Approaches for Measuring and Improving Service Quality – A Critical Review

Nishithkumar H. Bhatt and Nikita Patel

Abstract

It's a prime concern for service provider to improve quality of their services on continuous basis to achieve sustainable competitive advantage, higher market share and profitability. Service quality can be measured through how well services meet up customers' expectations. The purpose of this paper is to review the literature and pin point different approaches available such as SERVQUAL, Kano model and Quality function deployment model. The review will highlight characteristics; application and limitation of these models through analysis of various studies conducted across the world and will suggest an extended model to improve service quality.

Key words: *Service quality, SERVQUAL, Kano model, Quality function deployment*

1. Introduction

According to Parasuraman *et al*. (1985) service quality is the difference between predicted, or expected service that is customer expectations and perceived serviced that is customer perceptions. In addition to that they also mentioned that service quality is the degree of discrepancy between customers' expectation from the service and their perception of service performance. Researchers are having opinion that service quality plays an important role in achieving higher patronage, competitive advantage, sustained profitability (Brown & Swartz, 1989; Headley & Miller, 1993); corporate marketing, enhancing financial performance (Buttle, 1996); and acts as a determinant of demand of goods and services (Pai & Chary, 2013).Studies have proved that there is a direct link between service quality and increased market share, profit and savings (Devlin & Dong, 1994).

The Gap Model

A conceptual framework for service quality was propounded by Parsuraman, *et al*. (1985) and it was known as "Gap Model". This model was based on the interpretation of qualitative data from extensive exploratory research method such as focus group interview of consumers and in depth executive interviews, carried out in four service categories: retail banking, credit card, securities brokerage, and product repair and maintenance (Parsuraman, *et al*. 1985). They identified four distinctive gaps as shown in Figure1 on the service provider's side. These gaps can be major obstacles in attempting to deliver a service which consumer would perceive as being high quality.

Gap 1: Consumer expectation- Management perception gap
This gap revealed differences between customers' expectations and management perceptions of consumers' expectations. This gap arises because of lack of proper market/customer focus such as management processes, market analysis tools and attitude.

Gap 2: Management perception- Service quality specification gap
This gap revealed management's inability in to translate customer expectations into service quality specifications.

Dr. Nishithkumar H. Bhatt, Associate Professor, S. K. School of Business Management, Hemchandracharya, North Gujarat University, Patan, Gujarat - 384265, India

Nikita Patel, Assistant professor, V. M. Patel Institute of Management, Ganpat University, Ganpat Vidyanagar, Mehsana-Gozaria Highway, Kherva, Gujarat 384012, India

Gap 3: Service quality specification- Service delivery gap

Preparing or setting standards/guidelines do not guarantee high-quality service delivery or performance but it also requires proper implementation of the same by frontline staff.

Gap 4: Service delivery –External communication gap

This gap explains the difference between service delivery and what is communicated about the service to consumer through external communication. A Firm must ensure that its marketing and promotion campaign matter accurately depicts the service they offer and the way it is delivered.

These four gaps cause a fifth gap that is Gap 5.

Gap 5: Expected Services-Perceived Services gap

The size and direction of above four gaps are determinant of expected services-perceived services gap.

Gap5 = f (Gap1, Gap2, Gap3, Gap4)

Figure1-The Gap Model
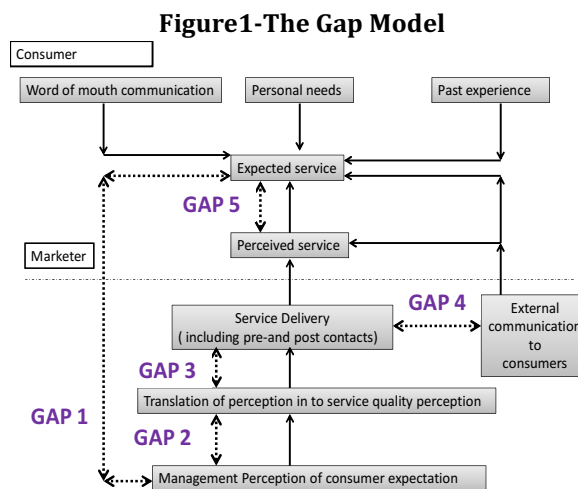
Source: Reproduced from Bedi (2011)

2. SERVQUAL

Parsuraman, *et al*. (1985) through their investigation, come to the conclusion that consumer basically used ten service quality dimensions in evaluating service quality such as "Reliability: Ability to execute services as per the promise, Responsiveness: Eagerness to help customers and providing fast service, Access: approachability and ease of contact, Courtesy: politeness, respect, consideration, and friendliness of contact personnel , Communication: effective listening to customer and make them well informed in a language they understand, Credibility: trustworthiness, honesty and customers' best interest at heart, Security: freedom from danger, risk or doubt, Understanding/knowing customer: making an effort to understand the customer's needs, Tangibles: physical evidence of the service. Further in their study in 1988, they collapsed these service quality dimensions in to the five dimensions as defined in the Table 1.1 by keeping service quality dimensions reliability, responsiveness and tangibles as it is and collapsed rest of the service quality dimensions in to two dimensions that is assurance and empathy. SERVQUAL is a concise multi item scale (22 item scale) with good reliability and validity. It has been designed as a generic measure, to be applicable across a broad spectrum of service to measure service quality. When necessary it can be modified or supplemented to fit the characteristics of particular service (Parsuraman, *et al*. 1988). This instrument was administered twice in different form, first to measure expectation and second to measure perceptions for each of the five service quality dimensions like Assurance, Reliability, Tangibility, Responsiveness and Empathy. Seven-

point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree) was used to rate respondents expectations and perceptions of performance and the results were then used to identify positive or negative gaps (Parsuraman, *et al.* 1988). SERVQUAL is extensively used in various private and public sectors such as retailing, healthcare, education, tourism and hospitality, financial services, B2B, real estate and government as well. (Buttle, 1996)

Table 1. SERVQUAL service quality dimensions

1	Tangibles	Infrastructural aspects of services and aesthetic of personnel
2	Reliability	Ability to execute services as per the promise
3	Responsiveness	Eagerness to help customers and providing fast service
4	Assurance	Trust and confidence generating ability of knowledgeable and courteous employees
5	Empathy	Care and personal attention provided to the customers

Source: Reproduced from Parsuraman, *et al.* (1988)

Application of SERVQUAL
If applied periodically, SERVQUAL can provide better understanding about prevailing service quality trends (Parsuraman, *et al.* 1988; Tan & Pawitra, 2001).
➢ It is used in categorising a firm's customers into several perceived quality segments (e.g., High, Medium and low) on the basis of their individual SERVQUAL scores. These segments can then be analysed on the basis of their demographic, psychographic and/or other profiles, relative importance of the five dimensions in influencing service quality perception and the reason behind perceptions of customers (Parsuraman, et al. 1988).
➢ It alters management to consider the perception of both management and customers (Tan & Pawitra, 2001).
➢ It is used to identify and priorities the areas of excellence and improvement through service gap, which will provide a basis for formulating strategy and tactics to ensure the fulfillment of expectation (Tan & Pawitra, 2001).

Criticism of SERVQUAL
Despite its popularity and wide use of SERVQUAL, it has been criticized for number of theoretical and operational aspects (Carman, 1990, Cronin & Taylor, 1992, 1994, Lee *et. al*, 2000, etc..). Following are the criticisms identified in theoretical and operational aspects (Buttle, 1996).
✓ Theoretical
➢ Model objections: SERVQUAL is based on a disconfirmation model rather than an attitudinal model; and SERVQUAL fails to come out with acceptable economic, statistical and psychological theory.
➢ Gaps model: It is found that customers' assess   service quality in terms of P – E gaps very rarely.
➢ Process focused: SERVQUAL focuses more on the process of service delivery, rather than the outcomes of the service encounter.
➢ Dimensionality: Five dimensions of SERVQUAL's are not universal in nature; the number of dimensions comprising Service Quality is contextualized; items do not always load on to the factors according to one's expectation, and high degree of intercorrelations is observed between the five dimensions.
✓ Operational
➢ Expectations: the term expectation is ambiguous in nature; to evaluate service quality, consumers use standards other than expectations; and SERVQUAL fails to measure absolute Service quality expectations.
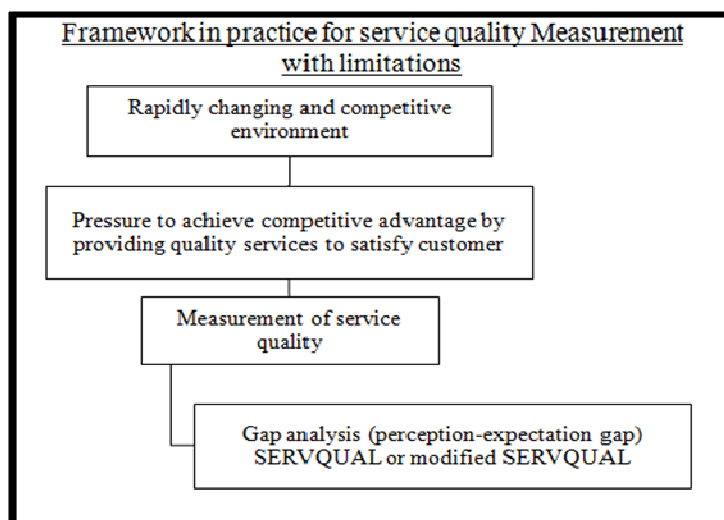
➢ Item composition: It is observed that four or five items are not able to justify the variability within each Service quality dimension.
➢ Moments of truth (MOT): Assessments of Service quality by customers may vary from MOT to MOT.
➢ Polarity: There are chances of occurrence of respondent error because of reversed polarity of items in the scale.
➢ Scale points: SERVQUAL uses the seven-point Likert scale which is flawed.
➢ Two administrations: two administrations of the instrument create boredom and confusion for respondent.
➢ Variance extracted: the overall SERVQUAL score explains only a minor proportion of item variances.
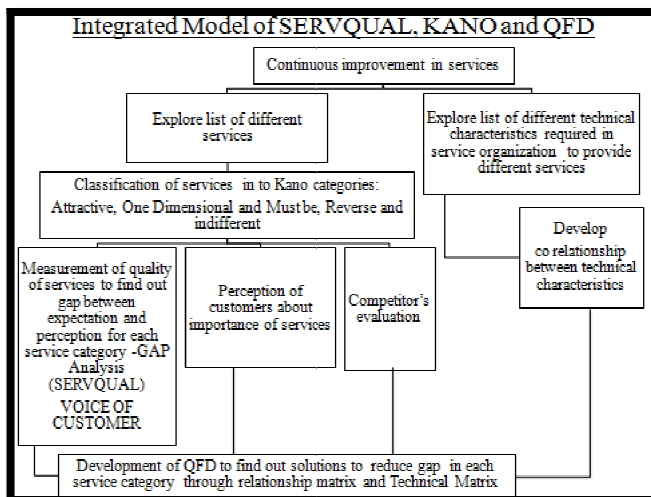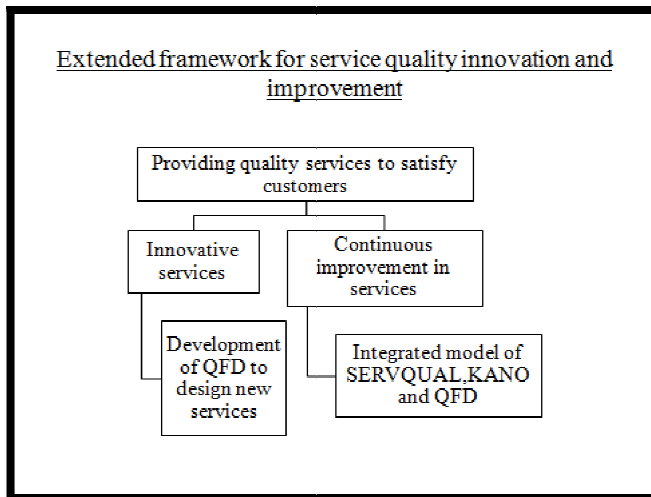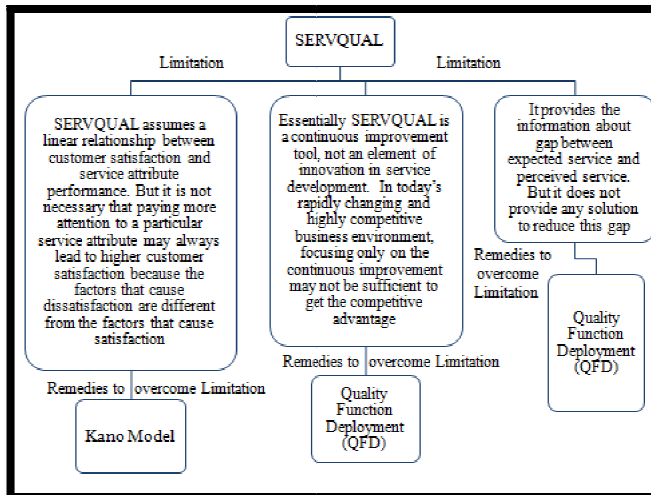
Areas for further improvement in SERVQUAL
➢ SERVQUAL assumes a linear relationship between customer satisfaction and service attribute performance. But it is not necessary that paying more attention to a particular service attribute, may always lead to higher customer satisfaction (Tan & Pawitra, 2001) because the factors that cause dissatisfaction are different from the factors that cause satisfaction (Herzberg et al. 1993)
➢ Essentially SERVQUAL is a continuous improvement tool, not an element of innovation in service development. In today's rapidly changing and highly competitive business environment, focusing only on the continuous improvement may not be sufficient to get the competitive advantage (Tan Pawitra, 2001). To get the competitive advantage timely design, development and marketing of new services with creative and innovative features are essential for organization (Shen et al. 2000), so many organization are strategically moving towards innovation (McAdam et al. 2000)
➢ It provides the information about gap between expected service and perceived service. But it does not provide any solution to reduce this gap (Tan & Pawitra, 2001).

These areas can be improved by integrating SERVQUAL with Kano and/or Quality function deployment for developing service excellence (Tan & Pawitra, 2001). So integrated approach has been applied in different industry by many researchers such as: tourism (Tan & Pawitra, 2001), health care (Lim *et al.* 1999; Akdag *et al.* 2013), logistic services (Birdogan *et al.*2009) etc.

Theoretical framework

Framework in practice for service quality Measurement with limitations

Rapidly changing and competitive environment

Pressure to achieve competitive advantage by providing quality services to satisfy customer

Measurement of service quality

Gap analysis (perception-expectation gap) SERVQUAL or modified SERVQUAL

The Kano Model

Theory of Attractive Quality-The Kano Model

A Distinction between satisfaction and dissatisfaction was first introduced in Herzberg's "Motivator-Hygiene Theory (M-H Theory) and it stated that the factors that cause job dissatisfaction are different from the factors that cause job satisfaction (Herzberg *et al.* 1993). The Kano model was first developed by Dr. Noriaki Kano of Tokyo Rika University and his colleagues from Japan in 1984(Kano *et al.* 1984) to categorise the attributes of a product or service, based on how well they are able to satisfy customers' need (Berger *et al 1993;* Witell & Lofgren 2007; Chen & Su 2006). The main inspiration for developing a Kano model was Herzberg's "Motivator-Hygiene Theory (M-H Theory)". This model is also called as 'Kano's theory of attractive quality' (Kano *et al.* 1984). Professor Kano contradicted traditional view that is linear and one dimensional relationship between quality attributes and customer satisfaction (Herzberg *et al.* 1993; Huiskonen & Pirttila, 1998) and proposed that sometimes quality attributes may reveal non linear and two dimensional relationship with customer satisfaction (Kano *et al.* 1984; Birdogan *et al.*2009; Witell & Lofgren, 2007). Day by day Kano's model has gained increased exposure and acceptance and it has been applied within quality management, product development, strategic management, and employee management, business planning and service management (Witell & Lofgren, 2007). Kano model has been widely applied in service sector to investigate various services such as superstores (Ting & Chen, 2002), web page design (Tan *et al.*, 1999), health-care services (Jane ´ & Domı´nguez, 2003), financial services (Bhattacharyya & Rahman, 2004), and electronic services (Fundin & Nilsson, 2003).

To understand the role of quality attributes, Kano *et al.* (1984) developed a model that evaluated patterns of quality, based on customers' satisfaction with specific quality attributes and their degree of sufficiency. Horizontal axis in the Kano diagram as shown in the Figure 2. shows the physical sufficiency of a certain quality attribute and the vertical axis shows the satisfaction with a certain quality attribute (Kano et al., 1984). As per the Kano model Quality attributes were classified in Five Categories: "attractive quality", "one-dimensional quality", "must-be quality", "indifferent quality" and "reverse quality"(Witell & Lofgren, 2007).

➢ Attractive quality attributes can be described as surprise and delight attributes (Kano *et al.* 1984). (Tan & Pawitra, 2001). When attractive quality attributes achieved fully, customer satisfaction increases super linearity with increasing attributes performance. There is, however, no corresponding decrease in customer satisfaction with decrease in attribute performance (Kano *et al.* 1984, Tan & Pawitra, 2001; Witell & Lofgren ,2007).These attributes are neither demanded nor normally expected, but when properly delivered they bring satisfaction. So they are a sufficient, but not a necessary condition for satisfaction (Kano 2001; Lilja & Wiklund, 2006; Busacca & Padula, 2005; Birdogan *et al.*2009). To attract competitors' customer, attractive attributes can be used as an element of an aggressive marketing strategy (Birdogan *et al.*2009).

Figure 2. The Kano Diagram
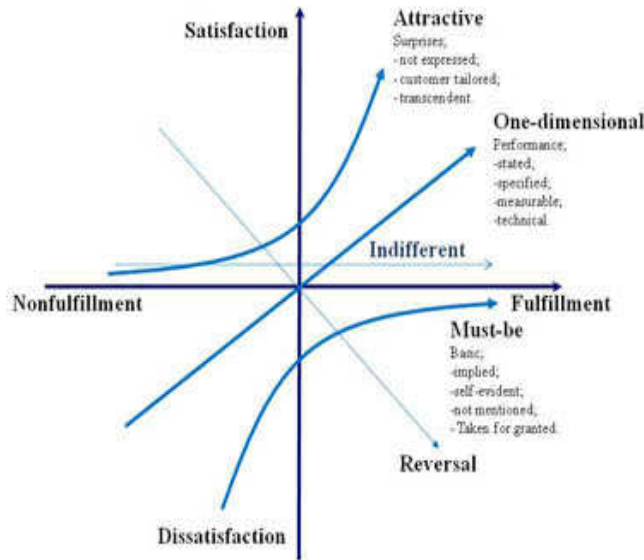
Source: Reproduced from Berger, C., et al. (1993)

➢ One-dimensional quality attributes result in satisfaction when fulfilled and result in dissatisfaction when not fulfilled (Kano *et al*. 1984; Witell & Lofgren, 2007). There is a linear relationship between these attributes and customer satisfaction (Shen *et al* 2000). They are called as spoken and are the ones with which companies compete (Gustafsson, 1998) and so they are both a necessary and sufficient condition for customer satisfaction (Busacca & Padula, 2005).

➢ Must-be quality attributes are taken for granted when fulfilled but result in dissatisfaction when not fulfilled (Kano et al., 1984). However customer satisfaction does not increase above neutral level even if these attributes fulfilled fully (Tan & Pawitra, 2001). These quality attributes are generally expected by customers' and they view them as basic, so it is possible that they are not going to tell the company about these quality attributes when asked about their expected quality attributes (Watson, 2003; Witell & Lofgren, 2007).

➢ Indifferent quality attributes: these quality attributes are neither good nor bad, and thus they do not result in either customer satisfaction or customer dissatisfaction (Kano et al.1984; Witell & Lofgren, 2007).

➢ Reverse quality attributes: High degree of achievement of this quality attributes results in dissatisfaction and vice versa; a low degree of achievement results in satisfaction with consideration of the fact that not all customers are alike. (Kano et al.1984; Gustafsson, 1998; Witell & Lofgren, 2007)

➢ The theory of attractive quality also proposes that product and service attributes are dynamic in nature, that is, over the time an attribute changes from being "indifferent", to "attractive", to "one-dimensional", and, finally, to being a "must-be" item. According to Kano (2001), "successful" quality attributes follow such life-cycle from "indifferent" to "must-be". Thus, the timely and continual development /improvement and introduction of products or services with innovative and novel attributes are important to get competitive advantage (Shen et al. 2000; Tan & Pawitra, 2001).

Managerial Implication of Kano Model

➢ It is useful tool in product or service development and it provides greater decision support during the design of products/services (Witell & Lofgren, 2007).

- ➢ With the help of Kano model, one can get better understanding about products or services quality attributes expected by customers and identify which have greater impact on customer satisfaction (Matzler & Hinterhuber, 1998; Tan & Pawitra, 2001; Witell & Lofgren, 2007).
- ➢ Because of technical or financial reasons, sometimes, it is not possible for the company to implement or promote each and every quality attributes. With help of Kano model, company can determine the quality attributes which have greater influence on customer satisfaction. Thus it plays important role in trade off situations (Matzler & Hinterhuber, 1998; Tan & Pawitra, 2001; Witell & Lofgren, 2007).
- ➢ Kano model claims to fulfill must be quality attributes, it emphasizes on one dimensional quality attributes to be competitive with market leaders and focuses on attractive quality attributes in order to delight customers (Witell & Lofgren, 2007).
- ➢ It can point out opportunities for service differentiation. (Matzler & Hinterhuber, 1998).

Limitations of Kano Model
- ➢ Kano model does qualitative assessment of quality attributes but does not quantify the extent to which the customer is satisfied (Berger et al. 1993; Bharadwaj & Menon. 1997; Erto et al. 2011).
- ➢ Kano model focuses on the customer and market perspective only. It does not consider the capacity of producer/ service provider to meet customer needs. (Xu et al. 2008; Erto et al. 2011).
- ➢ Kano model does not focus on what derives customer perception (Bharadwaj & Menon 1997, Tan & Pawitra , 2001).

Approaches to the classification of quality attributes
There are four approaches for the classification of quality attributes. (Witell & Lofgren, 2007)

Five level Kano Questionnaire
The original process of classification of quality attributes is basically following a survey method using a Kano questionnaire. The Kano questionnaire is constructed through pairs of customer requirement questions. Each question consequently has two parts, first part of is a function form and that is on how do you feel if that feature is present in the product or service while second part is a dysfunctional form and that is on how do you feel if that feature is not present in the product or service (Kano *et al.* 1984; Berger *et al.*1993). For each part of the questions, there were five alternative answers illustrate as "like"; "must-be"; "no feeling"; "give up"; and "do not like". Customer selects any one out of five alternative answers for each part of the questions and subsequently customers' perceptions were evaluated into quality dimensions (Kano. 1984). The five-level Kano classification approach is shown in the figure 3 through the example of study on e-service of ordering cinema tickets online (Witell & Lofgren, 2007). The five-level Kano classification approach thus had 25 possible outcomes, which were spread over five different quality dimensions such as Attractive quality (A), One-dimensional quality; (O), Must-be quality (M), Indifferent quality (I), and Reverse quality (R). "Skeptical evaluation" S, is used for representing responses in which it is unclear whether the respondent has understood the question or not (Kano *et al.*, 1984).

Then next step is to make overall classification of the quality attributes for all respondents. Statistical mode and a t-test are used to compare the proportions of customers classifying a quality attribute to a specific quality dimension (Witell & Lofgren, 2007).

Figure 3. Classifications through five level Kano questionnaire

If you can order cinema tickets online, how do you feel? (Functional Form)	(1) I like it that way. 2. I am expected to be that way. 3. I am neural. 4. I can accept it to be that way. 5. I dislike it that way.
If you can not order cinema tickets online, how do you feel? (dysfunctional Form)	1. I like it that way. 2. I am expected to be that way. 3. I am neural. (4) I can accept it to be that way. 5. I dislike it that way.

Customer Requirement →		Dysfunctional				
		Like	Expect	Neutral	Accept	Dislike
Functional	Like	S	A	A	(A)	O
	Expect	R	I	I	I	M
	Neutral	R	I	I	I	M
	Accept	R	I	I	I	M
	Dislike	R	R	R	R	S

Customer requirement	A	M	O	R	S	I	Total	Grade
1	1						1	A
2								
3								
…….								

Source: Reproduced from Witell and Lofgren (2007)

Three level Kano questionnaire

According to Kano (2001), in English language, a customer's perception about a quality attribute could be described by only three levels as "Satisfied", "Neutral" and "Dissatisfied". Kano (2001) also believed that these three levels should be sufficient to capture the quality dimensions in the Kano model (theory of attractive quality). Thus in 2001, Kano (2001) introduced simplified version of original five-level Kano questionnaire, consist of three alternative answers as "Satisfied", "Neutral" and "Dissatisfied" instead of five, in each part of the questions. The Three-level Kano classification approach followed the procedure of the original Five-level Kano Classification approach but it had 9 possible outcomes instead of 25, which were spread over five quality dimensions. Three-level Kano classification approach is shown in the figure 4 through the example of study on e-service of ordering cinema tickets online (Witell & Lofgren, 2007). This approach also facilitates completion of the questionnaires and the classification of quality attributes (Witell & Lofgren, 2007).

Figure 4. Classifications through three level Kano questionnaire

Source: Reproduced from Witell and Lofgren (2007)

Classification through direct questions

This approach was suggested by Emery and Tian (2002).They suggested that the researcher should explain the theory of attractive quality to the respondents and then ask them to classify each attribute

directly. Figure 5 shows the Classification of Direct Questions through the example of study on e-service of ordering cinema tickets online (Witell & Lofgren, 2007).

Figure 5   Classifications through Direct Question

How would you classify the ability to watch movie trailers online?
Ⓐ   Attractive quality
B.   One dimensional quality
C.   Must-be quality
D.   Indifferent Quality
E.   Reverse Quality
F.   Other

Customer requirement	A	M	O	R	S	I	Total	Grade
1	1						1	A
2								
3								
....								

Source: Reproduced from Witell & Lofgren (2007)

Classification via importance

Jacobs (1999) came up with an approach that classified quality attributes based on the respondents' perceptions of importance as shown in the figure 6. This approach is also known as the "dual – importance grid" and it is basically focused on following three measurements; "overall satisfaction", "stated importance", and "motivational importance". First and second measurement that are "Overall satisfaction" and "Stated importance" were measured through numerical rating scale "very dissatisfied" to "very satisfied" and "not at all important" to "extremely important" was used respectively. ". The third measurement "Motivational importance" was measured by deriving a relationship between the attribute performance ratings with measures of "overall satisfaction" through statistical analysis (Jacobs, 1999) such as correlation analysis (Jacobs, 1999), a regression analysis, or partial least squares (Martensen & Gronholdt, 2001).

Figure 6. Classification through dual- importance grid
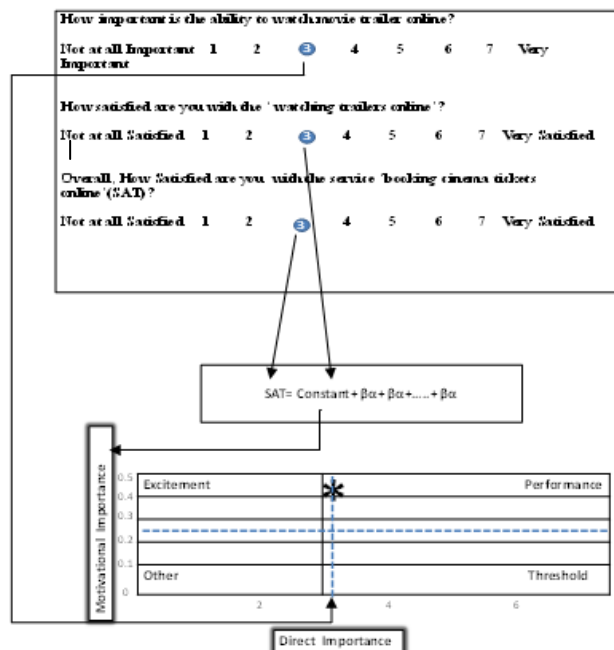
Source: Reproduced from Reproduced from Witell & Lofgren (2007)

Quality Function Deployment (QFD)

Introduction of QFD

A concept of Quality function deployment (QFD), is a design approach or a planning process of innovation (Brown 1991; shen *et al*. 2002) was introduced in Japan in the late 1960s (Akao 2004; Romeo *et al*. 2014) and then it was first brought in to practice in kobe shipyard of Mitsubishi industry in Japan by Dr. Yoji Akao In 1972 (Oakland, 2003; Iris 1996; Tan & Pawitra, 2001). QFD Called as *hin shitsu kino ten kai* in Japanese words and translated in English language as Quality Function Deployment where, *hin shitsu* means quality or features or attributes, *kino* means function or mechanization and *ten kai* means deployment, diffusion, development or evaluation (Lockamy & Khurana, 1995; Tan & Pawitra, 2001). QFD is a very useful planning process to design new products or services and also to improve an existing products or service (Hauser & Clausing, 1988 ; Iris Mohr-Jackson, 1996).

Definition of QFD

QFD is a technique for converting the customers' demands into "quality characteristics'' and developing a design quality for the finished Product by systematically deploying the relationship between the demands and the characteristics, starting with the quality of each functional component and extending the deployment to the quality of each part and process (Akao, 1990). QFD is a system for translating consumer requirements into appropriate company requirements at every stage of a product's life cycle from research to sales to service (Slabey, 1990). QFD is a set of planning and communication routines to focus and co-ordinate the skills of an organisation, first in design, and then in manufacturing and later in the marketing of the goods that customers want to purchase (Hauser & Clausing, 1988). QFD is a process that provides structure in the development cycle to focus on customer requirements (Bossert, 1991). QFD is a technique that identifies the true voice of the customer and ensures that this information goes through all stages of the product life cycle (Burn, 1991).QFD is a systematic planning process created to help a project team bring together and manage all elements needed to define, design, and produce a product (or deliver a service) that would meet or exceed customer expectations (Daetz *et al.* 1995).Mazur (1993) defined QFD for application in the service industries. According to Mazur, QFD consists of a system and a set of procedures to aid in the planning and development of services.

QFD Methodology

There are four key phases involved in QFD methodology (Romeo *et al*. 2014; Shen *et al*. 2000; Sullivan 1986).

Phase 1: Planning phase

This phase is called House of Quality (HOQ) and it is most commonly used part in QFD (Cohen, 1995). House of quality is a matrix style chart and conceptual map that correlates needs and wants of customers (customers' requirement) called "Whats" with technical requirement called "Hows" which fosters overall planning and communication among different functional areas of organization (Hauser & Clausing, 1988; Shen *et al*. 2000).

House of Quality includes following six sub matrices as shown in the figure 1.9 (Cohen, 1995; Bedi, 2011; Evans & Lindsay, 2009).

Figure 7. Quality function deployments - House of Quality
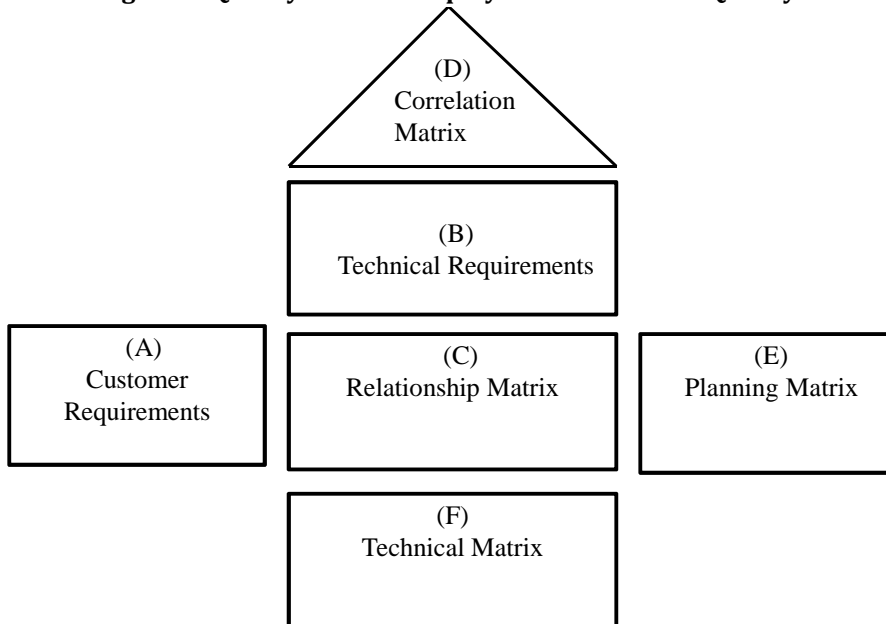
Source: Reproduced from Cohen (1995)

➢ Identifying Customer Requirement "Whats" (voice of customer or Customer need and wants)
Primary input in QFD process is voice of customer that is what are the needs and wants of customer from a product or a service. Proper marketing research has to be conducted to collect information from customer using focus group interview, personal or telephonic interview/survey or mail questionnaire etc.

➢ Identifying Technical Requirement "Hows"
Technical requirement provides bases for the design of product or service. Technical requirement are the design characteristics "Hows" by which organization respond to customer requirements "whats". Main Purpose of identifying Technical requirement "Hows" is to translate customer requirements "whats" into the terms that are measurable.

➢ Relationship matrix : Relationship between "Whats" and "Hows"
In this step relationship between "whats" and "Hows" is determined. This matrix shows whether technical requirement adequately addresses customer requirements. Experts' interviews or controlled experiments are carried out to determine theses relationship. Degree of relationship is represented by numbers 1, 3, and 9. 1, 3, and 9 represents weak, moderate and strong relationship respectively.

➢ Correlation matrix: Correlation between "Hows"
It is also called roof of House of Quality. It shows interrelationship between various technical requirements. This interrelationship indicates "How a change in a technical requirement does affect others?" Level of interrelationship is represented through following codification: Strong positive = +9, Positive = +3, Negative = -3, Strong Negative = -9

➢ Planning Matrix
In this step survey of customers is carried out to identify importance rating for each customer requirement "what" and evaluates company's products or services (In the case existing products or services improvements) and competitors' product or services for each customer requirement. Importance rating is the area of utmost interest and expectations uttered by customers and competitive evaluation involves strengths and weaknesses in competitors' products or services.

Through these steps areas of improvement, key selling point and priorities for design process can be identified.

➢ Technical Matrix

In this matrix evaluation of technical requirement of competitive products and services is carried out and targets for each technical requirement are developed and selected to deploy.

Phase 2: Design Phase (Romeo et al. 2014)

In this phase, with the help of brainstorming activity and through creative and innovative team ideas from design department of organization, numbers of design options are identified to satisfy customers' needs and wants.

Phase 3: Process Planning (Romeo et al. 2014)

Plans are prepared in this phase to implement identified design options.

Phase 4: Process Control (Romeo et al. 2014)

In this phase, performance measures are defined to measure the effectiveness of the processes involved in production of a certain product or service.

Benefits of QFD

➢ QFD lead to significant reduction up to 30% in start up and engineering cost (ReVelle et al.1998).
➢ In advance one can find out high risk areas during the design phase only and production process requirement (ReVelle et al.1998).
➢ Resource allocation will be more efficient (ReVelle et al.1998).
➢ Development time reduction (ReVelle et al.1998).
➢ Increase customer satisfaction level (ReVelle et al.1998).
➢ It assists team work and improves cohesiveness of team (ReVelle et al.1998).
➢ Spoken and unspoken needs and wants can be identified and prioritised through QFD model (King 1994; Einspruch et al. 1996; Hallberg et al. 1999; Lim et al. 1999; Chou 2004; Omachonu & Barach, 2005; Rahman & Qureshi, 2008; Aghlmand *et al.* 2010; Kuo *et al.* 2011; Raharjo &I. G, 2013; ReVelle *et al.*1998).
➢ It focuses on whole system rather than isolated product or service. (Lim & Tang 2000; Chaplin & Akao, 2003; Raharjo & I. G, 2013).

Limitations of QFD

(Bouchereau & Rowlands 1999; shen *et al.* 2000; Tan & Pawitra, 2011)

➢ Voice of customers can be ambiguous in nature.
➢ More subjective data and their analysis are involved.
➢ Manual Incorporation of customer survey information is difficult and time consuming.
➢ It assumes linear relationship between customer satisfaction and quality attributes

3. Research Gap

In competitive business environment, it is necessity for an organization to focus on providing quality services to satisfy the customers. This needs not only measurement of service quality but also to improve the existing service and adding innovative services. All past and most of the current research have focused on measuring the service quality through SERVQUAL or modified SERVQUAL scale that measure gap between Perception and expectation in different sectors. Even though there are some areas for further improvement in SERVQUAL such as, First, in certain cases SERVQUAL's use of a linear scale in its assignment of prioritization for improving service attributes may not be appropriate, second, SERVQUAL was not designed to address the element of innovation and third, SERVQUAL is not able to address how the gap can be closed. SERVQUAL is proved to be a very useful scale for assessing and

improving service quality, but it does not provide any solution to improve services. SERVQUAL gives more better result when it is used frequently to track service quality trends and used in combination with other forms of service quality measurement tools like Kano model, QFD etc., to overcome the causes underlying a key problem areas or gap identified by SERVQUAL. There is scope for integrating SERVQUAL with Kano model and Quality Function Deployment to achieve excellence in service quality. Very few researches have been carried out on this integration, this shows scope for integrated model that will help service provider to target and improve technical areas. These technical areas include technical characteristics which can strongly affect the customer's expectation and satisfaction level.

4. Conclusion

SERVQUAL is a concise multi item scale with good reliability and validity and it has been designed as a generic measure, to be applicable across a broad spectrum of service to measure service quality. When necessary, it can be modified or supplemented to fit the characteristics of particular service. It is used to identify and priorities the areas of excellence and improvement through service gap, which will provide a basis for formulating strategy and tactics to ensure the fulfillment of expectation. Despite its usefulness there are some areas which calls for improvement in SERVQUAL such as, linearity assumption, not being a tool for innovation and inability to provide solution for closing the gap. SERVQUAL can be further improved by using it in conjunction with other forms of service quality approaches like Kano model, QFD etc. There is scope for integrating SERVQUAL with Kano model and Quality Function Deployment to achieve excellence in service quality.

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