square value of the null measurement model (the null model had no hypothesized factor loading on a common construct in the confirmatory factor analysis) and the chi-square value of the specified measurement model to the chi-square value of null model. A scale with  $\Delta$  value of 0.90 or above was an indication of strong convergent validity (Ahire *et al.*, 1996).

**Table3. Scale reliability and convergent validity indices**

Construct (1)	Number of Items (2)	Cronbach Alpha ( $\alpha^a$ ) (3)	Bentler Bonett ( $\Delta^b$ ) (4)
• Tangibility	6	0.831	0.989
• Responsiveness	7	0.787	0.908
• Reliability	6	0.805	0.935
• Assurance	5	0.711	0.956
• Empathy	4	0.747	0.987

$\alpha^a$  value of 0.60 and above indicates strong scale reliability.

$\Delta^b$  value of 0.90 and above indicates strong scale convergent validity

Table 3 (column 4) summarized the Bentler-Bonett Coefficient ( $\Delta$ ) value corresponding to all the scales. Note that all the scales had a value of 0.90 or above, thereby demonstrating strong convergent validity.

*Discriminant validity:* A scale exhibits discriminant validity if its constituent items

estimate only one construct (Bagozzi and Phillips, 1982). Discriminant validity is ensured by demonstrating that a measure does not correlate very highly with other measures from which it is supposed to differ. It is noted that discriminant validity is an illustration of the uniqueness of the scale. Scales were tested for discriminant validity using a Chi-square difference test.

Confirmatory Factor Analysis (CFA) was run on the selected pair of scale, allowing for correlation between the two constructs. The Chi-square value of this model was noted (chi-a). Next CFA was rerun for the same pair of scale by fixing the correlation among the two at 1. The Chi-square value of the second CFA model is noted (chi-b). The Chi-square difference test checked the statistical significance of the statistic (chi-a minus chi-b) at  $p = 0.01$ . A statistically significant value of (chi-a minus chi-b) demonstrated that the two constructs under consideration were distinct. This procedure is repeated for all pairs of scales in the instrument. The combinations to be tested for  $m$  scales will be:

$$C(m, 2) = m! / [(m-2)! 2!]$$

**Table 4. Assessment of discriminant validity**

Tests	Description	Chi- Square	Chi-Square	Difference
		<i>Constrained Model (df) [chi-a]</i>	<i>Unconstrained Model (df) [chi-b]</i>	
1	<i>Tangibility with</i> Responsiveness	912.8 (64)	945.6 (65)	32.8***
2	Reliability	838.4 (53)	841.3 (54)	02.9*
3	Assurance	539.2 (43)	655.9 (44)	116.7***
4	Empathy	433.3 (34)	800.2 (35)	367.0***
	<i>Responsiveness with</i>			
5	Reliability	768.6 (64)	810.1 (65)	41.5***
6	Assurance	865.2 (53)	943.7 (54)	78.5***
7	Empathy	778.5 (43)	1117.0 (44)	338.5***
	<i>Reliability with</i>			
8	Assurance	487.6 (43)	513.1 (44)	25.5***
9	Empathy	390.9 (34)	863.5 (35)	472.6***
	<i>Assurance with</i>			
10	Empathy	239.4 (26)	597.8 (27)	458.4***

\* $p < 0.10$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$



According to the above formula, for the 5 sub-scales in the instrument, a total of 10 discriminant validity checks were run. Table 4 reported the results of 10 pair wise tests conducted for discriminant validity. It can be seen through Table 4 that all the 10 tests indicated strong support for the discriminant validity criterion.

## DISCUSSION AND CONCLUSIONS

The service sector has grown by leaps and bounds in economies throughout the globe. Given this, services are not only meaningful, but are also predicted as the vision of the future. Service marketing is triggering a lot of interest among researchers and managers in the sense that service providers are especially interested in how exactly to understand and measure customer's perceptions of service quality.

The present study strived to uncover the critical determinants of service quality and subsequently proposed a conceptual model of service quality as perceived by passengers. To this end, a 30-item scale was developed. Exploratory *Factor Analytic Technique* was used to bring out the factors affecting passengers' perception towards service quality. Passengers perceived *tangibility* as an important factor followed by other factors namely: *responsiveness, reliability, assurance and empathy*. The scale was further checked for unidimensionality and it was revealed that 2 statements were confusing as they were loaded on different exogeneous factors. Therefore, those were deleted and remaining 28 items with five factors of service quality had shown strong evidence of unidimensionality, reliability, convergent validity, and discriminant validity. Therefore, it could be posited that passenger perceptions of service quality towards public buses was a multi-dimensional concept that included five factors.

The proposed service quality scale provided a conceptual framework in an area where little prior research was done. It was based on an interpretation of qualitative data generated through a number of in-depth interviews and consumer focus groups – an approach consistent with procedures recommended for marketing theory development (Parasuraman *et al.*, 1985). The exploratory research revealed five evaluative dimensions or criteria, which transcend a variety of services. Research focusing on the relative impact of these factors on passengers' service expectations, within as well as across service categories, will have useful managerial implications. The major insights gained through the research suggest a conceptual service quality scale that will hopefully spawn both academic and practitioner interest in service quality and serve as a

framework for further empirical research in this important area.

## LIMITATIONS AND FUTURE RESEARCH DIRECTION

This study was also not free of limitations. The first limitation concerns the national context of the study that put constraints on the ability to generalize for other countries and cultures. Besides, the study was confined to bus transport sector only.

The conceptual model and propositions emerging from the study offers a systematic approach that could form the cornerstone for providing further insights on the conceptual and empirical comprehension of passengers perceived service quality. Naturally, it cannot be claimed that the factors we investigated are the only ones that influence perceived quality. However, our study provides a starting point for further investigation in the field.

Besides, the current study is limited to one service industry, this assertion would need to be validated by further research. Further studies should apply the measurement instrument in other countries, in other industries and with different types of tertiary institutions in order to test whether the results obtained are general and consistent across different samples so that the findings can be used as a basis for formulation of a definite policy. The study can also be extended to the passengers using other transport systems.

## REFERENCES

- Abdullah, F. (2005), "Measuring service quality in higher education: HEDPERF versus SERVPERF", *Marketing Intelligence and Planning*, Vol. 24 No.1, pp. 31-47.
- Agarwal, R. (2008), "Public Transportation and Customer Satisfaction", *Global Business Review*, 9(2), 257-272.
- Ahire, S.L., Golhar, D.Y. and Waller, M.A. (1996), "Development and validation of TQM implementation constructs", *Decision Sciences*, Vol. 27 No.1, pp. 23-56.
- Akhtar, J. (2011), "Determinants of Service Quality and Their Relationship with Behavioural Outcomes: Empirical Study of the Private Commercial Banks in Bangladesh", *International Journal of Business and Management*, 6(11), 146-156.
- Avkiran, N.K. (1994), "Developing an instrument to measure customer service quality in branch banking", *International Journal of Bank Management*, Vol. 12 No 6, pp.10-18.
- Babakhus, E. and Boller, G.W. (1992), "An Empirical Assessment of the SERVQUAL Scale", *Journal of Business Research*, Vol. 24 No 3, pp. 253-268.
- Bagozzi, R.P. and Phillips, L.W. (1982), "Requesting and testing organizational theories: a holistic construct", *Administrative Science Quarterly*, Vol. 27 No. 3, pp.459-489.
- Bagozzi, R.P. and Yi, Y. (1998), "On the evaluation of structural equation models", *Journal of Academy of Marketing Science*, Vol. 16 No.1, pp. 74-94.

- Bahia, K. and Nantel, J.** (2000), "A reliable and valid measurement scale for the perceived service quality of banks", *International Journal of Bank Marketing*, Vol. 18 No. 2, pp.84-91.
- Bentler, P.M. and Bonett, D.G.** (1980), "Significance tests and goodness of fit in the analysis of covariance structures", *Psychological Bulletin*, Vol. 88(5), pp. 588-606.
- Bentler, P.M.** (1990), "Comparative fit indexes in structural models", *Psychological Bulletin*, Vol.107 No.2, 2 pp.38-246.
- Berry, L., Zeithaml, V. and Parasuraman, A.** (1985), "Quality counts in services too", *Business Horizons*, Vol. 29 (May/June), pp. 44-52.
- Berry, L. L.** (1980), "Services marketing is different", *Business*, Vol. 30 (May-June), pp. 24-28.
- Bollen, K.A.** (1989), *Structural Equations with Latent Variables*, Wiley, New York.
- Bolton, R. and Drew, J.** (1991), "A Multistage Model of Customers' Assessments of Service Quality and Value", *Journal of Consumer Research*, Vol.17 (March), pp. 375-384.
- Booms, B. and Bitner, M.** (1981), "Marketing strategies and organizational structures for services firms", *Marketing of Services*, J. Donnelly and W. George (eds.) Chicago, American Marketing, pp.47-51.
- Brady, M. and Robertson, C.J.** (2001), "Searching for a consensus on the antecedent role of service quality and satisfaction: an exploratory cross-national study", *Journal of Business Research*, Vol.51 No.1, pp.53-60.
- Brown, S.W. and Swartz, T.A.** (1989), "A gap analysis of professional service quality", *Journal of Marketing*, Vol.53 No.4, 92-98.
- Buttle, F.** (1996), "SERVQUAL: Review, critique, research agenda", *European Journal of Marketing*, Vol.30 No.1, pp.28-32.
- Carman, J.M.** (1990), "Consumer perceptions of service quality: an assessment of the servqual dimensions", *Journal of Retailing*, Vol.66 No.1, pp.33-56.
- Chumpitaz, R. and Papatoidamis, N.** (2004), "Service-quality and marketing performance in business-to-business markets: exploring the mediating role of client satisfaction", *Managing Service Quality*, Vol.14 No.2/3, pp.235-248.
- Churchill, G.A.** (1979), "A Paradigm for Developing better measures of Marketing Constructs", *Journal of Marketing Research*, 16(1), 64-73.
- Cronbach, L.** (1950), *Essentials of psychological testing*, Harper and Row, New York.
- Cronin, J.J. and Taylor, S.A.** (1992), "Measuring service quality: a re-examination and extension", *Journal of Marketing*, Vol.56 No.3, pp.55-68.
- Crosby, L.A. and Stephens, N.** (1987), "Effects of relationship marketing on satisfaction, retention, and prices in the life insurance industry", *Journal of Marketing Research*, Vol.24 No.3, pp.404-11.
- Dukic, S., and Kijevcannin, V.** (2012), "Sevice Quality as Deyterminant of Customer Satisfaction", *Economics and Organisations*, 9(3), 311-325
- Eboli, L. and Mazzulla, G.** (2007), "Service Quality Attributes Affecting Customer Satisfaction for Bus Transport", *Journal of Public Transportation*, 10(3), 21-34.
- Flynn, B.B., Schroeder, R.G. and Sakakibara, S.** (1994), "A framework for quality management research and an associated instrument", *Journal of Operations Management*, Vol.11 No.4, pp.339-366.
- Geetika and Nandan S.** (2010), "Determinants of Customer Satisfaction on Service Quality: A study of Railways Platforms in India", *Journal of Public Transportation*, 13(1), 97-113.
- Gounaris, P.S., Sathakopoulos, V. and Athansopoulos, A.** (2003), "Antecedents to perceived service quality: an exploratory study in the banking industry", *International Journal of Bank Marketing*, Vol.21 No.4, pp.168-190.
- Granross, C.** (1982), *Strategic Marketing and Marketing in the Service Sector*, Helsingfors, Swedish School of Economics and Business Administration, Seden.
- Gunaseelan, G.J.** (1998), *Public Sector Road Transport Corporation: A Comparative Study with Private Sector*, Deep and Deep Publications, New Delhi.
- Hair, J.F., Anderson, R.E., Tatham, R.L. and Black, W.C.** (2005), *Multivariate Data Analysis*, Pearson

Education Pvt. Ltd., New Delhi.

- Hoyle, R.H. and Panter, A.T.** (1995). "Writing about structural equation models", in *Structural Equation Modeling: Concepts, Issues and Applications*, R.H. Hoyle (ed) Sage Publications, Thousand Oaks, CA, pp.158-176.
- Jullian, C.C. and Ramaseshan, B.** (1994), "The role of customer-contact personnel in the marketing of retail bank's services", *International Journal of Retail and Distribution Management*, Vol. 22 No.5, pp.29-34.
- Kangis, A. and Passa, V.** (1997), "Awareness of service charges and its influence on customer expectations and perceptions of quality in banking", *Journal of Services Marketing*, Vol.11 No.2, pp.105-117.
- Kaplan, R.M. and Sacuzzo, D.P.** (1993), *Psychological Testing: Principles, Applications and Issues*, Pacific Grove CA: Brooks Cole.
- Kundu, S.C. and Vora, J.A.** (2004), "Creating a talented workforce for delivering service quality", *Human Resource Planning, A Journal of Human Resource Planning Society*, Vol. 27 No. 2, pp. 40-51.
- Lassar, W.M., Manolis, C., and Winsor, R.D.** (2001), "Service quality perspective and satisfaction in private banking", *Journal of Services Marketing*, Vol. 14 No.3, pp.244-271.
- Lehitnen, U. and Lehitnen, R.** (1982), "Service quality: a study of quality dimensions", Unpublished Working Paper, Helsinki: Service Management Institute, Finland.
- Lewis, B.R. and Mitchell, V.W.** (1990), "Defining and measuring the quality of customer service", *Marketing Intelligence and Planning*, Vol.8 No.6, pp.11-18.
- Lewis, R.C.** (1987), "The measurement of gaps in the quality of hotel service", *International Journal of Hospitality Management*, Vol.8 No.6, pp.11-18.
- Lewis, B. R.** (1993), "Service quality measurement", *Marketing Intelligence and Planning*, Vol.11 No.4, pp.4-12.
- Lewis, R.C. and Booms, B.H.** (1983), "The marketing aspect of service quality "in Berry, L. and Shostack, G., and Uaph, G. (eds.) *Emerging Perspectives on Services Marketing*. American Marketing Association, Chicago, pp.99-102.
- Mekokh, N. K.** (1997), "Quality of service in passenger road transport – a comparison between public and private sectors with reference to Goa", *Indian Journal of Transport Management*, Vol. 21 No. 6, pp. 3-8.
- Moorthy, R. and Murugeson, R.** (1996), "Quality of service in state transport undertaking – evaluation and improvement", *Indian Journal of Transport Management*, Vol. 20 No. 7, pp. 31-34.
- Netemeyer, R., Bearden, W., and Sharma, S.** (2003). *Scaling Procedures*, New Delhi: Sage Publications.
- Nevo, B.** (1985), "Face validity revisited", *Journal of Educational Measurement*, Vol.22 No.4, pp.287-293.
- Nunnally, J.C.** (1988), *Psychometric Theory*, McGraw-Hill Book Company, Englewood-Cliffs, NJ.
- Ozer, A., Kocak, A. and Celik, O.** (2006), "Determinants of market orientation in accounting firms", *Marketing Intelligence and Planning*, Vol.24 No.6, pp.591-607.
- Parasuraman, A., Berry, L.L. and Zeithaml, V.A.** (1991), "Refinement and reassessment of SERVQUAL scale," *Journal of Retailing*, Vol.67 No.4, pp.420-50.
- Parasuraman, A., Zeithaml, V.A. and Berry, L.L.** (1985), "A conceptual model of service quality and its implications for future research", *Journal of Marketing*, Vol.49 No.5, pp.41-50.
- Parasuraman, A., Zeithaml, V.A. and Berry, L.L.** (1988), "SERVQUAL: a multi-item scale for measuring consumer perceptions of service quality", *Journal of Retailing*, Vol.64 No.1, pp. 12-40.
- Parasuraman, A., Zeithaml, V.A. and Berry, L.L.** (1994), "Reassessment of expectations as a comparison standard in measuring service quality: implications for future research", *Journal of Marketing*, Vol.58 No.1, pp. 111-24.
- Robledo, M.A.** (2001), "Measuring and managing service quality: integrating customer expectations", *Managing Service Quality*, Vol.11 No.1, pp. 22-31.
- Rust, R.T. and Oliver, R. L.** (1994), "Service quality: insights and managerial implications from the frontier", in Rust, R. T. and Oliver, R. L (eds.) *Service Quality: New Directions in Theory and Practice*, Sage Publications, London, pp.1-20.

- Sachdev, S.B., and Verma, H.V.**(2004), "Relative Importance of Service Quality", *Journal of Services Resaerch*, 4(1), 93-116.
- Sasser, W.E., Olsen, R.P. and Wyckoff, D.D.** (1978), "Understanding service operations", in Allan and Bacon (eds.), *Management of Service Operations*, Boston.
- Sharma, S.** (1996), *Applied Multivariate Techniques*, John Wiley & Sons, Inc., New York
- Silvestro, R., Johnston, R., Fitzgerald, L. and Voss, C.** (1990), "Quality measurement in service industries", *International Journal of Service Industry Management*, Vol.1 No.2, pp. 54-66.
- Sureshchander, G.S., Chandersekharan, R. and Anantharaman, R.N** (2002), "Determinants of customer-perceived service quality: a confirmatory factor analysis approach", *Journal of Services Marketing*, Vol.16 No.1, pp. 29-34.
- Tax, S.S., Brown, W. and Chandrashekar, M.** (1998), "Customer evaluations of service complaint experience: implications for relationship marketing", *Journal of Marketing*, Vol.62 No.2, pp.60-76.
- Teas, R.K.** (1993), "Customers expectations and measurement of perceived service quality", *Journal of Professional Services Marketing*, Vol.57 No.4, pp.18-24.
- Teas, R.K.** (1994), "Expectations as a comparison standard in measuring service quality: an assessment of a reassessment", *Journal of Marketing*, Vol.58 No.1, pp.132-139.
- Umigar, E.S.** (1989), "Exploring the scope of private participation for urban public transport supply in India", *Transport Review*, Vol.9 No.2.
- Vanniarajan, T and Stephen, A.** (2008), "Railways and Passenger Satisfaction: An Empirical Study of Southern Railways", *Asia Pacific Business Review*, 4(1), 64-75.
- Venkatraman, N.** (1989), "Strategic orientation of business enterprises: the construct, dimensionality, and measurement", *Management Science*, Vol.35 No.8, pp.942-962.
- Zeithaml, V.A., Berry, L. and Parasuraman. A.** (1996), "The behavioral consequences of service quality", *Journal of Marketing*, Vol.52 No.7, pp. 2-22.
- Zeithaml, V.A., Parasuraman. A. and Berry, L.L.** (1985), "Problems and strategies in services marketing", *Journal of Marketing*, Vol. 49 No.2, pp. 33-46.

Appendix 1. Initial Service Quality Scale For Passengers: Sampling Adequacy Analysis (Kaiser-Meyer-Olkin Measure; Bartlett's test)

Label	Statement
S1	Public buses provide comfortable travel.
S2	Public buses provide services as per schedule.
S3.	Public buses start journey at right time
S4	Public buses run at consistent speed.
S5.	Public buses operate services during lean period
S6.	In public buses concession is given to deserving people.
S7	In public buses, govt. rules, regulations and procedures are followed.
*S8	Public busses do not reach at destination in time.
S9.	Public buses have good seating arrangement.
S10	Employees provide appropriate information.
**S11	Public buses run at consistent speed.
S12	In case of breakdowns, alternative is provided by public buses.
S13	Employees are conscious of their work and responsibility.
S14	Public buses never delay due to crew staff.
S15	There is proper lightning in the public buses.
S16.	Passengers feel ease in boarding.
S17	Public buses avoid rash and careless driving.
S.18	Passengers feel easy to carry luggage.
*S.19	Public buses have no proper ventilation.
**S20	There is no proper leg space between seats.
S21	Employees are properly trained.
*S22	Public buses provide good service at a reasonably minimum cost.
*S23	In public buses passengers feel safe, secure and satisfied.
*S24	Grievance redressal system is not good.
*S25	Employees are not efficient to do their job.
*S26	Public buses often met with an accident.
S27	In public buses confessional fare is charged for school and colleges educational trips.
S28	Employees are helpful and cooperative during journey.
*S29	No care for safety is taken in public buses.
S30	Employees immediately attend you when required.

**KMO value = 0.696;**      **Bartlett's test:**  $\chi^2 = 12992.21$ ,  $df = 465$  ( $p < .001$ )

\*These items were worded negatively to reduce the bias due to tendency of respondents to reply in affirmative during data collection. They were, however, reverse coded for the purpose of data analysis and thus, interpreted accordingly

\*\*These items were subsequently deleted from the final scale while carrying out confirmatory factor analysis



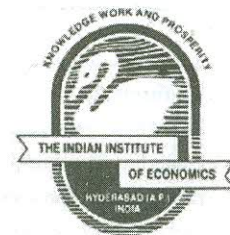
## Appendix 3. Rotated factor analytical results of service quality scale

Factors	Loadings	Eigen Value	Percent of Variance
<b>F<sub>1</sub> (Tangibility)</b>		<b>4.503</b>	<b>15.009</b>
Public buses provide comfortable travel.	0.803		
Public buses have no proper ventilation*	0.757		
Public buses run at consistent speed.	0.730		
There is proper lightning in the public buses.	0.716		
Passengers feel ease in boarding.	0.708		
Passengers feel easy to carry luggage.	0.585		
Public buses have good seating arrangement	0.520		
There is no proper leg space between seats.	0.505		
<b>F<sub>2</sub> (Responsiveness)</b>		<b>3.898</b>	<b>12.992</b>
Public buses operate services during lean period	0.800		
Public buses avoid rash and careless driving.	0.768		
In public buses confessional fare is charged for school and colleges educational trips.	0.598		
In public buses concession is given to deserving people.	0.593		
In public buses, govt. rules, regulations and procedures are followed.	0.579		
Public buses provide good service at a reasonably minimum cost.	0.513		
Employees immediately attend you when required.	0.501		
<b>F<sub>3</sub> (Reliability)</b>		<b>3.604</b>	<b>12.015</b>
Public buses often met with an accident*.	0.750		
No care for safety is taken in public buses*.	0.696		
Public buses never delay due to crew staff.	0.679		
Public buses provide services as per schedule.	0.648		
Public buses start journey at right time	0.605		
Public busses do not reach at destination in time*.	0.506		
<b>F<sub>4</sub> (Assurance)</b>		<b>2.949</b>	<b>9.829</b>
In case of breakdowns, alternative is provided by public buses.	0.749		
There is no care for safety is taken in public buses*	0.705		
They are properly trained.	0.677		
Employees are conscious of their work and responsibility.	0.551		
Employees are not efficient to do their job*	0.486		
<b>F<sub>5</sub> (Empathy)</b>		<b>2.853</b>	<b>9.511</b>
Grievance redressal system is not good*	0.731		
Public buses run at consistent speed.	0.631		
Employees are helpful and cooperative during journey.	0.545		
Employees provide appropriate information.	0.446		

\*These items are worded negatively to reduce the bias due to tendency of respondents to reply in affirmative during data collection. They were, however, reverse coded for the purpose of data analysis and thus interpreted accordingly.



# The Asian Economic Review



Journal of the Indian Institute of Economics

Volume 56

September 2014

No.3

## CONTENTS

**\*Faiza Umer:** Impact of Trade Openness on Economic Growth of Pakistan: An ARDL Approach; **\*S.Gandhimathi, Savitha M, Priyanga G, RahiniR and Thilagavathi E** :Impact of Economic Development on Carbon Emission in Selected World Economies - An Empirical Analysis; **\* Ijaiya, M.A, Lawal, W.A and Osemene, O.F.:** Microfinance and Mortgage Financing in Nigeria: A Rural Experience; **\*Ganapati Mendali and Sanjukta Das:** The Effect of Exchange Rate Variability on Exports: The Case of India; **\*Pravin Kumar and Rajeev Kumar :** Foreign Direct Investment and Economic Growth: A Cross- Country Exploration in Asia using Panel Cointegration Technique; **\*M.C.Purohit:** Taxation of Wheat and Wheat Products - The Issues for GST; **\*Jasmindeep Kaur Brar :** Customer Protection in Indian Banking Sector - A Study of Banking Ombudsman Scheme; **\*D.Satyanarayana Murthy, Suresh Kumar Patra and K. Mahendra Babu:** Pace and Pattern of the Banking Sector Development in India during Pre & Post Reform Period; **\*Umer Jeelanie Banday, Anurag Asawa and Garima kaushik :** Tourism and its Impact on Economic Growth and Environment; **\* Sulochna Meena and J. N. Sharma:** Regional Disparity: A Case Study of Industrial Sector in Rajasthan; **\*G .Ramakrishna, G . Madhavankutty and P. Lalitha:** Impact of Capital Account Openness, Trade Balances and Exchange Rates on Economic Growth: The Evidence from India (1990-2013).

The Revised Subscription Rates and Membership Fees are as shown below:

Subscription Rates				Membership	
Category	1 yr	2 yrs	3 yrs	Life Member Individual	Life Member Institutional
Indian (in Rs)	500	950	1400	5,000	15,000
Foreign (in \$ US) by Air Mail	100	175	—	\$ 500	\$ 5000

Please send the amount by DD/ Cheque favouring **Indian Institute of Economics** for timely receipt of the journal. For outstation Cheque please add bank charges at Rs.35 for amount between Rs.500 to 1000.

**The Indian Institute of Economics**, Federation House, FAPCCI Marg , 11-6-841, Red Hills, Hyderabad-500 004.(India). Phone:(O) 23393512, Fax: 91-40-23395525.

Email: [ieaer@yahoo.com](mailto:ieaer@yahoo.com), website:<http://www.ieasia.in>