

# Technology Usage, Quality Management System and Service Quality

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## ***Abstract***

The hospital becomes aware of quality management system including Thai hospitals from the more general and immediate problem of how to produce quality goods and service. The customer perspective on quality is unnecessary concern for hospitals financial viability. This means that the nature of health-care is changing from a seller-oriented to buyer-oriented market. Traditional, hospital service quality in Thailand was never so directly probed and measures in variety of basic elements. Quality of hospital service from the customer view will become more important in this competitive business. This article explore the important issue of technology usage, quality management system and service quality in Thai hospital. Properly conducted technology usage and quality management system consensus assessment has potential of informing a service organization of its current position and possible areas of improvement. A specific in Thai hospital context, the preliminary results suggest that hospitals can also use this approach to their advantage, yielding sustainable improvement in service quality that perceived by patients and service providers. Management must apply this knowledge to plan for the successful implementation of service- quality related activities in their organization.

*Key words: Technology Usage, Quality management System and Service Quality*

## **Introduction**

This article explore the important issue of technology usage, quality management system and service quality in Thai hospital. Properly conducted technology usage and quality management system consensus assessment has potential of informing a service organization of its current position and possible areas of improvement. This paper presents results of exploratory research to investigate the service quality using a customer's perception. A specific in Thai hospital context, the preliminary results suggest that hospitals can also use this approach to their advantage, yielding sustainable improvement in service quality that perceived by patients and service providers. Through this reports results, hospitals can make better quality decisions based on structured measurement and knowledge. Management must apply this knowledge to plan for the successful implementation of service- quality related activities in their organization.

## *Technology Usage, Quality management System and Service Quality*

In a competitive world, class market performance, the increasing role of technology usage provides substantial benefits for both firms and customers. Therefore, most businesses turn to their customers for quality assessment either directly or indirectly by using technology. There is strong evidence that using technology as a tools for performance delivers high quality and cost a competitive service (Zineldin, 2000). Many organizations are moving to assess technology and quality management systems to support customers' preferences with effective operations management. However, it is sometimes difficult to separate technology from the relationship between the service providers and customers. For implementation of some technologies and quality management systems to dramatically enhance competitive edge, service providers must satisfy and customers must perceive it (Cook, 2002).

The increasing of technology usage involves adding significant to improve product/ service quality that appeals to the needs and desires of a particular segment of customers. This effort is useless without the ability to efficiently design, produce, support, and manage the distribution and delivery process (Erffmeyer and Johnson, 2001). However, technology implementation alone is can increase high quality. It is equally essential to implement quality management systems into organizations while using resources. The integration of technology and QMS need to be explored more, especially in many service sectors, which rapidly adopting technologies, and any kind of QMS which might influence service quality. Therefore, while it is important for a firm to closely monitor and conform to the needs and preferences of its customers, it is equally essential to build a quality system within the organization. The responsibility of delivering high-quality service ultimately rests on the service providers.

Heskett et al., (1994) suggest that quality management systems are the critical link to the customers. They are responsible for usage of technology and interpreting customer requirements on time. Despite much previous research focusing on technology and quality management systems conducted in the past, relatively little attention has been focused on the effect of quality management systems relative to technology usage and service quality. Examination of previous research of existing literature on technology usage support for quality has been conducted by Howcroft (2000). They reveal that no previous attempts have been made to review the existing literature on technology usage support for service quality. In order to enable quality practitioners to have a better understanding of the current status of technology and quality management system in supporting service quality. They have to organize and practice their skill.

Cook (2002) explored the linkages between quality systems and service quality on service providers' perspectives. The results show that employee perceptions of service quality are related to operations performance. However, there is little empirical evidence to explore how customer's perceives service quality. Most academic research has explored an employee's point of view, and understanding of service quality from the customers viewpoint is still vague. To answer this critical question, "It is important to conduct research that includes data gathered from service providers, in addition, information from the customers' perspectives would provide a valuable insight" (Erffmeyer and Johnson, 2001, p.175).

Although, the service providers are the representative of the organization through the customers' eyes because of the influence of all dimensions of service quality: reliability, responsiveness, assurance, empathy and tangible need to measured by customers. In a service business measures of unit productivity and administrative effectiveness, service quality on customers' perceptions is a critical performance indicator (Parasuraman, Zeithaml, and Berry 1988). Customer's perceptions of service quality become more important due to the role of market changing in competitive business. This issue is particularly relevant to the hospital industry, where the technology and quality management system is directly influenced on the service quality of customer's perceptions.

Traditionally, the hospital service quality in Thailand has not been directly measured and probed to their basic elements so much. The technological developments as well as quality standards have had an important impact on medical care, surgical techniques, drugs, equipment and organization in hospitals. (Kunst, 2000). The quality of hospitals from a customer's view is becoming more important in this competitive market. Therefore, the nature of the hospital industry is changing from a seller – oriented to buyer – oriented market. Unlike a manufactured product, which can readily be assessed, the quality of service is an elusive and abstract construction that is somewhat difficult to define and measure.

This paper looks at customer's perceptions of service quality in the Thai hospital industry. Thailand is a particularly good setting in which to examine such issues. The service industry is a major contributors to GDP and employment, and is rapidly growing. Thai service markets have increased competitiveness hospitals (Kunst, 2000). A more competitive environment due to a drive from the Thai government initiatives 30 baht primary health – care, triggers quality enhancement programs among health – care service providers. Therefore, the hospital industry is one industry that uses a number of technologically sophisticated instruments that need to studies on how technology usage improves services in hospitals and is still abundant (Mike, 1995).

## TECHNOLOGY USAGE

Technology has been used as a productive, tactical and strategic resource; as a tool and as a changing of agent. Its use by the organization has altered the ways people do their jobs, the means of interaction and relationships of the practices of management. Technological developments and quality standards have had an important impact on medical care also surgical techniques, drugs, equipment and the organization in delivery of health care service (Kunst and Lemmink, 2000). Most hospitals in Thailand seek the specialist tools to improve their quality in service. Hospitals are increasing their attention to quality to influence of government customers and management initiatives. To succeed in this environment, an organization needs to create new improved benefits to customers and providers alike (Bitner, 2000). However, technology can malfunction or break down, and its manner of use may create “ technology – induced hostility” in their customers.

Technology has been applied pervasively and strategically in the service industry for the past decades to offer customers with quality and to satisfies their needs. Walker (2002) indicated that the use of technology enables to facilitate the delivery of service and also had potential to benefit both customers and providers. However, forcing technologies on customers, particularly complex technologies that do not enhance the exchange process and may hostile customers. Therefore, technology requires substantial adjustment to the new procedures and practices for the whole spectrum of an organization’s life and their operations. On the operation front, technology has been used increasingly to create and deliver the products and services that an organization offers to the market.

For improved service quality, It is incorporated and used from the inception of a product. Through the various stages of value addition by different aspects of design, R & D, manufacturing, marketing, finance and distribution right up to the final delivery to consumption. In assessing the use of technology, it is essential to capture the essence of the quality of the technology in use and the extent to which it permeates key areas of most organization’s life including the service industry. The excellence of technology usage includes as many as available of the following aspects in design, production and management control function (Mels, G., et, al, 1997). From this perspective, the technology usage is seen as the tool to enable for the phenomenal growth in the service delivery and also increase speed and amount of processing of technology usage.

In this sense, technology in the new business environment is more global, open, competitive and dynamic within a more open and volatile geopolitical order. To success in this environment, an organization needs to create new or improved benefits to the customers and providers alike. Currently, some service firms have introduced technology into service activities to provide better service for their customers (Bitner et al., 2000). To achieve the benefits of technology usage, companies have to understand and manage simultaneously to set up the structures technicalities of technology that they adopt to produce the required organizational goals. This highlights the importance of recognizing that the benefit of technology usage to improve quality.

## QUALITY MANAGEMENT SYSTEM

Quality is a very important issue in every organization today. Companies competing across borders are required to bring efforts to ensure their products meet the highest quality of set standards. In order to implement a successful quality management system, there are certain factors in an organization that are of critical important. Organizational culture of each firm is characterized by their norm or value and could it effective in their operation performances (Bates et al., 1996, M. McDermott, 2001). The Incorporation of quality concepts into overall strategy becomes a necessity to support competitive advantages. In the past few years, many organizations implemented quality management systems to increase the quality of their product and services.

According to Kust and Lemmilk, J. 2000), the philosophical elements of TQM can be cultivated by an organizational learning culture. In addition, quality management systems can be used to change their norm rather than change their environment. Therefore, quality management systems are not suitable for an organization that does not have a long term plan. However, they should be apart of the mission strategy to reach their organizations goals over a long term period (Bedford, 2000). Many organizations have begun to implement QMS, it is interesting to note that there are still some organizations who have yet to construct an organizational culture.

Many quality approaches and models have been developed for businesses and focus on the value creation process to satisfy it’s customers. In the service business, the process is more important and related to service quality in order to achieve their goals. There are a few research projects focusing on the quality management of service quality in the service industry (Boaden, 1997). There is some previous research of quality management systems that can determine the level of quality management. The knowledge of a quality management system is useful for explaining and predicting service quality. To understand the moderating effect of quality management system on relationship between technology usage and service quality would be enable us to describe the characteristic of service quality on perceptions of both service providers and customers.

Moreover, describing the practice of quality management system can be open for development and implementation of innovation for improving quality in an organization. According to a management philosophy of The British Standards Institute defined quality management system as “ all activities through the needs and expectations of the customer and the community, and the goals of an organization, are satisfied in the most efficient

and cost effective way by maximizing the potential of all employees to improve their job” (Boaden, 1997). In this sense, quality management system is management processes that is customer oriented and is continuously making improvements in all aspects of the organization.

## **SERVICE QUALITY**

One of the most debated and controversial topics in the services marketing literature is the conceptualization and measurements of service quality perceptions. A number of researchers worked on how service quality perceptions should be measured (Babakus and Boiler 1992, Churchill, and Peter, 1993). With little advance as to what should be measured. The literature shows that there are two conceptualization, one is Nordic perception (Gronroos 1982, 1984). According to this concept the dimensions of service quality in global term consists of functional and technical quality. The other one is, the American perspective (Parasuraman, Zeithaml, and Berry, 1988). According to this concept, some term (reliability, responsiveness, empathy, assurances and tangibles) used to describe service encounter characteristics. Though the latter conceptualization dominates the literature, there is no general consensus as to which approach is the more appropriate and there is not much attempt to relate different conceptualization. Moreover, it is apparent that the perceptions of service quality are based on multiple dimensions, but there is no general agreement as to the nature or content of the dimensions.

In a service business, along with measure of unit productivity and administrative effectiveness, service quality is a critical performance indicator to determine whether the quality management system and technology implementation is adequate, organizations should have a method to measure service/product quality to be sure that technology and quality management system not detract from it. While many organizations consider quality of service quality on customer’s perceptions as good indicator of the quality of performance in organization, these are sometimes not precise enough for retaining customers. Enhancing the technology and quality management system in a highly competitive marketplace is difficult if their service providers who use the technology and quality systems have different perspectives from the customers (Oliver, R.L., 1993).

## **METHODOLOGY**

This preliminary step will be used to develop better understanding of the quality concept in customers and service providers perception. We examine these issues in the context of Thai hospitals as service providers, taking the view of patients as customers. The study employs qualitative research to investigate the contexts in which service quality on customers and service providers perceptions. The use of qualitative research techniques is appropriate for gaining information inductively from hospitals. This approach gives hospital patients and service providers opportunity to respond openly to inquiries about their experiences of service quality in the service delivery process. In qualitative research the depth of understanding is based on detailed knowledge of the particular, and its nuances in each context (Spiggle, 1994).

Many social scientists now believe that quantitative methodologies are more appropriate in early stages of research on problems, where there is still a need to develop the understanding. Qualitative research is more productive later, after the issues and concepts are well defined (e.g., Kenneth, 2000). The most direct way to understand perceptions of service delivery (quality output) is to get customers responses. However, front-line service providers was in direct contact with customers and are often responsible for service delivery so they have some knowledge about issue related to customers perception of quality. In the Thai context, the respondents feel comfortable with in-dept interview. Thai respondents would not comfortable with public confrontation which might come up in focus group situations to express their service experiences, particularly if they were supposed to complain about when service delivery fails, since politeness is a key culture value (Prompitakpan, 1999). Further, they are not comfortable with critical incident techniques, another common qualitative method used to explore perceptions of service interactions when the critical incidents are negative (Bitner,1994).

The researcher conducted in-dept interviews separately between four groups of respondent in order to explore customer response to technology usage, quality management system and service quality. The first group consisted to ten professional full-time of service providers such as doctors, nurse, QA managers in Thai hospitals. They are categorized as the internal customers and have direct contact with external customers. The starting point of the in-dept interviewing was sending out a memo explaining the purpose of interviewing in academic research to administration department in the four Thai hospitals. Consequently, director authorized employees to provide volunteers of service providers who use technology applications and integrate the quality management system in their service. Four service providers have been selected in each hospitals. The total of hospital is five.

In additional, interviews were conducted with ten external customers who come to use service in hospital during one month. All of them are customers of the hospitals that we interviewed in the research. The external customers were briefly informed by researcher about the purpose of the interviews in order to enhance the response rate. In practice, the researcher used some judgment in screening these respondents, based on assessing respondent

characteristics to choose those who currently using service in hospitals at that moment. We wanted to make sure that respondents would be able to remember of the system of delivery and technology used by service providers.

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### **Service providers Perception of Technology usage to improve Service Quality**

Our interviews on perceptions of service quality generally found issues following the guidelines suggested in Parasuraman et al. (1985) about factors which increase service quality. These 10 issues are tangibles, responsiveness, competence, courtesy, credibility, security, communication, understanding, access, and reliability. Later, Parasuraman, Zeithamal and Berry (1988) condensed the dimensionality of these measures, and proposed that the SERVQUAL model should contain five dimensions: reliability, responsiveness, assurances, empathy and tangible. The discussion of service providers fall within these themes but some issues are somewhat different from literature.

*Reliability* : In our interviews, all service providers perceived service quality to be technology which are used for improve service such effectiveness of use resource, Reliable practice, state of the art technology, information, time management, expertly medical treatment. These can increase reliability approach. All service providers felt that technology such as ultrasound ,diagnostics system , laboratory for blood test can aid them by more effectively result that benefit for both service providers and customers. Moreover, these technology give them more quickly access to databases, allowing doctors to get proper data to show the symptom by paper that can help the patients confident for the treatment processes. This ability to address customer problem quickly and may increase the service provider's credibility in the customers' mind.

*Responsiveness* : most of service providers believe that service providers who use mobile phone, pager, internet and intranet in their service will be response to service quickly. Most of service provider's specialists for doctors who use this technology can proving service promptly. Moreover, this technology can increase efficiency for communication between service providers and customers for appointment without waiting time or consult the symptom while accident that happen out of service area. In our interviews, all of service providers like intranet technology instruments in their service because it can contribute to better understanding among service providers in deference department that saving time for them a lot.

In hospital service, the communication and interpersonal response is very important for patients and service providers because it sensitive for human's life. Therefore, human interaction still plays crucial role to encourage customers fell safer than interaction with technology alone.

*Assurances* : Service providers perceived that technology not only can provide more accuracy of information and help manage regular contact, it also aids them in demonstrating standards of service in the organizations. They believe that customers felt that their technology usage provide assurance for customers. In additional, most of them perceived technology applications can improve the access information for faster use in operation process and cost saving in their paper work particularly can enhance customer trust in their payment after finish service. Moreover, most of service providers believe on accuracy of technology use and feel comfortable for the service.

*Tangible*: this approach is very important for service in service providers perspective. In hospital service need hygienic environment includes the cleanness of all physical environments both in the common places and in the operational rooms. There is some hardware technology that they used in hospital such as cleaning floor, laundry, dish washer machine. This technology is interacting with customers directly that makes patients fell safe for their life during stay in hospitals. Hospital administrators usually pay more attention to the safety and effectiveness of services. Apart from good quality services, all resources have to be allocated with the highest financial benefit to the hospital.

In conclusion, in the service providers (or employees) perspective, the essential factors are good internal communication, customer satisfaction tracking system, medical professional practice, and organizational culture. Good internal communication is a process that information delivery and exchange has to be right things, to the right recipients, and at the right time. Customer satisfaction tracking system is an approach of which the operators monitor the customers' attitude toward their delivered service in any forms of customers' feedback. Professional practice is how expert each service provider is in his or her duty. Normally, patients can perceive the expertise from the conversation, the real comparison between the diagnosis and actual symptom. The most challenging task toward

the quality organizational culture is how to change the attitude of service providers from quality as a compulsory requirement to quality as a usual habit or service mind.

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## **Service providers Perception of Technology usage to improve Service Quality**

***TEN PATIENTS ARE INTERVIEWED. THE RESULTS FROM TEN SAMPLES ARE QUITE ALIKE. IT IS COMPOSED OF SHORT WAITING TIME, SOON RECOVERY, CLEANNESS OF PLACE, LOCATION, EQUIPMENT AVAILABILITY, REASONABLE PRICE, AND SIZE OF HOSPITAL. (THEY PREFER SMALL HOSPITALS TO BIG ONES). CUSTOMERS' POINT OF VIEW***

*Two-customer interviews are shown in these following key quality factors: humane service, short-waiting time, cleanness of place, expertly medical treatment, rapid recovery, willingness of staff to provide service, and doctor's human relations.*

In the customers' viewpoint, they want easy contacted, convenient, and prompt service. This means the service availability which customers can obtain services at any convenient time of theirs with or without advance appointment and which the operational process is not sophisticated and time-consuming. Moreover, customers require reliable practices from the doctors at reasonable price.

The result from this group is quite varied as 15 different quality items. The reason for this variation rather comes from difference in demographic characteristic of customers, such as, income, education, and employers (affecting to choices of hospital in social security program).

This sample group views mainly on tangible factors, for example, cleanness (of both places, clothes, and staff uniforms), state-of-the-art physical appearance, size, location, availability of equipment, etc. The other concerns are on service encounter (e.g., willingness to provide service, short-waiting time, amiability of doctors, etc.), and competency in medical practice.

Interestingly, some respondents in this group inform that price of service and cleanness of staff's uniforms influence to their quality perception.

## **Conclusion**

This study looks at elements which are attributes of service quality. Parasuraman, Zeithml and Berry (1985), in the research on effective of service quality on customer satisfaction view point of service providers and customers, point out quite correctly that customers may not see things exactly the same as what service providers do. Therefore, data here clearly indicates that some elements in this study contribute to enhancing service quality, according to quality perception of customer. These factors are service standard, hospital's size, innovation, quality certificate, and reasonable price.

Some factors in this study can suggest only what the service providers, not customers, think they are important for their service, such as, willingness of staff to provide service. Some of service providers' views are important but may have to adjust if customer views are different.

Our evidence indicates some elements seeming to view the same as Parasuraman (1985), such as, tangible, responsiveness, competence, courtesy, security, and communication understanding; whereas some elements are not referred to in this study including reliability, credibility, and access.

Key factors that all of our respondents refer to are competence and courtesy. Moreover, characteristics that customers implicitly expect to see at the hospital are friendliness, politeness during service delivery time which patients feel physically uneasy.

Finally, the elements that are ubiquitous in this Thai context are: 1) short waiting time, 2) hygienic environment, 3) willingness to provide service, 4) expertly medical treatment, 5) doctors' human relationship, 6) information knowledgeable personnel, 7) good interpersonal response, 8) good intercommunication, 9) organizational culture, 10) standard service, 11) quality certificate, 12) hospital size, 13) service innovation, 14) service psychology, and 15) reasonable price.

### **Direction for future research**

More considerable research is needed on how these elements effective to service quality on customer perceptions. Our data suggest that some elements that occurred in this study should be considered. Finally, research in the future should be looking at the customer side only.

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