

# A Novel Service Quality Measurement Method with Minimum Attributes (SERVQUAL-MA) of a Service Industry Involving Human Interactions

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**Abstract**— Service quality assessment is the most important parameter for a service firm. The measurement of service quality has become a difficult task due to inherent peculiarities and fluctuations regarding human service involved. Several researchers has tried to ensure solution for service quality measurement using normal scaling technique like Likert scale, Ordinal scale etc., but they have not yet succeeded to develop the essence of service quality in a real time basis. In this paper, I propose a solution for measuring service quality in an industry or organization having human and machine services by considering the most important three attributes like responsiveness, empathy and innovative power of the involved human beings in a real time basis.

**Index Terms**— Empathy, Innovative power, Responsiveness, Servperf, Servqual, Servqual-MA.

## I. INTRODUCTION

The service businesses sectors e.g. institution, banking, hotel, logistic, hospital, medical, retail, tourism, entertainment etc are encountering tremendous competition to meet profitable ways due to privatization and globalization. For that reason, the driving force towards success in service businesses is the delivery of high quality service (Rudie and Wansley 1985; Thompson, DeSouza and Gale 1985). Hence, service quality measurement and improvement is one of the most significant strategic tools for enhancing efficiency and business growth [2], [4], [15]. Researchers have explained the importance of quality to service firms [24] and have demonstrated its positive relationship with profits, increased market share, return on investment, customer satisfaction and future purchase intentions or market, rate of customer retention etc. [1], [5], [9], [23]-[26]. Quality measurement and improvement of service industries has been perceived differently. It is based on different conceptualizations. Various scales have been investigated for service quality measurement [6], [11], [12], [18]-[22].

Since one of the scales is not so accurate enough for measuring and comparing service quality value. Empirical

efforts are not well diagnosed for corrective actions in case of quality shortfalls. Moreover, practical implementation to the applicability of these scales is very much limited to the service industries in developing as well as developed countries. A comprehensive service-quality is studied on the basis of the features unique to the services like heterogeneity, intangibility, perish-ability and inseparability of production and consumption [18], but quite a large number of features or attributes have to be considered. It is a very hard task to evaluate all these features (44, 22 in one set) considering their inter-, intra-relationships. Thus service quality of any service industry can not be evaluated properly within a stipulated time frame.

Therefore, I invent the procedure for measuring service quality of any service industry by minimizing all these features into three main features which evaluate the service quality accurately involving human with machine services in a real time basis.

## II. IDEA OF SERVICE QUALITY

Quality is defined as “conformance to requirements” (Crosby 1984), “fitness for use” (Juran 1988) or “one that satisfies the customer” [13]. Japanese consider production philosophy in which quality identifies “zero defects” in the firm’s offerings in a significant time. Although idea and measuring of service quality is embraced from the goods sector, but a solid foundation for research work in this area is laid down in the mid-eighties by Parasuraman, Zeithaml and Berry in 1985. They have suggested that the concept of quality prevalent in the goods sector is not extendable to the services sector. Being inherently and essentially intangible, heterogeneous, perishable, entailing simultaneity, inseparability of production and consumption, measurement of services require a different structure for analysis and improvement. While in the goods sector, tangible clues exist to satisfy consumers by product quality, but quality in the service sector is accompanied in terms of the parameters or attributes, that is, under the domain of “experience” and “credence” properties. These parameters are very much difficult to measure and to identify in a proper way [18], [26]. One major contribution of Parasuraman et al in 1988 has provided a perfect definition of service quality. They describe service quality as “a global judgment or attitude is relating to the superiority of the service” and explicate it as involving evaluations of the outcome i.e. what the customer actually receives from service and process of service act; and the manner in which service is delivered. The same way

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of expressing service quality is realized by Gronroos 1982; Smith and Houston 1982. Parasuraman et al measures service quality as a difference between consumer expectations of “what they want” and their perceptions of “what they get”. Based on this conceptualization, they propose a service quality measurement scale called “SERVQUAL”. The SERVQUAL scale is able to indicate the service quality, but it is very much cumbersome and time consuming process for achieving accurate measurement by considering all attributes. These attributes are consisting of 44 numbers in two sets and 22 numbers in each one set.

Thus, a new method for the fastest (immediate) measurement of the service quality in a service industry is invented by merging all parameters into three main parameters. Hence accurate value of the service quality is computed in a twinkle of time.

### III. SERVQUAL SCALE FOUNDATION

Parasuraman et al [18] explain in 1985 that the criteria used by consumers for measuring service quality fit to ten (10) potentially overlapping dimensions. These dimensions are tangibles, reliability, responsiveness, communication, credibility, security, competence, courtesy, understanding or knowing the customer and access. These ten dimensions and their descriptions served as the basic structure, from which items are derived for SERVQUAL scale. The foundation for the SERVQUAL scale is the integrated gap model proposed by Parasuraman, Zeithaml and Berry in 1985, 1988.

The gap model as shown in Fig. 1 maintains that satisfaction is related to the size and direction of disconfirmation of a person’s experience vis-a-vis his/her initial expectations [10], [18], [19], [25]. As a gap or difference between customer “Expectations” and “Perceptions”, service quality is viewed as lying along a continuum ranging from “ideal quality” to “totally unacceptable quality”. In this gap or difference, some points along the continuum representing satisfactory quality.

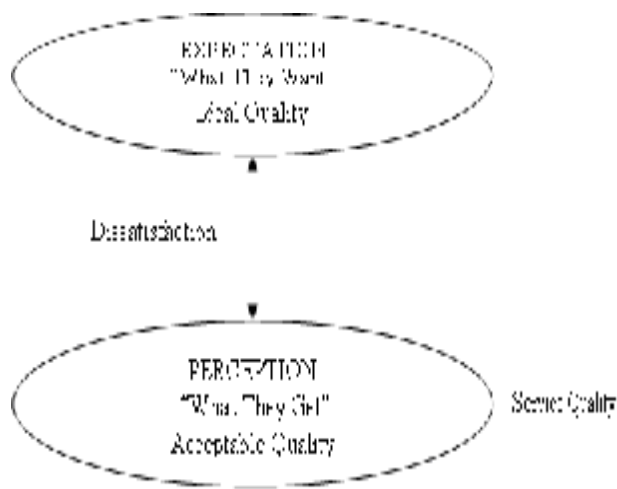


Fig. 1. Block Diagram of Service Quality Measured.  
(Service Quality is lesser than the Expected level)

Parasuraman et al in 1988 describe when the perceived or experienced service is less than the expected service, it ascertainment service quality lesser than requisite or satisfied value. When the perceived service is more than the expected service, obviously the service quality is more than satisfactory. They explain while a negative discrepancy between perceptions and expectations — a “performance-gap” which brings forth dissatisfaction, where as a positive discrepancy exhibit consumer satisfaction having better service quality [19]-[26]. They describe a set of 22 attributes or variables spreading in five different dimensions for service quality computation. Since they enumerate service quality as measuring difference (a gap) between customer’s expectations and perceptions of performance (availability of services) on these variables. Their service quality measurement scale is composed of a total of 44 items (22 for expectations and 22 for perceptions). Customers’ responses to their expectations and perceptions are obtained on a 7-point Likert scale and are compared to arrive at (P-E) gap scores. The higher (more positive) i.e. perception minus expectation more, the higher is perceived, in which the level of service quality becomes higher or increasing. Mathematically it is expressed as

$$SQ_i = \sum_{j=1}^k (P_{ij} - E_{ij}) \quad (1)$$

Where  $SQ_i$  = Perceived service quality of individual ‘i’,  
 $k$  = Number of service attributes or items or parameters,  
 $P$  = Service quality perception of individual ‘i’ with respect to attribute ‘j’,  
 $E$  = Service quality expectation for attribute ‘j’ by the individual ‘i’.

Parasuraman et al [19] scale is practically applied to a number of empirical studies in various service settings done by Lewis 1987, 1991; Brown and Swartz 1989; Carman 1990; Pitt, Gosthuizen and Morris 1992; Young, Cunningham and Lee 1994; Kassim and Bojei 2002; Witkowski and Wolfenbarger 2002. The SERVQUAL scale has been fronted so many difficulties on various conceptual and operational grounds, although it is applied as an essential tool for service quality measurement in service industry. Some major problems regarding the service quality scale are use of (P-E) gap scores, length of the questionnaire, predictive power of the instrument and validity of the five-dimension structure [4], [11]. Several points have been raised in respect to the use of (P-E) gap scores e.g. disconfirmation model. Most of the results derived for service quality by Parasuraman et al scale is differing from actual value [19]. Some researchers measure service quality through a single-item scale [3], [4], [14]. Although the use of gap scores is intuitively appealing and conceptually sensible, the ability of these scores to provide additional information is under doubt [4], [16]. Pointing to conceptual, theoretical, and measurement problems associated with the disconfirmation model, Teas in 1993 observed that a (P-E) gap of magnitude “-1” can be produced in six ways:  $P=1, E=2$ ;  $P=2, E=3$ ;  $P=3, E=4$ ;  $P=4, E=5$ ;  $P=5, E=6$  and  $P=6, E=7$  etc and these tied gaps cannot be construed as implying equal perceived service quality shortfalls. In a similar vein, the empirical study by Peter et al [7] found difference scores

being set with psychometric problems and they caution against the use of (P-E) scores.

Expectation (E) is the subject to have multiple interpretations. So, it has been operationalized by different researchers in different ways (e.g., Brown and Swartz 1989; Gronroos 1990; Babakus and Inhofe 1991; Teas 1993, 1994; Dabholkar et al 2000). Initially, Parasuraman et al [18], [19] are taken expectation close on the lines of Miller (1977) as “desires or wants of consumers”, i.e., what they feel a service provider should offer rather than would offer. Later on Parasuraman et al [20] label this “should be” expectation as “normative expectation”, and point out it as similar to “ideal expectation” [20]-[21]. For realizing the problem with this interpretation, they themselves propose a revised expectation (E\*) measure, i.e. what the customer would expect from “excellent” service [21]-[22] and the new scale is formed as SERVPERF.

#### IV. SERVICE QUALITY MEASURE BY WEIGHTED ATTRIBUTES

In the service quality scales different quality attributes are used. These are considerably differing in value for various types of services and service customers. Tangibility might be a prime factor of quality for bank customers but may not affect much to the customers of a cellular service provider. Since service quality attributes are not equally important or weightage for different service industries. Thus the importance or weights are imposed to the attributes in the service quality measurement scales [11], [20]-[22]. While the unweighted measures of the SERVQUAL and the SERVPERF scales have been described above, the weighted versions of the SERVQUAL as proposed by Cronin and Taylor [11] are as follows:

$$SQ_i = \sum_{j=1}^k I_{ij} (P_{ij} - E_{ij}) \quad (1)$$

Where  $I_{ij}$  = Weighting factor i.e. importance of attribute ‘j’ to an individual ‘i’, measuring service quality of an individual ‘i’.

#### V. SERVICE QUALITY MEASURE WITH MINIMUM ATTRIBUTES: SERVQUAL-MA

In this paper, I propose to minimize the huge number of attributes (total 44 numbers in two sets, 22 numbers in each set) as suggested by Parasuraman et al [15]-[25] to three (3) main attributes. It is chosen in terms of their validity, ability to explain variance in the overall service quality, power to distinguish among service objects, parsimony in data collection etc. Thus it can provide insights for managerial interventions in case of quality shortfalls. These three important attributes are responsiveness, empathy and innovative power of the human beings involved for providing services to the customers. All other attributes like security or secrecy, assurance, tangibility etc are assumed to remain constant i.e. within some standard norm (value) for a service industry. When a client or customer approaches for a service to an organization or institution, the first expectation

is to get the particular service (work done) correctly within a minimum time e.g. in bank, money transaction; in cellular communication, call connection etc done within a stipulated or expected time. Thus responsiveness is the time of transaction or getting the service without error within a stipulated or minimum time. The second expectation is that human or worker involving in this process will behave courteously and feel for customer need by positive thinking and perfect feedback i.e. ultimately he or she (organizer) will exhibit empathy towards customer. The third or may be the last expectation is that human being involved for providing service will search a new direction or way to do the work more efficiently with less time consuming in a smoother way. Thus worker’s innovative power is another criterion to determine the service quality in accuracy. Accordingly a new method or process is suggested with human or worker involved in the service to the organizer for affording better and result oriented service. Now based on these three attributes, I apply different weightage as per Cronin and Taylor’s equation [11]. These weightage for three attributes such as responsiveness, empathy and innovative power may vary for different service sectors. Generally I have assigned weightage for responsiveness is 0.65, for empathy is 0.20 and for innovative power is 0.15. Thus I formulate a simple general equation for calculating service quality for a service industry. The calculation of service quality for an industry by this procedure is named as “SERVQUAL-MA” i.e. service quality measured with minimum attributes, it is denoted by  $SQ_{MA}$ .

$$SQ_{MA} = \sum_{j=1}^3 I_{ij} (P_{ij} - E_{ij}) \quad (1)$$

Where  $I_{i1} = I_{ir} = 0.65$ , Weighting factor of attribute ‘Responsiveness’ to an individual ‘i’,

$I_{i2} = I_{ie} = 0.20$ , Weighting factor of attribute ‘Empathy’ to an individual ‘i’,

$I_{i3} = I_{iv} = 0.15$ , Weighting factor of attribute ‘Innovative Power’ to an individual ‘i’.

Hence, the above equation reduces to,  $SQ_{MA} = I_{ir} (P_{ir} - E_{ir}) + I_{ie} (P_{ie} - E_{ie}) + I_{iv} (P_{iv} - E_{iv})$ .

Where  $SQ_{MA}$  is Service Quality for an industry considering minimum attributes (3 attributes) namely responsiveness, empathy and innovative power of the worker,

$P_{ir}, P_{ie}, P_{iv}$  is perceived service qualities for responsiveness, empathy and innovative power attributes respectively to an individual or worker ‘i’.

$E_{ir}, E_{ie}, E_{iv}$  is expected service qualities for responsiveness, empathy and innovative power attributes respectively to an individual or worker ‘i’.

From this equation, we can calculate service quality of an organization or institution by summing up all worker’s individual service quality ( $SQ_{MA}$ ). At the same time we can compute efficiency or service quality ( $SQ_{MA}$ ) of the individual worker associated in that service industry. Thus it serves as a quick solution for getting the correct and immediate information about the standard of service imparted by the service industry which ultimately indicates efficiency level of the industry as well as that of each individual human being involved in the service offering.

#### VI. CONCLUSION

SERVQUAL and SERVPERF are being the two most widely used methods for determining the service quality scales at present. Although these two techniques are done on an assessment of the psychometric and methodological soundness towards the computation of the service quality scales, but it is very difficult process to calculate all the attributes (44) correctly in a specific time. As a result the essence of service quality measurement is not correctly implied in human related service zone by these two methods.

Therefore, the new technique as proposed in this paper to calculate service quality of a service industry by taking three main attributes like responsiveness, empathy and innovative power, termed SERVQUAL-MA is the authentic tool. This method also indicates efficiency level of an individual human being involved in the service industry. Thus it is a powerful technique to calculate service quality of a service industry in a real time basis with the earnest accuracy.

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