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## Research Papers

### Management of Innovation Networks—A Case Study of Different Approaches

-Dr. Jukka Ojasalo, Professor, Laurea University of Applied Sciences, Finland

### A Study of Job Stress on Personal Health and Work Behavior among University Teachers in Iran

-Dr. Samad Jabbari Asl, Islamic Azad University, Astara Branch-Iran

### Type of Account Consumer maintains with their Banks and Service Quality

-H.M.R.P. Herath, Lecturer, Department of Marketing Management, Faculty of Commerce and Management studies, University of Kelaniya, PhD Student, Newcastle University, UK

### The Impact of Promotional Strategies of Pharmaceutical Companies on Doctors Recommendation of Branded Drugs: An Empirical Study in Sri Lanka

-M.M.Tharaka Punchibandara, Product Manager, Abbott Laboratories S.C, Colombo, Sri Lanka

Dr. W.M.C.B. Wanninayake, Senior-Lecturer, Department of Marketing Management, University of Kelaniya, Sri Lanka

### Mobile Banking in India-Future Outlook

-Dr. R.K. Uppal, Principal Investigator, University Grants Commission Sponsored Major Research Project, D.A.V College, Malout, India

### Analysis of Long-Term Relationship between Spot and Futures prices Using Johansen's Test of Cointegration

-Dr.Sathya Swaroop Debasish, Reader, Department of Business Administration, Utkal University, Vani Vihar, Bhubaneswar, Orissa

### The Role of Human Resource Development (HRD) Strategies in Knowledge Sharing for Sustaining Organizational Effectiveness

-Dr. Babita Agarwal, Reader, Shri Vaishnav Institute of Management, Indore M.P

-Monika Maheshwari, Lecturer, Shri Vaishnav Institute of Management, Gumasta Nagar, Indore, M.P

### A Study of Investment Pattern by the Investors (With Specific Reference to Uttarakhand State)

-Deepshikha, Sr. Lecturer, Dehradun Institute of Technology, Dehradun

### Non Performing Assets in Select Commercial Banks of India: A Comparative Analysis

-Samriti Jain, Assistant Professor, Chandigarh Business School, Gharuan, India

-Dr. Himani Sharma, Assistant Professor, Dept. of Business Management, Ch. Devi Lal University, Sirsa, India.

## Case Study

### A Dilemma of a Venture Capitalist

--Dr. Monika Aggarwal, Dean, CGC- Group of Colleges, Gharuan, India

## **Type of Account Consumer Maintains with their Banks and Service Quality**

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### **Abstract**

*In Sri Lanka, financial system of the country mainly depends on banking system, because banking sector represents a share of 70.8% ( Central Bank Report, 2006) of total financial system of the economy. Deregulation of the banking sector and entrance of foreign banks to Sri Lankan market intensifies the competition. Therefore, banks need themselves to differentiate from other institutes through improving the quality of the service. Therefore, it is worthwhile to study the significance of the type of the account that the consumer maintains with the bank and the service quality in the retail commercial banking industry of Sri Lanka. A sample of 150 consumers was selected through stratified random sampling technique. The scope of the study was retail consumers of private and public commercial banks situated in the Gampaha district, who have been dealing with those particular banks for more than two years. The retail consumers who maintain savings accounts, fixed deposit accounts and current accounts were considered proportionately in drawing the sample elements. A structured questionnaire developed based on SERVQUAL model of service quality was used to collect data. The gathered data were analyzed using ANOVA and findings showed that there is not any impact made by the type of the account that the consumer maintain with the bank on evaluation of service quality provided by the banks.*

### **Introduction**

Deregulation of the banking sector has speed up the competition between banks and expanded the industry to greater extent and also the entrance of foreign banks to Sri Lankan market intensify the competition since the competitive edge that they are having with their huge asset base and advanced technology. Therefore banks need themselves to differentiate from other institutes. But being differentiated is not that easy for banks since their core business is to sell a service. Products can be differentiated easily with its features where as it is difficult with services due to its intangible nature. The only way of differentiating services is tangibilizing the service through improving the quality of the service. Therefore, due to the undifferentiated nature of money and other financial services, banks are now heavily rely on improving quality of service to get the competitive edge.

Across all service industries, the issue of service quality remains a critical one as businesses strive to maintain a comparative advantage in the marketplace (Stafford, 1996). Because financial services, particularly banks, compete in the marketplace with generally undifferentiated products, hence service quality becomes a primary competitive weapon (Stafford, 1996). Banks that excel in quality service can have a distinct marketing edge since improved levels of service quality are related to higher revenues, increased cross-sell ratios,

higher customer retention (Bennett and Higgins, 1988), and expanded market share (Bowen and Hedges, 1993). Bowen and Hedges (1993) noted that the importance of various quality improvements differs among customer segments. It is particularly important to focus first on those customers who are most valuable to the bank.

Given these significant findings in the financial services industry, it is important to understand specifically how service quality is evaluated by the customer. Moreover, it is critical to determine which elements of service quality are more important to different customers. Because depending on the type of the account that the consumer is maintaining with the bank, the level of involvement with the bank is different by different consumers. For instance the consumers who are maintaining current accounts might deal with the banks more frequently than the consumers who are maintaining savings accounts and it may be further lower with the consumers who are having fixed deposit accounts. Thereby it is worthwhile to study whether there is any influence from the type of the accounts that the consumers are maintaining with the banks and the way they evaluate the service quality of the banks. Further, this study is addressing the research gap of unavailability of literature with respect to the service quality in the Sri Lankan context.

### **Research Problem**

The study mainly focuses only on the retail consumers of the commercial banks within the local context. It includes all the local commercial banks of the private sector and public sector, and the researcher evaluates how the evaluation of service quality varies in terms of the type of the account that the consumers maintain with a bank. The study was done considering the bank branches located in the Gampaha District only. Further, the study includes consumers who have been dealing with the bank for more than two years, who maintain current accounts, fixed deposit accounts and savings accounts in the above mentioned banks in the Gampaha district.

### **Literature Review**

The credit for heralding the service quality research goes to Parasuraman, Zeithaml and Berry (Parasuraman et al., 1985, 1988; Zeithaml et al., 1985, 1990). The authors, based on qualitative research, formulated a measure of service quality derived from data on a number of services, instead of counting on earlier dimensions of goods quality in the manufacturing sector. The initial results, based on some focus group findings, yielded 10 dimensions of service quality that included tangibles, reliability, responsiveness, competence, courtesy, credibility, security, access, communication and understanding the customer. Further empirical scrutiny (Parasuraman et al., 1988) resulted in a 22-item scale, called "SERVQUAL" which measures service quality based on dimensions, viz. tangibles, reliability, responsiveness, assurance and empathy. The

entire approach was formulated on the tenet that customers entertain expectations of performances on the service dimensions, observe performance and later form performance perceptions. The authors described service quality as the degree of discrepancy between customers' normative expectations for the service and their perceptions of the service performance. 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 is 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 ( $P \pm E$ )" service quality model. The author developed alternative models of perceived service quality based on evaluated performance (EP) and normated quality (NQ). It was concluded that the EP model could overcome some of the problems associated with the  $P \pm E$  gap conceptualization of service quality. Parasuraman et al., (1994) responded to the concerns of Cronin and Taylor (1992) and Teas (1993) by demonstrating that the validity and alleged severity of many of those concerns were questionable. Parasuraman et al., (1994) elaborated that though their approach for conceptualizing service quality could and should be revised, relinquishing it altogether in preference of the alternate approaches proclaimed by Cronin and Taylor and Teas did not seem warranted. This triggered an interesting controversy in service quality research. In another empirical work, Parasuraman et al., (1994) revamped 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). Several other works have also criticized the operationalization, conceptualization, measurement and applications of SERVQUAL across different industrial settings (Sureshchandar et al., 2001).

A topic of particular interest in service quality research is the issue of measurement. The actual quality of service is difficult to define and measure (Gavin 1983; Parasuraman et al. 1988; Brown and Swartz 1989). However, researchers have reached a consensus that service quality should be defined and measured from the customer's perspective. The most widely accepted definition of perceived service quality is that it represents the discrepancy between customers' expectations and their perceptions of the service performance (Lewis and Booms 1983; Gronroos 1984; Parasuraman et al.

1988). There has been a debate regarding the inclusion of expectations in the measurement of service quality (Teas 1993, 1994; Cronin and Taylor 1994; Parasuraman et al. 1994). While Cronin and Taylor (1994) claimed that the perceived performance measure possesses a high predictive ability, Parasuraman et al., (1994) assert that the expectation measures can assist management in identifying those areas which require immediate attention. However, Parasuraman et al., (1994) concur that if the primary purpose of measuring perceived service quality is to explain the variance on some dependent construct, then a performance-based measure is appropriate (Tam, 2004). Parasuraman et al., (1994) defined service quality in a three-column format: minimum service level (would expectations), desired service level (should expectations), and perceived performance. (Sachdev and Verma, 2004) There is a growing acceptance among researchers that service quality can be tied to perceptions of service performance (Gronroos 1993; Dabholkar 1993). The "expectation/performance" conceptualization of service quality led Parasuraman, Zeithaml, and Berry to develop the SERVQUAL approach for measuring service quality in 1988. This method assesses both the consumer's service expectations and perceptions of the provider's performance. Positioned as a generic method applicable to a wide range of service industries, The service quality defined in the SERVQUAL model determines the gap between customers' expectations and perceptions. Namely,  $SQ = P - E$ , where SQ is denoted as service quality, and P and E are denoted as customers' perceptions and expectations, respectively. Respondents, therefore, would have to complete all attributes based on service expectations, followed by a second set of the same attributes, based on their perceptions of actual service received. As a result, completing the survey could seem rather onerous.

Thus, it has been suggested (Cunningham, et al., 2002) that measuring service quality based only on the perceptions of service performance would suffice, as in the so called the SERVPERF model: namely,  $SQ = P$ . However, the study of Robledo (2001) indicated that the SERVPERF was not an efficient measurement scale, in terms of validity and reliability. In his study, an alternative scale was proposed, called the SERVPEX, to measure service quality. The five SERVQUAL dimensions are a concise representation of the core criteria that customers employ in evaluating service quality. As such it is reasonable to speculate that consumers would consider all five criteria to be quite important (Parasuraman, 1988) It was developed to measure perceived service quality as the key output variable and in its finalized form it has 22 pairs of Likert-type scales. The first 22 items are designed to measure customer expectations of service for a particular

service industry expectations, while the remaining 22 are intended to measure the perceived level of service provided by a particular service organization (perceptions). Service quality is then measured by calculating the difference in scores between the corresponding items (i.e. perceptions minus expectations). However, it is limited to current and past customers, because respondents need to have some knowledge and experience of the organization in order to be able to complete the scale.

Previous research has shown that demographic variables are related to service Expectations quality expectations (Gagliano and Hathcote, 1994; Thompson and Kaminski, 1993; Webster, 1989). More specifically, Thompson and Kaminski (1993) found a significant relationship between age and dimensions of service quality, while Gagliano and Hathcote (1994) reported significant relationships between income and service quality expectations. Further, Webster (1989) found that age, gender and income were significantly related to service quality expectations for professional services. Income segmentation has been a popular demographic variable utilized by a myriad of product and service marketers. Income segmentation does not automatically assume targeting those earning higher salaries.

Although previous research had been done based on the relationship between demographic variables of the consumer and the service quality, yet there is no evidence of previous research done based on the relationship between service quality and the type of the accounts consumers maintain with the banks. Therefore, researcher attempts to find out the relationship between the types of the account consumer maintains with the bank and the evaluation of service quality of the consumers in the banking sector.

### **Methodology**

In this study it measures the relationship between the service quality dimensions and the level of perceived service quality considering the differences based on the type of the account that the consumers are maintaining by which it explains the existing situation rather going to examine cause and effect situation. Therefore the design of the research falls under the research design of descriptive research. Both primary and secondary data were used. Secondary data were collected through text books and previous research articles. Primary data were collected on survey method based on a structured questionnaire developed on SERVQUAL Model and variables were operationalized on the basis of SERVQUAL instrument. Three accounts types of savings accounts, current accounts and fixed deposit accounts were considered. Stratified Random Sampling technique was used to select the sample elements and gathered data analyzed using one way ANOVA. The questionnaire was circulated among 150 consumers who have been already dealing with the bank more than two years. The table 1 shows the profile of the sample.

**Table 1- Sample Profile**

<b>Ownership</b>		<b>No. of Respondents</b>
Private Sector Local Banks		90
Savings Accounts Holders	45	
Fixed Account Holders	30	
Current Account Holders	15	
Public Sector Banks		60
Savings Accounts Holders	30	
Fixed Account Holders	22	
Current Account Holders	08	
<b>Total Respondents</b>		<b>150</b>

*Source: Researcher's own construction*

### **Reliability and Validity of Instruments**

Though the SERVQUAL is an internationally tested instrument, still the testing the reliability is needed, since it is going to apply to different nature of context. And also it has to be checked whether language of questionnaire does any impact on the reliability of the measurements. "At times, we may also have to adapt an established measure to suit the setting. For example, a scale that is used to measure job performance, job characteristics, or job satisfaction in the manufacturing industry may have to be modified slightly to suit a utility company or a health care organization. The work environment in each case is different and the wordings in the instrument may have to be suitably adapted" (Research Methods for Business, Sekaran Uma, 4th Edition, pp 208).

Since the data was generated using scaled responses reliability of the questionnaire was measured through Cronbach's alpha to ensure the internal consistency of the instrument. Cronbach's Alpha was measured for all the dimensions of the service quality of both expected and perceived. And also the reliability of the expected service quality part of the questionnaire and the perceived service quality part of the questionnaire was measured separately. All the scores of Cronbach's Alpha for all dimensions were over 0.7 as shown in the table 2. Scales that receive alpha score over 0.7 are considered to be reliable (Malhotra 2005).

**Table 2: Reliability Statistics**

Variables	Cronbach's Alpha	No. of Items
Expected Service Quality-Tangibles	.797	4
Expected Service Quality-Reliability	.867	5
Expected Service Quality-Responsiveness	.826	4
Expected Service Quality-Assurance	.835	5
Expected Service Quality-Empathy	.849	5
Perceived Service Quality-Tangibles	.916	4
Perceived Service Quality-Reliability	.897	5
Perceived Service Quality-Responsiveness	.870	4
Perceived Service Quality-Assurance	.785	4
Perceived Service Quality-Empathy	.901	5
Expected Service Quality	.987	22
Perceived Service Quality	.965	22

*Source: Results of Data Analysis*

Convergent Validity of the questionnaire was measured through Paired Sample Correlation. Convergent validity was measured in the two sections of questionnaire separately. In the sections of expected service quality and the perceived service quality, it was measured the degree to which the dimensions of service quality and the expected service quality and the perceived service quality correlate to each other. Convergent validity is established when, the scores obtained with two different instruments measuring the same concept are highly correlated (Sekaraku Uma, 2006).

**Table 3: Paired Samples Correlations: Expected Service Quality**

		N	Correlation	Sig.
Pair 1	Mean Expected Tangibles & Expected Service Quality	150	.871	.000
Pair 2	Mean Expected Reliability & Expected Service	150	.915	.000

	Quality	N	Correlation	Sig.
Pair 3	Mean Expected Responsiveness & Expected Service Quality	150	.907	.000
Pair 4	Mean Expected Assurance & Expected Service Quality	150	.895	.000
Pair 5	Mean Expected Empathy & Expected Service Quality	150	.853	.000

*Source: Results of Data Analysis*

Table 3 represents the coefficients of, in between all the dimensions which measure the variable of expected service quality and the variable of expected service quality as a one variable. They are showing a higher correlation. It says that in between the five dimensions of expected service quality and the expected service quality, convergent validity is there.

**Table 4: Paired Samples Correlations: Perceived Service Quality**

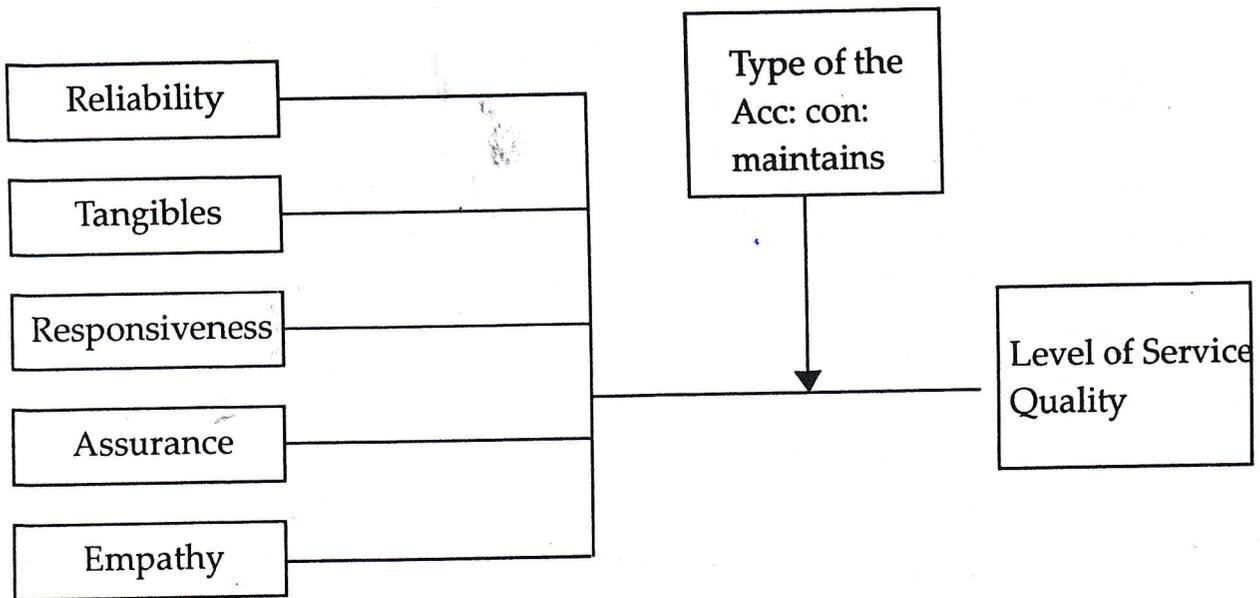
		N	Correlation	Sig.
Pair 1	Mean Perceived Tangible & Perceived Service quality	150	.801	.000
Pair 2	Mean Perceived Reliability & Perceived Service quality	150	.892	.000
Pair 3	Mean Perceived Responsiveness & Perceived Service quality	150	.903	.000
Pair 4	Mean Perceived Assurance & Perceived Service quality	150	.913	.000
Pair 5	Mean Perceived Empathy & Perceived Service quality	150	.889	.000

Table 4 shows the coefficients of, in between the dimensions of perceived service quality and the perceived service quality variable. Since it shows higher correlations among the pairs it can be said that convergent validity is there in the instrument of data collection.

### **Conceptual Model**

Based on the reviewed literature the researcher was able to identify dimensions of service quality of reliability, tangibles, responsiveness, assurance and empathy as per the SERVQUAL Model and those dimensions are used as the base for measuring the service quality of the banks. Further it is evident through the literature that the relationship between the independent variables of dimensions of service quality and the dependent variable of level of service quality is moderated through the impact of the type of the accounts that they maintain with the banks. Figure 1 illustrates the relationship among these variables.

**Fig. 1 Conceptual Framework**



*Source: Researcher's own construction, based on SERVQUAL Model*

## Hypotheses

- H1:** Consumer evaluation of service quality varies in terms of the type of the account that the consumer maintains with the bank.
- H2:** The importance assigned to the each dimension of service quality varies in terms of the type of the account that the consumer maintains with the bank.

## Data Analysis

Using ANOVA the formulated hypotheses of the research was tested. To analyze data SPSS package was used.

**H1:** Consumer evaluation on service quality varies in terms of the type of the account that the consumer maintains with the bank.

The mean values of service quality obtained by subtracting the value of expected service quality by values of perceived service quality. The overall service quality values were related to the type of the account maintained by consumer. The table 5 indicates the results of the data analysis obtained using ANOVA. According to the table H1, cannot be accepted since it is not statistically significant, because table value of 0.301 is greater than the P value of 0.05.

**Table 5: Service Quality and Type of Account of the Consumer**

Service Quality

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2.494	2	1.247	1.211	.301
Within Groups	151.377	147	1.030		
Total	153.872	149			

**H2:** The importance assigned to the each dimension of service quality varies in terms of the type of the account that the consumer maintains with the bank.

Within the frame work of this hypothesis another five hypotheses can be built up on the basis of each dimension of service quality. Again using ANOVA the status of these hypotheses was tested. For that, the mean values of service quality in overall were related with the income level of the consumers. According to the table 6, the validity of the hypotheses can be seen as follows;

- The importance assigned to the tangibles of service quality varies in terms of the type of the account that the consumer maintains with the bank- This hypothesis is rejected since the table value of 0.605 is greater than the value of 0.05.
- The importance assigned to the reliability of service quality varies in terms of the type of the account that the consumer maintains with the bank- This is also rejected because the table value of 0.151 is greater than the value of 0.05 which is the limit of confidence interval.
- The importance assigned to the responsiveness of service quality varies in terms of the type of the account that the consumer maintains with the bank.- It is rejected because the value in the table of 0.352 is greater than 0.05.
- The importance assigned to the assurance of service quality varies in terms of the type of the account that the consumer maintains with the bank.- It is rejected because the

value in the table of 0.403 is greater than 0.05.

The importance assigned to the empathy of service quality varies in terms of the type of the account that the consumer maintains with the bank- This hypothesis also rejected since the value of 0.436 which indicates the table is lower than the value of 0.05.

**Table 6: ANOVA Table- Service Quality and Type of Account of the Consumer**

		ANOVA				
		Sum of Squares	df.	Mean Square	F	Sig.
Service Quality Tangible	Between Groups	1.226	1.226	.613	.505	.605
	Within Groups	178.493	178.493	1.214		
	Total	179.719	179.719			
Service Quality Reliability	Between Groups	50594	2	2.797	1.913	.151
	Within Groups	214.945	147	1.462		
	Total	220.539	149			
Service Quality Responsiveness	Between Groups	2.767	2	1.383	1.051	.352
	Within Groups	.93.442	147	1.316		
	Total	196.208	149			
Service Quality Assurance	Between Groups	2.137	2	1.068	.914	.403
	Within Groups	171.800	147	1.169		
	Total	173.937	149			
Service Quality Empathy	Between Groups	2.890	2	1.445	.834	.436
	Within Groups	254.671	147	1.732		
	Total	267.562	149			

### Discussion of Findings

According to the results of data analysis, all the developed hypotheses were rejected. It indicates that, with respect to the Sri Lankan context the type of the account consumer maintains with the bank is not a significant factor in evaluation of service quality. Further, it says that based on the type of the account consumer maintains with the bank he or she does not expect different levels of service quality from the banks. Therefore, the findings of the research raised the importance of treating all the consumers of the bank equally, regardless of the type of the account they maintain with the bank. Moreover, this level of service should be extended based on the each dimensions of service quality: tangibles, reliability,

responsiveness and assurance. But, the high levels of expected service quality indicate that current level of service offered by the banks is not at a satisfactory standard.

### **Conclusion**

The study is concluded that the type of account consumer maintains with the bank, does not exert a significant impact on evaluations of service quality of the consumers. Further the findings imply that regardless of the type of account consumer maintains with the bank, the banks should provide a higher level of service for their customers which indirectly says that nowadays it is difficult to satisfy customers easily, since their expectations are lie at a higher level. Anyway in market segmentation of the banks, type of account consumer maintains with the bank does not play a significant role and therefore this not a good variable to consider in market segmentation.

### **References**

- Brown, S. and Swartz, T.A. (1989), "A gap analysis of professional service quality" *Journal of Marketing*, Vol. 53, April, pp. 92-8.
- Cunningham, L. F and Young, C.E and Lee, M. (2002), "Cross-cultural perspectives of service quality and risk in air transportation", *Journal of Air Transportation*, Vol. 7, pp. 3-26.
- Cronin J.J. Jr & Taylor, S.A., (1992), Measuring service quality: a re-examination and extension. *Journal of Marketing*, Vol. 56, No.2, 55-68.
- Gagliano, K.B. and Hathcote, J. (1994), "Customer expectations and perceptions of service quality in retail apparel specialty stores", *Journal of Services Marketing*, Vol. 8, No. 1, pp. 60-69.
- Gronroos, C. (1988), "Service quality: the six criteria of good perceived service quality", *Review of Business*, Vol. 9, No.3, pp. 10-13.
- Gronroos, C. (1991), "Strategic Management and Marketing in the Service Sector", *Student literature-Chartwell-Bratt*, Sweden.
- Gronroos, C. (2001), "The perceived service quality concept is a mistake?", *Managing Service Quality*, Vol. 11, No. 3, pp. 150-162.
- Lewis, B.R. (1991), "Service quality: an international comparison of bank customers' expectations and perceptions", *Journal of Marketing Management*, Vol. 7, No. 2, pp. 17-63.
- Parasuraman, A., Zeithaml, V. and Berry, L. (1985), "A conceptual model of service quality and its implications for future research", *Journal of Marketing*, Vol. 49, No. 4, pp. 41-50.
- Parasuraman, A., Zeithaml, V. and Berry, L. (1988), "SERVQUAL: a multiple-item scale for measuring consumer perceptions of quality", *Journal of Retailing*, Vol. 64, No. 1, pp. 12-40.
- Parasuraman, A. (1985), "A conceptual model of service quality and its implications for future research", *Journal of Marketing*, Vol. 49, pp. 41-50

Parasuraman, A., Zeithaml, V.A. and Berry, L.L. (1994), "Moving forward in service quality research: measuring different levels of customer expectations, comparing alternative scales, and examining the performance-behavioral intentions Link", *Marketing Science Institute working paper*, Report No. 94-114

Sureshchandar G.S., Chandrasekhar and Rajendran & T.J. Kamalanabhan. (2001), "Customer perceptions of service quality": *A critique*, *Total quality management*, Vol. 12, No.1, pp.111-124.

Thompson, A.M. and Kaminski, P. (1993), "Psychographic and lifestyle antecedents of service quality expectations: a segmentation approach", *Journal of Services Marketing*, Vol. 7, No.4, pp. 53-61.

Webster, C. (1989), "Can consumers be segmented on the basis of their service quality expectations?" *Journal of Services Marketing*, Vol.3, No.2, pp.35-53.