Service Quality in the Healthcare Sector

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Abstract: Service quality is considered a major weapon which companies can use to gain competitive advantage, and it is considered a critical determinant of competitiveness (Devlin et al., 2002). A critical measure of organisational performance and service quality is commonly noted as a critical prerequisite for establishing and sustaining a satisfactory relationship with valued customers. This paper discusses the healthcare industry in New Zealand, the importance of service quality in general and more specifically to the biomedical engineering departments within hospitals. It further investigates the available models of service quality and how best they could be used in the healthcare sector. The main goal is to recommend a suitable model that could lead to best practice and ultimate customer satisfaction through an adequate service quality in hospitals.

Keywords: Service Quality, Healthcare Sector, Customer Satisfaction

1 Introduction

Service quality is considered a major weapon which companies can use to gain competitive advantage, and it is considered a critical determinant of competitiveness (Devlin et al., 2002). A critical measure of organisational performance and service quality is commonly noted as a critical prerequisite for establishing and sustaining a satisfactory relationship with valued customers.

This paper starts by giving an overview of health care in New Zealand, concerns related to improve effectiveness and lowering costs of service quality and at the same time ensure customer satisfaction. Then, it discusses the role of biomedical engineering department in hospitals, quality in health care in general and more specifically service quality. This research then presents in detail the various service quality models available to help decide the best fitted model for health care. The researchers finally conclude by recommending the adoption of the SERVQUAL model as the best fitted model for biomedical departments in healthcare hospitals in New Zealand.

2 Overview of Health Care in New Zealand

In mid-1990s, New Zealand's Ministry of Health has directed public hospitals to operate like business organisations. This was part of the government-led reforms of the health sector. Now the government provides a yearly operating budget to the hospitals depending on the types of therapy and service it provides to the community. This has increased competition among public healthcare providers. Hospital managers are trying to decrease operating costs, expand access and improve service quality to ensure Ministry of Health that a high-quality service is provided to the community in a cost-effective manner. A cost-effective and high-quality service allows the management of the hospitals to expand their business and secure a higher level of funding from the Ministry of Health.

The healthcare industry deals with multiple stakeholders and many internal and external customers. Accordingly, it has to cope with environmental pressures such as demographic changes and the aging of populations as well as emergence of new treatments and technologies and increased insistence on greater quality of service to remain competitive (Andaleeb, 1998; Ingram and Desombre, 1999).

Not surprisingly, service quality and the closely related internal customer satisfaction constructs are of vital concern for New Zealand public hospitals. In the literature, it is argued that there are many issues facing health care today that originate from the hospital itself, such as advance technology and science, uncertainty about treatment effectiveness, the explosion of information and its accessibility, growing demand for services and good management, operating cost, workforce and facility needs (Christensen, 1997).

3 Role of Biomedical Engineering Department in the Hospital

The role of biomedical engineering is to meet technology management challenges that can be broadly defined as providing a safe and an effective management of technology used for patient diagnosis, therapy and monitoring within healthcare institutions (Frize and Michael, 1991). This implies involvement in all phases of the equipment life cycle, selection, acceptance testing, training in safe and effective use, equipment safety, maintenance and final disposal or replacement.

Biomedical engineers are responsible for explaining new technologies and their impact on construction and operating costs and to translate technological ideas, problems and concepts into a non-technical language so that a wide range of people (i.e. outside the biomedical field) could understand with ease. Frize and Michael (1991) suggest that the biomedical engineering departments usually perform the following tasks.

- Corrective maintenance and calibration of medical equipment
- Incoming inspections (acceptance testing) for new equipment acquisitions and for equipment returned after an outside repair, performed before the equipment is placed in patient use
- Preventive maintenance and periodic inspections of equipment as per medical equipment management standard (AS/NZS 3551:2004 for New Zealand and Australia)
- Equipment safety such as screening hazard notices, performing equipment and electrical safety checks and generally contributing to a safer environment
- Training users on the safe, effective use of their technologies and prevention of equipment misuse or abuse and accidents related to the use of equipment
- Pre-purchase consultation, especially where the clinical engineering department is expected to repair the technology after expiry of the warranty and sometimes even during the warranty period
- Physiological measurements requiring personal with a technical background, such as the catheterisation procedure and cardiac investigation studies
- Clinical research and development, including equipment modification and design because this activity contributes important skills to medical researchers and brings the clinical engineer in closer contact with direct patient care, it provides a multidisciplinary approach to problem solving and to the quality of patient care
- Administration duties relating to the department's budgets, staffing, planning and training and development

Moreover, biomedical engineers are uniquely qualified to understand the many subtleties of medical device and its alarm performance. They tend to have a very good understanding of the inner workings of the devices and are good at picking out situations where clinical staff may run into trouble when using a certain type of device or feature (Keller, 2006).

4 Quality in Health Care

Williamson (1991) stated that hospitals are still maintaining quality in the traditional manner and heavily relying on the data from their information technology systems. The traditional approach to quality management in health care has relied on licensor, certification and accreditation. Over the years, a number of organisations have been involved in the development and deployment of these structural quality assurance

mechanisms. The most notable ones are in the United States. The prominent ones are Joint Commission on Accreditation of Healthcare Organisations, Commission on Professional and Hospital Activities and Professional Standards Review Organisations. In one sense, these organisations form the backbone of the regulatory structure of the healthcare industry. Thus, the traditional quality management is externally driven. The positive aspect of this system is that it provides safeguards to the public in terms of standards of health care and minimal competence of the healthcare professionals. Its shortcomings are that it uses the negative incentive of punishment such as loss of license to operate in the cases of non-compliance, and the underlying premise seems to be that sanctions are needed to ensure quality.

Technology has revolutionised the management of healthcare organisations by changing the way in which people work and interact. Health care today is characterised by more to know, more to manage, more to watch, more to do and more people involved in doing it than at any time in any nation's history. In the last few decades, investments in biomedical research have increased steadily, resulting in an extraordinary expansion of medical knowledge and technology (Blumenthal, 1994). The modern method of organising and delivering care is more complex. Sometimes healthcare organisations are finding difficult to meet all expectations of patients and their families because of the science and technologies involved in health care; the knowledge, skill, care interventions, medical devices and drugs have advanced more rapidly hence putting pressure on healthcare resource and its ability to deliver them safely, effectively and efficiently (Johnson, 1996).

Around the world, the medical testing, technology-driven therapy and technology performance are guided by medical standards prescribed by medical authorities of each country, for example, British Standards Institution, Thai Industrial standards, South African Bureau of Standards and Canadian General Standards Board (CSA). Similarly in New Zealand, modern methods of delivering care, surgical techniques, medical testing and technology management follow the rest of the world and are guided by medical standards of New Zealand known as Standards New Zealand. Standards New Zealand is a government organisation responsible for developing and marketing national, regional and international standards offering an independent service to a wide range of organisations in New Zealand. The majority of the standards are developed in partnership with Australia. These standards represent Australia and New Zealand in the International Organisation for Standardisation, the International Electro-technical Commission and other related governing bodies. Standards New Zealand ensures that New Zealand's voice is heard worldwide (Quality Health New Zealand, 2006).

From the literature, it can be said that the technological development and quality standards clearly have an important effect on the service quality in hospital care such as medical practice, surgical techniques, drugs, equipment and organisation (Kunst and Lemmink, 2000). Technology can be used as a productive, tactical, strategic resource, change agent and tool. For continuous improvement, it is important that tools for measuring quality are used.

5 Service Quality

5.1 Definition of Service Quality

Chan and Lee (2006) mentioned that service quality is more difficult to measure when compared with product quality. Parasuraman et al. (1988) explained that service quality is defined as the capability of a company to meet or exceed the customers' expectations. They illustrated that customer satisfaction results from service being greater than customer expectations. Hence, service quality is closely connected to customer expectation which is viewed as a line or point that service performance must go beyond, due to the concept of disconfirmation (Dedeke, 2003). Along the same lines, Parasuraman et al. (1985) and Gronroos (1984) defined service quality as the difference between a customer's expectation and the experience of a product or the performance of a product. It can be seen as the difference between the service provided by the service provider and the quality of performance the customer hopes to receive from the service provider, before the encounter takes place.

Quality within health care remains a major concern and is further complicated by the wide groups of stakeholders each holding different perception of quality (Joss and Kogan, 1995). Quality management as opposed to quality assurance within health care has grown in importance in recent years, and this is due to the fact that hospitals believe that quality improvement programmes and methods will lead to higher quality patient care, improved patient satisfaction, enhance employee morale and lower the cost of service delivery (Boersteler, 1996). McGlynn (1995) argues that a simple definition of service quality is the art of doing the right thing, at the right time, in the right way, for the right person and having the best possible results. He further holds the view that health care has always been a major love of populations; it is not only the means to good health and long life but also a symbol of democratic rights and citizenship; therefore, no one should be denied the right to good health care and to a good quality of life.

5.2 Service Quality Models

The foundation of service quality theory lies in the product quality and customer satisfaction literature. This section will explore the various service quality models that are available for measuring customer satisfaction. This section will be discussing in particular the following models: SERVQUAL model, SERVPERF model, Nordic Service Quality Model and finally the three-component model.

5.2.1 SERVQUAL Model

Parasuraman et al. (1985) proposed that customers tend to evaluate service quality by using 10 common factors: reliability, responsiveness, competence, access, tangible, courtesy, security, understanding/knowing, credibility and communication. In 1988, Parasuraman et al. (1988) simplified these 10 service quality attributes into five dimensions: tangibility, reliability, responsiveness, assurance and empathy, which later become well known as the SERVQUAL approach to measurement of the quality concept. Based on the above five dimensions, shown in Figure 1, Parasuraman et al. (1985) hypothesised that these five dimensions are related to the discrepancy between consumer's expectations and perceptions. In essence, they considered that service quality, as perceived by consumers, stemmed from a comparison of what consumers felt the service firm should offer (their expectations) with their perceptions of the performance of the service providers (Kassim and Bojei, 2002). SERVQUAL remained through the 1990s as the most widely used measure of service quality. Despite its popularity, a number of criticisms have been levelled at the SERVQUAL instrument, aimed at both the conceptual and the operational level. The most notable among the critics have been Cronin and Taylor (1992) and Teas (1993) who developed their own measurement instruments. Based on a review of service quality and customer satisfaction literature,

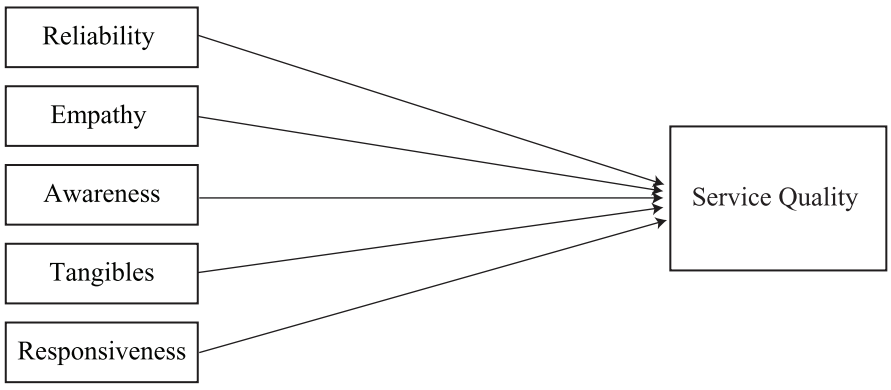

Figure 1 - SERVQUAL model

Source: Adapted from Parasuraman et al. (1985).

Cronin and Taylor conclude that current performance best reflects a customer's perception of service quality and that expectations are not part of this concept.

Based on their empirical investigation, they developed SERVPERF measure (performance only) (Robinson, 1999). Along with Cronin and Taylor (1992), others (such as Buolding et al., 1993; Forbes et al., 1986; Wilton and Nicosia, 1986) have questioned the conceptualisation and usefulness of the expectation side of the instrument (Caruana et al., 2000). Cronin and Taylor (1992) suggest that perceptions of service quality more closely match customer evaluations of the service provided. Parasuraman et al. (1994) counter this criticism by taking the position that measuring service quality as disconfirmation (i.e. the difference between perceptions and expectations) is valid, and further it allows service providers to identify gaps in the service provided. Further, in the literature on service quality, SERVQUAL has generally been considered to be a useful and popular method for researchers and businesses to evaluate service quality.

5.2.2 SERVPERF Model

SERVPERF model is a performance-only-based approach to measure service quality. This model was originally developed by Cronin and Taylor (1992), has been applied by several studies and has demonstrated useful and practical applications to date. For example, Robinson (1999), who evaluated the perception of service quality in the healthcare service industry by using the performance-only approach (SERVPERF method), concluded that asking patients and clients about their level of customer satisfaction with regards to service gave better results (i.e. more easily administrated and interpreted) than did the SERVQUAL approach (Cronin and Taylor, 1992).

5.2.3 Nordic Service Quality Model

Gronroos (1984), in addition to adapting the disconfirmation paradigm to the measurement of service quality, further proposed the Nordic Service Quality Model as an alternative service quality model, which identified two service quality dimensions, as shown in Figure 2. Functional quality represents how the service is delivered, that is, it defines customer's perceptions in relation to the interactions that take place during service delivery. Technical quality reflects the outcome of the service act or what the customer receives in the service encounter (i.e. the service product). Study conducted by Lassar et al. (2000) observed that in high contact banking services, such as private banking and wealth management, the technical and functional quality dimensions are better suited to predict levels of service quality and customer satisfaction when customers expect a high-level face-to-face contact and of expert advice. In addition, the Nordic model took note of the impact of image on service quality.

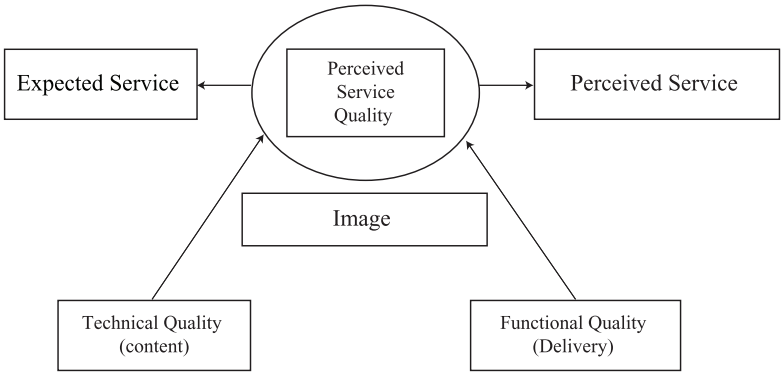

Figure 2 - Nordic Service Quality Model

Source: Adapted from Gronroos (1984, p. 37).

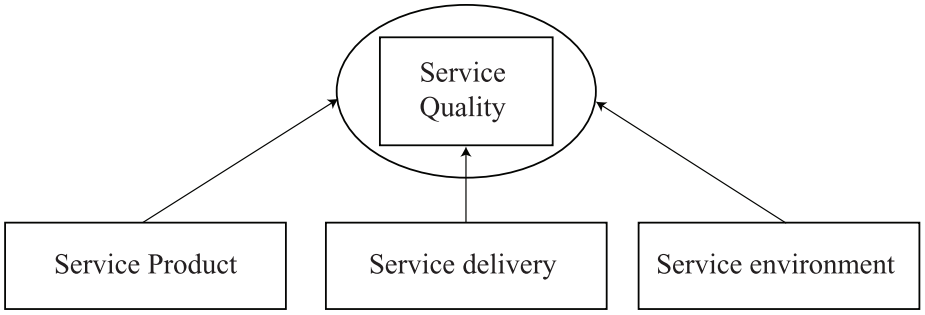

Figure 3 - The three-component model

Source: Adapted from Rust and Oliver (1994, p. 16).

Rust and Oliver (1994) improved upon the earlier model that evolved from the technical and functional quality dimensions and introduced the three-component model with three dimensions (see Figure 3).

5.2.4 The Three-component Model

The three-component model consists of the service product (i.e. technical quality), the service delivery (i.e. functional quality) and the service environment. Although Rust and Oliver (1994) did not test their conceptualisation, support has been found for similar models in retail business such as banking (Yavas et al., 1997). The following are the detailed three components of the model (see Figure 3).

5.2.4.1 Service Product

The service product has been termed as the technical quality of what the customer is actually receiving from the service and the outcome of quality because the service is evaluated after performance (Gronroos, 1990; Parasuraman et al., 1985). In healthcare context, healthcare services are particularly complex in their characteristics, heterogeneous in their range of medical specialisations and associated services, and ambiguous in the sense that the average customers have no technical knowledge to understand their particular needs or the services available to satisfy them. Thus, accepting this complexity, heterogeneity and ambiguity, the quality of the product should be assessed not only from the customer's point of view but also from the provider's perspective.

5.2.4.2 Service Delivery

The second element of the service quality in this model is its delivery process. In any service organisation including health care, the perception of the quality of service is critical for both employees and customers (Rust and Oliver, 1994). In the healthcare context, services are intangible performance and personal experiences that can vary in execution and from one hospital to another and similarly from one hospital department to another because of the nature of treatment and service. Healthcare service is difficult compared with physical goods because most goods are relatively high in search qualities, that is, qualities like colours, shape, size and personal appearance that customer can directly see and asses before purchase. However, in health care, it is mainly experience qualities because they can only be established during treatment, that is, only based on actual experience with the quality of delivery, for example, patient care, pain management, courtesy and personal treatment. Thus, enhancement of technological delivery capability, such as user-friendly test and diagnostic equipment that is efficient and reliable, plays a crucial role in establishing the seamlessness of the service delivery. Finally, credence quality service tends to provide technical and clinical support to the clinical members of the hospital because biomedical engineers have both technical and clinical knowledge. Therefore, they have more experience and credence qualities compared with goods (Young and Wilkinson, 2002). For example, in this research, it is anticipated that most of the services in biomedical engineering department of public hospital would have

experience and credence qualities because of the multidimensional nature of its quality related performance (e.g. data networking, patient monitoring and self-operating diagnostic equipment) and involves considerable interaction between clinical staffs and biomedical engineers and technicians.

5.2.4.3 Service Environment

The third element of the service quality, the service environment, can be classified into the internal and external environment. The internal environment includes corporate culture, organisation structure, customer generation and retention, including employee support and reward systems. In contrast, the external environment is another aspect of customer's experience of a service or tangible cues. This environment relates to the effects of the surroundings on customer and employee beliefs, attitudes and performance including ambience and services cape. These tangible cues could be the appearance, confidence and courtesy of the frontline staffs as well as written communication and customer billing (Johnson and Fornell, 1991).

6 Conclusion and Recommendations

This research paper explored the health care in New Zealand and the role of biomedical engineering departments in hospitals in access service quality to the customers. It then explored the definition of service quality and the various models available for adoption. This research indicated that a considerable amount of research has been carried out in the field of service quality and more specifically in product quality. However, there has been a limited research considering service quality and service product quality in the health care in general and more specifically in the biomedical engineering field in New Zealand public hospitals.

The researchers favour the SERVQUAL model to be adopted in measuring service quality in the healthcare sector in general and more specifically in the biomedical engineering department because it has five dimensions of service quality that is needed in health care. These include tangibles, reliability, responsiveness, assurance and empathy. *Tangibles* are the physical evidence of the service (e.g. physical facilities, appearance of personnel, or tools or equipment used to provide the biomedical service). *Reliability* involves consistency of the performance and dependability (i.e. biomedical engineer performs service correctly first time and honours his or her promises that equipment will be available when needed). *Responsiveness* concerns the willingness or readiness of biomedical engineer to provide service (e.g. timeliness of service). *Assurance* corresponds to the knowledge and courtesy of biomedical engineers and their ability to inspire trust and confidence. Finally, *empathy* pertains to caring, individualised attention that a biomedical engineering department needs to provide its internal customers. According to this model, service quality is measured as disconfirmation (i.e. the difference between perception and expectations) allows service providers to identify gaps in the service provided and enables corrective actions to be taken for future reference.

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