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Measuring quality and assesing customer satisfaction in Cyprus hospitals

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MEASURING QUALITY AND ASSESING CUSTOMER SATISFACTION IN CYPRUS HOSPITALS

By

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Dedication

To my family for their understanding and unwavering support during the two-year duration of the MBA course.

To all NUP academic staff involved in the MBA program for their outstanding teaching and educational effort.

Abstract

Quality and quality management is one of the major factors companies should concentrate their efforts on in today's highly volatile and sensitive business environment in order to diversify and excel. In a healthcare setting effectively managing quality and evaluating the level of service quality provided to patients is critically important. What patients expect from a hospital and how they perceive the medical services provided to them plays an integral role in the success and reputation of a medical facility. Measuring service quality and evaluating patients' expectations and perceptions on a number of quality dimensions provides information on the areas where a hospital performs well and where improvement is needed.

The purpose of this study is to identify any quality gaps between the patients' expectations and perceptions on service quality in Cyprus hospitals. Three hospitals were included in the study, two from the private sector and one from the public sector with a total of three hundred participants. The SERVQUAL model was used to assess the expectations and perceptions of patients on five generic quality dimensions. Analysis of the data collected with SPSS revealed quality gaps on all five dimensions both in the public and private sector. Low patient expectations and substantial quality gaps were detected in the public sector, indicating service quality issues of the public healthcare sector in Cyprus. Smaller quality gaps were identified in the private sector indicating thought space for further improvement and a necessity by private hospitals to address the increasing demands of patients paying for private medical care. The results of the present study may be used for shaping quality management strategies in both public and private hospitals in order to improve the quality of medical services provided to patients in Cyprus.

Key words: Service quality, Patients' expectations, Patients' perceptions, SERVQUAL, Cyprus healthcare sector.

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Table of Contents

List of Graphs

List of Figures

List of Charts

Page

List of Tables

INTRODUCTION

Service quality is of key importance for modern service providers. The concept of quality and quality management was originally developed for the manufacturing sector but over the years it has gain applicability in the services sector. Many firms have successfully implemented concepts and practices of quality management in their operations with outstanding outcomes. It is thus essential for a business operating in the services sector to be able to measure service quality and address quality dimensions that play an important role on how the business delivers a service to the end customer.

SERVQUAL has been proposed by Parasuraman *et al.* (1985; 1991) as an effective tool to measure service quality in service firms by evaluating expectations and perceptions of customers on services received. Since it was first introduced the tool has received criticism for its generic nature and limited capacity to assess quality dimensions across different industries and diverse business sectors. However, the model remains the most widely used approach to evaluate service quality to date and has been applied in many different business settings by many scholars and researchers around the world. It has been used either as it was originally presented or with adjustments to accommodate characteristics of special business environments or cultural dimensions. SERVQUAL has also been successfully used as a research instrument in healthcare and is thus the model of choice in the present study.

The tool was applied in a hospital setting that included three general hospitals, one in the public sector and two in the private sector. Three hundred patients were asked through a questionnaire to evaluate their expectations and perceptions of medical care received in any of the three participating hospitals. The analysis of the data collected intended to identify quality gaps between patients' expectations and perceptions that need to be addressed by hospital managements in order to improve service quality and the level of medical care provided to patients in Cyprus.

Following, is a literature review on the concept of service quality and the different models of identifying service quality gaps. The section includes information on criticism of the SERVQUAL model, the applicability of the instrument and its implementation in a hospital setting. The literature review concludes with data and statistics on the healthcare sector in Cyprus. The results of the current study are then presented in a discussion with the conclusions derived. Finally, suggestions are presented on how the findings of the present study could be implemented by hospitals across Cyprus in order to improve medical services offered to patients and facilitate healthcare professionals focus on those quality dimensions that really play a role in improving patient satisfaction. The ultimately goal is for such data to be utilized in order to improve medical services and increase patient satisfaction, offering a valued proposition to patients seeking for medical services of high quality and standard in Cyprus.

LITERATURE REVIEW

The modern business environment and the customer of today

In today's highly volatile and sensitive business environment organizations and firms need to concentrate their efforts on a customer-centric approach and the continuous improvement of their performance in order to diversify and distinguish from mass business activity. Modern customers are educated and well informed on products, services and offers. They have an abundance of choices when it comes to a product or service and in most cases they seek for the best possible quality at the most affordable price. It is thus essential for an organization to properly understand and measure customers' expectations and be able to identify from the customers' perspective any gaps in service quality. In this way the organization is in position to allocate financial and other resources in a cost-effective and efficient manner to bridge any such quality gaps (Shahin, 2003). Furthermore, assessing the expectations of customers and their perception on quality service received allows the organization to buffer any financial and resource constraints and prioritize which quality gaps to focus on, a decision that can prove critical given the scarcity of resources in today's global business environment (Shahin, 2003).

Quality and quality management

Quality is one of the major factors companies should focus on. Over the last decades a number of quality gurus around the world have provided different and diverse definitions on quality and how quality should be managed in an organization. The quality literature is full of case studies and examples of companies around the world that have successfully implemented quality concepts and quality improvement programs embracing the views and approaches on quality management by quality gurus such as Deming, Juran, Ishikawa, Crosby and others.

Among the world's quality gurus, Deming's early work focused primarily on improving quality in the manufacturing sector through the use of statistical quality control techniques. Himself being a statistician he approached the problem of quality management from a statistician's perspective. His philosophy on quality management is encapsulated in his 14 principles of quality management. In his principles Deming prescribes strong management commitment to quality, process design and control through statistical tools, continuous search for and correction of quality problems and a purchasing policy that emphasizes quality rather than

cost. Furthermore, he prescribes the removal of all barriers to employee participation and teamwork. He stresses effective communication between supervisors and employees, the elimination of numerical goals and targets for employees and company-wide training and education on quality (Saraph *et al.*, 1989).

Along with Deming, Juran is considered to be one of the early leaders in the quality field and has helped built the conceptual basis for quality management. Juran stressed both the management and technical aspects of quality management and proposed three basic processes, quality control, quality improvement and managerial and technical breakthroughs through major leaps in quality performance. In contrast to Deming, Juran's approach emphasizes on quality planning, establishment of formal quality policy, quality through product design, quality audits and managing quality throughout the organization. Juran stressed dedication to quality at each stage of the product development cycle, from market research to product design, manufacturing and finally delivery of the product or service (Saraph *et al.*, 1989).

Ishikawa emphasized total quality control. He stressed training of employees in order to improve quality. Ishikawa supported the use of cause-and-effect diagrams, also known as Ishikawa diagrams, as a tool for the detection and diagnosis of quality problems in an organization. He has been a leader in stressing employee participation and quality circles as an integral part of an effective quality management process (Saraph *et al.*, 1989).

Crosby has been an industrial quality practitioner, like Deming and Juran and is best known for his focus on people-oriented issues of quality management, In contrast to Deming and Juran, Crosby has been a supporter of the cultural and behavioral aspects of the quality management process, such as employee motivation and rewards. He stressed out concepts like "do it right the first time" and "quality is free". His approach for effective quality management is reflected in his 14-step zero-defect program that includes dimensions like management commitment, establishment of quality measurement, training, calculating the cost of quality and error-free removal (Saraph *et al.*, 1989).

Service quality and models of service quality gaps

Service firms just like organizations operating in the manufacturing sector are now more than ever realizing the importance of customer-centered philosophies and are turning to quality management approaches in order to effectively manage their businesses. There are a number of different definitions as to what is meant by service quality. One that is commonly used defines service quality as the extent to which a service meets the customers' needs or expectations (Wisniewski and Donnely, 1996). Service quality can thus be defined as the difference between customer expectations of a service and perceived quality of the actual service received. If expectations are greater than performance, then the perceived quality is less than satisfactory and hence the customer is dissatisfied (Parasuraman *et al.*, 1985; 1988). Based on this concept Parasuraman *et al.* developed a service quality gaps model with five quality gaps described in table 1 below. The service quality gaps model proposed by Parasuraman *et al.* is represented in figure 1 that follows table 1.

Table 1: Service quality gaps as proposed by Parasuraman *et al.*

QUALITY GAP	DESCRIPTION	CAUSE
Gap 1	Customers' expectations versus management perceptions	Lack of marketing research orientation, inadequate upward communication and too many layers of management
Gap 2	Management perceptions versus service specifications	Inadequate commitment to service quality, a perception of unfeasibility, inadequate task standardization, absence of goal setting
Gap 3	Service specifications versus service delivery	Role ambiguity and conflict, poor employee-job fit, poor technology-job fit, inappropriate supervisory control systems, lack of perceived control, lack of teamwork
Gap 4	Service delivery versus external communication	In adequate horizontal communications, tendency to over-promise
Gap 5	Discrepancy between customer expectations and their perceptions of the service delivered	Influences exerted from the customer side and shortfalls on the part of the service provider

Source: Parasuraman *et al.*, 1985; 1991.

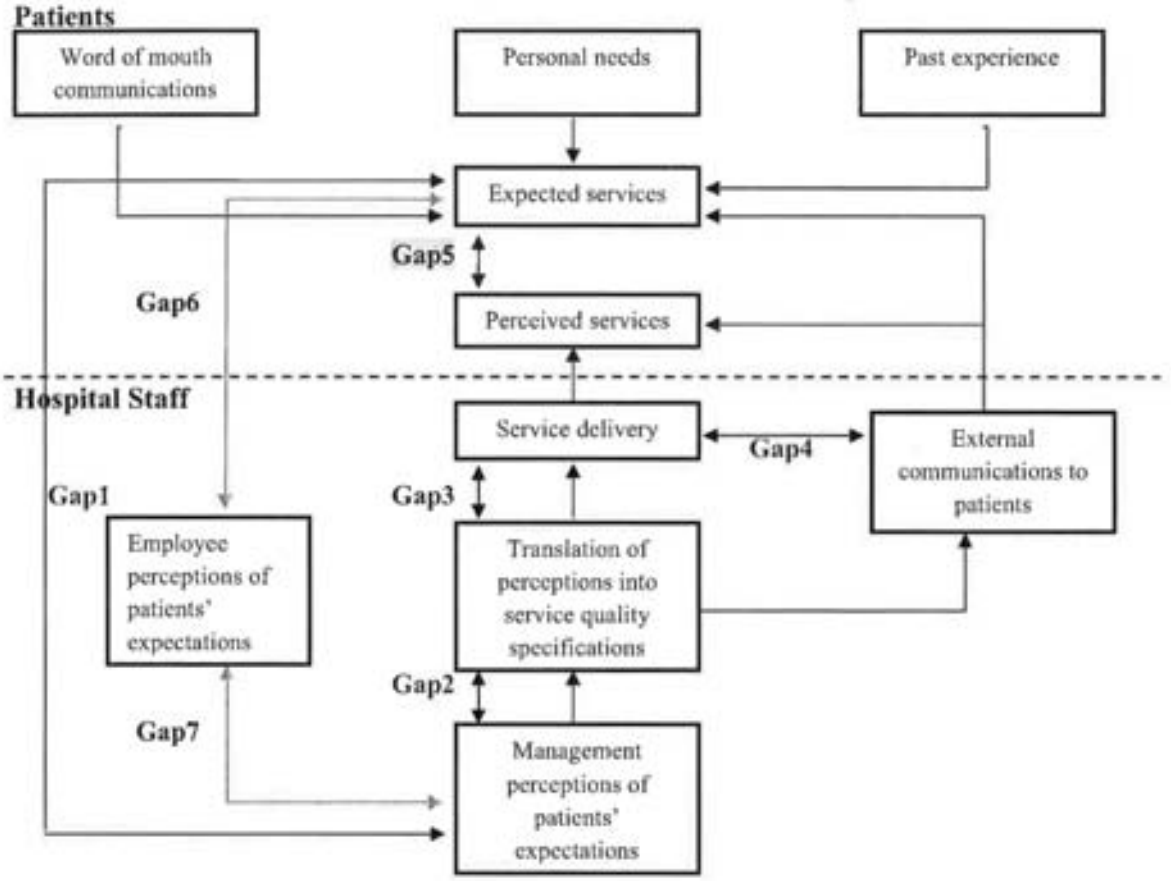


Figure 1: Conceptual model of service quality gaps

Source: Parasuraman *et al.*, 1985; 1991

According to the service quality gaps model by Parasuraman *et al.* (1985) the SERVQUAL scale was proposed by the authors to measure only gap 5. The model developed has been extensively and successfully used over the years as a service quality measurement model. The instrument compares customers' expectations before a service encounter and their perceptions of the actual service delivered. Due to its generic nature and successful applicability over a number of business sectors and a diverse nature of organizations the tool has been the predominant method used to measure customers' perceptions of service quality. The basic model initially proposed by Parasuraman *et al.* (1985; 1988) was that consumer perceptions of quality emerge from the gap between the organization's performance and the customers' expectations for the service. As the organization's performance exceeds the expectations of the customers or

the delivered service, quality increases. As the organization's performance decreases relative to the customers' expectations, then quality decreases. Based on this, the theoretical foundation of SERVQUAL is formed by performance-to-expectations gaps on attributes that customers use to evaluate the quality of a service received by the organization (Asubonteng *et al*., 1996).

Parasuraman *et al.* (1985; 1988) initially proposed ten service quality dimensions that included reliability, responsiveness, competence, access, courtesy, communication, creditability, security, understanding/knowing the customer and tangibles. Subsequently, the authors simplified the model reducing the ten quality dimensions into five designated as the *RATER* dimensions. The five RATER dimensions included *R*eliability, *A*ssurance, *T*angibles, *E*mpathy and *R*esponsiveness and are listed in table 2 below. All five quality dimensions contribute to the overall service quality delivered by an organization and influence the level of satisfaction or dissatisfaction of the end customer. This relationship is diagrammatically represented in figure 2 that follows table 2.

Table 2: SERVQUAL quality dimensions as proposed by Parasuraman *et al.*

QUALITY DIMENSION	DESCRIPTION OF QUALITY DIMENSION
Tangibles	Physical facilities, equipment and appearance of personnel.
Reliability	Ability to perform the promised service dependably and accurately.
Responsiveness	Willingness to help patients and provide prompt service.
Assurance	Knowledge and courtesy of medical and nursing staff and their ability to inspire trust and confidence.
Empathy	Caring, individualized attention that the hospital provides to patients.

Source: Adopted from Parasuraman *et al*. (1991).

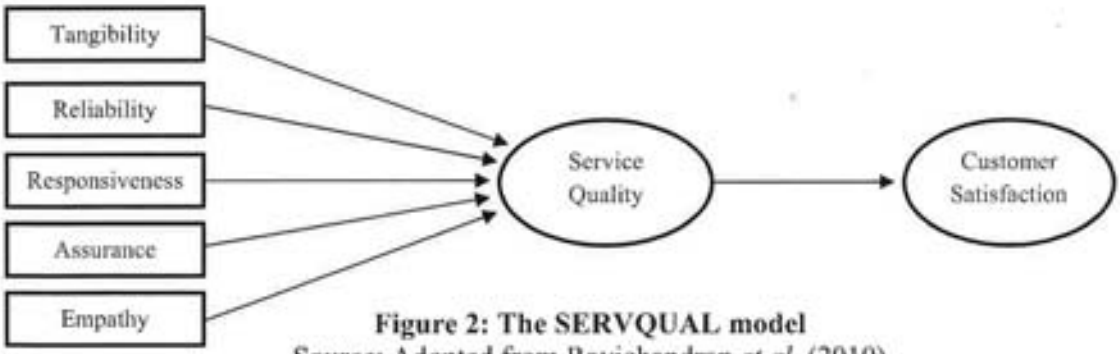


Figure 2: The SERVQUAL model
Source: Adopted from Ravichandran *et al*. (2010)

In the SERVQUAL model proposed by Parasuraman *et al.* (1991) 22 items measure performance across the five RATER dimensions of quality using a seven-point Likert scale. On the Likert scale 1 is "strongly disagree" and 7 is "strongly agree" meaning that higher scores indicate higher expectations and better customer evaluation of the quality of service provided. The approach evaluates service quality by calculating differences (gaps) between customer expectations and perceptions (service quality = P-E). *P* denotes customer perception of service or performance and *E* denotes expectations before a service encounter delivers the actual service (Shahin and Samea, 2010). This equation is usually called gap analysis and as it was pointed out earlier the approach only measures gap 5 (Zahari *et al.*, 2008).

Frost and Kumar (2000) developed a different approach and highlighted the existence and importance of internal customers. They addressed the criticality of evaluating quality dimensions in internal service interactions between departments of large organizations that operate as internal customers and internal suppliers. Based on this concept they developed an internal service quality model and identified three major internal quality gaps as follows:

Table 3: Service quality gaps as proposed by Frost and Kumar

QUALITY GAP	DESCRIPTION
Internal gap1	Difference in the perception of the supportive staff (acting as the internal supplier) of the front-line staff's expectations (acting as the internal customer).
Internal gap 2	Difference between service quality specifications and the service actually delivered, resulting in an internal service performance gap.
Internal gap 3	Difference between the expectations of the front-line staff (acting as the internal customer) and the perceptions on service quality of the support staff (acting as the internal supplier).

Source: Adopted from Frost and Kumar (2000)

Luk and Layton (2002) developed the approach by Parasuraman *et al.* a step further and expanded the quality gaps initially identified from five to seven. In their model of service quality gaps Luk and Layton proposed that quality gaps 6 and 7 respectively reflect differences in the understanding of consumer expectations by managers and front-line service providers and the differences in consumer expectations and the providers' perceptions of such expectations. The two additional gaps proposed by Luk and Layton along with the five quality gaps originally proposed by Parasuraman *et al.* are listed in table 4 below.

Table 4: Service quality gaps as proposed by Luk and Layton

QUALITY GAP	DESCRIPTION	CAUSE
Gap 1	Customers' expectations versus management perceptions	Lack of marketing research orientation, inadequate upward communication and too many layers of management
Gap 2	Management perceptions versus service specifications	Inadequate commitment to service quality, a perception of unfeasibility, inadequate task standardization, absence of goal setting
Gap 3	Service specifications versus service delivery	Role ambiguity and conflict, poor employee-job fit, poor technology-job fit, inappropriate supervisory control systems, lack of perceived control, lack of teamwork
Gap 4	Service delivery versus external communication	In adequate horizontal communications, tendency to over-promise
Gap 5	Discrepancy between customer expectations and their perceptions of the service delivered	Influences exerted from the customer side and shortfalls on the part of the service provider
Gap 6	Discrepancy between customer expectations and employees perceptions	Differences in the understanding of customer expectations by front-line service providers
Gap 7	Discrepancy between employee's perceptions and management perceptions	Differences in the understanding of customer expectations between managers and service providers

Source: Parasuraman *et al*., 1985; 1991; Luk and Layton, 2002.

Criticism on the models of service quality gaps and SERVQUAL

SERVQUAL and the models of service quality gaps have not been without criticism. In the literature this criticism mainly focuses on two levels, the applicability of the tool to all service industries or situations and the validity of the model, specifically as far as the dependence or independence of the five quality dimensions evaluated (Babakus and Mangold, 1992). Furthermore, dimensions like access and price are neglected from the quality dimensions evaluated (Gilmore and Carson, 1992). Supportive of the generic and thus not industry-specific nature of the quality dimensions evaluated through the traditional SERVQUAL approach is the fact that in a national study by Sweeney *et al*. (2003) for assessing patients' perception of quality of care received in Irish hospitals the authors examined patients' perceptions in a wide range areas that included dimensions like admission procedures, pain management, medication, adherence to the patient charter and overall satisfaction.

In a study aiming to identify those attributes that determine quality and satisfaction in healthcare service delivery Bowers *et al.*, (1994) utilized SERVQUAL to investigate the service quality in hospitals. The authors indicated that the instrument was unable to include all aspects of quality that apply in the medical industry by failing to accommodate quality dimensions such as caring and outcomes of medical care.

Dagger *et al.* (2007) using an alternative to SERVQUAL approach developed and validated a multidimensional hierarchical scale for measuring health service quality. In the model they developed the primary quality dimensions were interpersonal quality, technical quality, environment quality and administrative quality. The quality sub-dimensions were interaction, relationship, outcome, expertise, atmosphere, tangibles, timeliness, operation and support.

Haywood-Farmer and Stuart (1988) concluded that SERVQUAL was inappropriate for measuring professional service quality since it excluded important dimensions for "care service", "service customization" and "knowledge of the professional".

Reidenback and Sondifer-Smallwood (1990) developed a modified version of the SERVQUAL instrument and identified additional quality dimensions. The instrument proposed by the authors included seven quality dimensions whose differential impact was evaluated in three hospital settings, inpatient, outpatient and emergency room services. In their study they found that "patient confidence" affects patient satisfaction in all three settings in addition to influencing perceptions of service quality in both the inpatient and outpatient services.

In a study by Silvestro and Johnston (1992) eighteen quality dimensions were identified namely, cleanliness, aesthetics, comfort, functionality, reliability, responsiveness, flexibility, communication, integrity, commitment, security, competence, courtesy, friendliness, attentiveness, care access and availability.

Vandamme and Leunis (1993) suggested that SERVQUAL may not be generalized to hospital services or healthcare services due to the unique character and nature of the services offered in a medical setting.

Also, in an empirical study by Lekidou *et al.* (2007) to assess patients' satisfaction of care in a Greek central hospital the authors identified the admission of patients, accommodation aspects, supporting facilities, the care of doctors, the nursing staff and assistant personnel as the most important factors determining patients' satisfaction.

Sureshchander et *al.* (2002) suggested a revised SERVQUAL model with 5 quality dimension and 41 items evaluated. The model considered that the defining dimensions of the service quality from the customers' perspective include tangibles of service, systematization of service delivery, core service, social responsibility and human element of service delivery. According to the authors, in comparison to the elementary SERVQUAL model, the revised model included 19 more items to be evaluated and gave more attention to details which could be important and effective on customers. The model developed by Sureshchander et *al.* was also used by Ghazemi et al. (2012) in a study aiming to investigate and evaluate service quality gaps of Islamic Azad University.

Among the researchers questioning the SERVQUAL scale Cronin and Taylor (1992; 1994) argued that while perception (P) is definable and measurable in a straightforward manner as the consumer experiences the service, expectation (E) is subject to multiple interpretations and as such it has been defined differently by different authors and researchers. Because of this problem with the conceptualization and measurement of the expectation component of the SERVQUAL scale the authors suggested that expectation (E) component of SERVQUAL is discarded and instead performance (P) component alone is used. The SERVPREF scale was developed by Cronin and Taylor (1992; 1994) instead as one of the important variants of the SERVQUAL scale. SERVPREF as a tool uses a single-item scale measuring the perceived performance component through 22 items that evaluate performance only. A higher perceived performance implies higher service quality.

Using data collected through a survey of consumers of fast food restaurants in New Delhi, India, Jain and Gupta (2004) found that the SERVPREF scale provides a more convergent and discriminating explanation of service quality. However, the scale was found deficient in its diagnostic power. The authors supported that it is the SERVQUAL scale which outperforms the SERVPREF scale in the extent that it possesses higher diagnostic power to pinpoint areas where an organization's management can intervene in order to correct limitations or problems of service quality. According to the authors, because of its superior diagnostic power compared to the SERVPREF scale, SERVQUAL should be the tool of choice when the research objective is to identify areas relating to service quality shortfalls for possible corrective interventions by the managers of the organization under study.

Universality of the SERVQUAL model

➢ SERVQUAL in the service sector

Despite the criticism and opposite opinions by many researchers and authors SERVQUAL as an instrument to assess quality it the service sector remains the most widely used approach to date. The tool has been extensively used over the years by researchers around the world in different service industries and in countries around the globe with diverse socio-economical, cultural and business environments. Mohammad and Alhamadani (2011) used a service quality measure based on a modified version of SERVQUAL as proposed by Parasuraman *et al.* (1988) to examine the level of service quality perceived by customers of commercial banks in Jordan and its effect on customer satisfaction. A similar study by Jabnoun and Al-Tamimi (2003) utilized SERVQUAL to measure the perceived service quality at UAE commercial banks.

In another study SERVQUAL was used as the instrument of choice to measure service quality and highlight important service quality gaps associated with external customer services in the banking sector of Bangladesh, especially in private commercial banks (Rahaman *et al.*, 2011). In a study by Saleh and Ryan (1991) SERVQUAL was used to analyze service quality in the hospitality industry. In an effort to find the quality of services being provided by insurance companies in the region of New Delhi, India Madan (2012) used the SERVQUAL model to

examine the gap between the expectation and perception of customers in regard to service quality in public and private insurance companies.

Frost and Kumar (2001) used the SERVQUAL tool to evaluate service quality in an international airline. They examined the different quality dimensions at an organizational level assessing service quality between internal customers and internal suppliers. The approach showed the multidimensionality of SERVQUAL and the capacity of the instrument to address service quality and identify quality gaps both at the level of the external customer but also internally between departments and different functional units of a large organization.

A modified SERVQUAL approach that was based on the five generic dimensions (Reliability, Responsiveness, Assurance, Empathy, Tangibles) and included 15 questions in the form of customer perceptions and expectations was used by Shahin and Janatyan (2011) in a study on service quality in the Iran Travel Agency (ITA). The study aimed to analyze the correlation of service quality gaps and to estimate customer dissatisfaction based on those gaps in the Iran Travel Agency, one of the major international travel agencies of the country. SERVQUAL was successfully used on a number of regular customers of the agency that have been asked to fill appropriate questionnaires accordingly.

➢ SERVQUAL in the healthcare sector

In the healthcare sector SERVQUAL has been applied in various different settings and for analyzing service quality on a number of different levels. The literature is rich in publications that examine service quality and measure patient satisfaction in different countries, the public sector, private sector or both, purely medical institutions or generally healthcare organizations and more. Irfan *et al.* (2012) developed a modified SERVQUAL questionnaire in order to investigate the level of quality of healthcare services delivered to patients by the public hospitals in Pakistan. The authors used the five generic dimensions of empathy, tangibles, timeliness, responsiveness and assurance originally proposed by Parasuraman *et al.* and evaluated a total of 369 responses that were collected from patients availing services from the public hospitals located in Lahore, Pakistan.

In a study by Alrubaiee and Alkaaida (2011) a modified SERVQUAL model was used to measure patient perception of healthcare quality in public and private hospitals in Jordan. The main purpose of the study was to investigate the relationship between patient perception of healthcare quality, patient satisfaction and patients trust and the mediating effect of patient satisfaction. Furthermore, the study aimed also to test the significance of socio-demographic variables in determining healthcare quality, patient satisfaction and patient trust.

Lam (1997) analyzed the applicability of SERVQUAL in the healthcare sector in Hong Kong. The findings from the study showed that the instrument provides a consistent and reliable scale to measure healthcare service quality.

Karassavidou et al. (2008) successfully used the instrument to determine patients' perceptions and expectations of service quality in NHS hospitals in North Greece. The SERVQUAL questionnaire used included a section on patients' expectations, a section on their perceptions and a third section relating to demographics. As the authors support, in the particular study the SERVQUAL instrument proved to be a useful tool in terms of validity and reliability for measuring quality in the healthcare sector. Additionally the instrument was considered as a flexible tool as it allows the incorporation of modifications and adjustments to accommodate the special characteristics of a specific industry or national environment.

Butt and Cyril de Run (2010), in a study to assess the quality of private healthcare in Malaysia applied the SERVQUAL model in a private healthcare facility over a 3-month data collection period. Their study aimed to test and report SERVQUAL scale results in a developing country's healthcare sector thus taking the applicability of SERVQUAL and/or developed scales of the instrument a step further from its use in developed Western societies to its use in developing nations.

Babakus and Mangold (1992) in an effort to increase response rate and quality and at the same time reduce the "frustration level" of patients responding to the SERVQUAL questionnaire used a five-point instead of a seven-point Likert scale in their application of SERVQUAL to a hospital setting.

Carman's (1990) study of hospital services also used SERVQUAL as the basis of a modified approach that included evaluation of 40 items. In an effort to minimize potential patient confusion by the administration of an expectations (E) and a perceptions (P) section of SERVQUAL, Carman collected data on the expectations – perceptions difference with a single question at a single administration, for example: "The visual appeal of the hospital's physical facilities is (much better, better, about the same, worse, much worse) than I expected".

The studies mentioned above are only a fraction of the available literature on the use of SERVQUAL or modified versions of the tool in assessing service quality in the healthcare sector. The wide applicability of the tool and the fact that it has been adopted and/or modified by researchers to be applied as the basis in research studies under diverse business but also cultural settings makes the tool a reliable and well-tuned instrument to use in order to evaluate and analyze quality of services in the healthcare. Any criticism across the literature on the theoretical and operational limitations of the tool when implemented in different business settings mainly takes the form of modifications and alternative approaches to the basic SERVQUAL model as was originally introduced by Parasuraman *et al*. Consequently, despite the theoretical criticism on the validity of the instrument, SERVQUAL seems to be moving rapidly towards adopting an institutionalize status (Buttle, 1996). As Rust and Zahorik (1993) observed, the general SERVQUAL dimensions should probably be put on any initial evaluation screening as a list of attributes of quality in the service sector.

Quality in the healthcare sector

In the context of a hospital, quality of medical treatment is defined as the use of advance medical technology, medical treatment and sanitation (Yang and Huang, 2013). According to the definition of The Joint Commission for Accreditation of Healthcare Organizations (JCAHO) medical treatment provided to patients will increase the likelihood of a positive result for patients and minimize the likelihood of poor outcome (http://www.jointcommission.org, 2013).

In the healthcare, quality management aims to establish a system that measures and manages patient care in a way that provides the optimal medical service for all patients (Li,

1997). Nowadays, more than ever, hospitals and healthcare organizations are enhancing their quality management programs in an effort to reach to higher levels of service quality. Continuous development of medical and nursing staff through training and education has proven to be a critical mediator in delivering quality medical services and achieving high customer satisfaction. Donabedian (1982) supports that a competent and knowledgeable staff is more likely to design processes and deliver services that conform to customer needs.

Modern quality management approaches in healthcare organizations are replacing vertical integration of organizational units traditionally used, with a horizontal model of coordination between the various organizational units of the hospital or the healthcare organization (Deming, 1981). This modern approach takes into account the various interactions and interrelations between the different departments of a hospital from which a patient receives medical services and orchestrates them in a way that the patient receives the best possible quality of medical services (Li, 1997).

Computer technology and IT services in a hospital have the capacity to facilitate a number of functions performed in the hospital. Information on medical records, laboratory results and other medical data can be documented and statistically analyzed by IT systems and software in order to assess the quality of offered services and improve the patient satisfaction level where possible and needed. Furthermore, technology can provide to a hospital a competitive edge over other hospitals for providing high-tech related healthcare services (Donabedian, 1982).

Healthcare quality performance is assessed by the public, healthcare administrators and policy makers. The quality performance of the healthcare services provided by a hospital is usually judged by the level of clinical quality, customer satisfaction and response to patient requests (Li & Benton, 1996).

Quality implementation and management in a hospital cannot be a static approach. It is a dynamic effort with cycles of continuous quality improvements. Implementation of an efficient medical information system and a process analysis identifies bottlenecks and opportunities for

improvement in an accurate and cost effective way. This facilitates the medical staff to make the most informed decisions and take the most rational actions (Li, 1997).

The physical and technical aspects of quality are difficult to evaluate for any service. As Gronroos (1983) indicates, "service quality is an abstract, elusive and multidimensional construct more difficult for consumers to evaluate than goods quality since it is evaluated both on the results obtained and the process of service delivery". In the healthcare sector quality is even more difficult to measure and evaluate due to the unique nature of the services provided. Healthcare services are provided by professionals, the outcome is often not tangible and patients are quite unique as customers. In other words, in healthcare services a hospital's technical competence, as well as the immediate results from many medical treatments, is very difficult for the patient to evaluate either before or immediately after the delivery of the service.

These distinct characteristics of the services provided to patients make the effort of measuring service quality in the healthcare sector more complex but at the same time more important to attain. As Asubonteng *et al.* (1996) support, because of this lack of ability to assess technical and physical aspects of quality in the healthcare sector, patients rely on other measures of quality attributes associated with the process of health service delivery, in other words the "how" and not the "what" of the service delivered by a medical institution. Consequently, according to the authors, patients rely on attributes such as reliability and empathy to assess the quality of services received in a hospital (Asubonteng *et al.*, 1996).

Service for patients means results they can see, feel, understand and personally value. They rely on technical results as evidence of high quality and assume they will receive the appropriate level of technical and scientific expertise but measure quality based on what they understand and value (Kenagy *et al.*, 1999). Providing correct medications and suture placements are issues of technical quality and are the one side of the coin. Promptly answering questions to the patient's satisfaction in a clear, culturally relevant, easily understood manner is service quality and constitutes the other side of the coin (Kenagy *et al.*, 1999). Similarly, relieving pain by the right dose of medicine and the appropriate route of administration is a matter of technical quality whereas doing so in a caring way helping the patient to relieve the fear of pain is service quality (Kenagy *et al.*, 1999).

Gronroos (1984) distinguishes the quality of services received in the healthcare sector in two dimensions, the technical quality of received services and the functional quality of the received services. The technical quality is defined mainly on the basis of the technical accuracy of the medical diagnoses and procedures or the conformance to professional specifications. The functional quality refers to the manner in which the health care services are delivered to the patients. In other words, technical quality in healthcare is about what the patients get whereas functional quality is about how they get it (Yesilada and Direktor, 2010).

According to Lam (1997) patients cannot distinguish between the caring performance and the curing performance of medical care providers. Most patients lack the knowledge and information necessary in order to be able to evaluate at a technical level the quality of the therapeutic approach or service provided to them by a medical institution. Consequently, patients rely on more tangible human traits and interpersonal characteristics based on which to characterize a service received by a hospital and evaluate the quality of that particular service. Breedlove (1994) suggested that patients determine the quality of healthcare system in terms of empathy, reliability, response, communication and care thus assessing human attributes and not the technical abilities of doctors or nursing staff. Assessing these dimensions of quality in surveys that evaluate the patients' expectations and perceptions of care is an important tool that managers and administrators can utilize to evaluate and continuously monitor quality with the focus on tracing the weaker aspects of the healthcare delivery system (Karassavidou *et al.*, 2008).

In the global marketplace continual improvement of service is not optional but is rather a necessity and a matter of survival. The same obviously applies for the healthcare sector and the services provided by medical institutions. Improving patient care involves simplifying processes of care and increasing control and choice given to patients. As Kenagy *et al.* (1999) support, improving quality in a hospital setting is directly related with improved surgical outcomes as well as significant reductions in the costs of care. In light of new aggressive global competition many organizations in the service sector find waste unacceptable and continually seek for new methods and alternative strategies to improve and gain competitive advantages.

Looking into this experience outside healthcare, medical institutions must study such approaches and implement similar methods in order to find effective ways to improve quality, reduce waste, answer questions, preserve dignity, customize experience, assure physical and psychological comfort and offer choice to patients (Kenagy *et al.*, 1999). Lekidou *et al.* (2007) report that improving quality and thus achieving patient satisfaction enables healthcare organizations to position themselves for success in today's global and increasingly competitive environment.

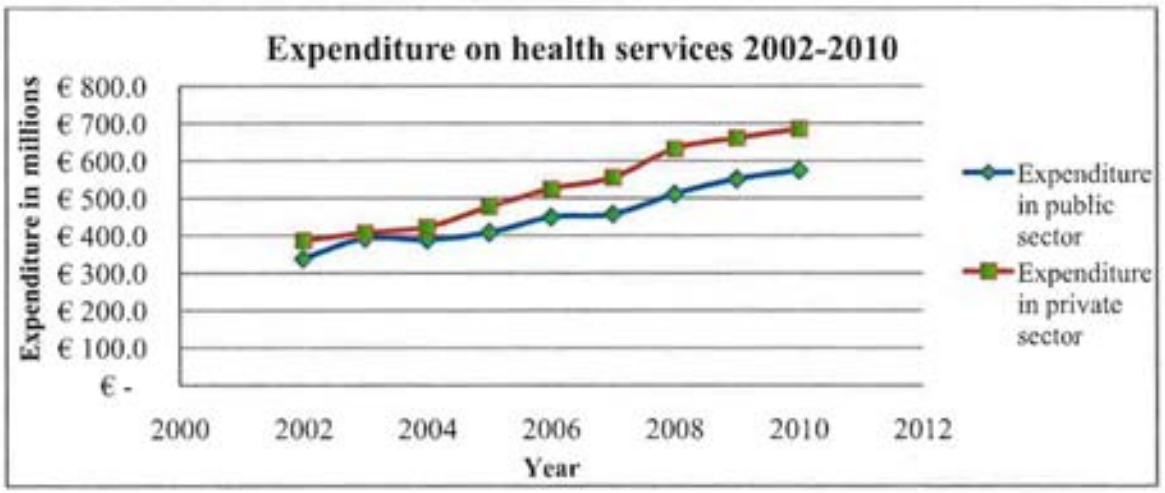
The healthcare sector in Cyprus

The standard of health in Cyprus is considered to be very high and compares favorably with that of developed countries, as it is shown by the various health indicators. Based on a report on health and hospital statistics published by the Cyprus Statistical Service on the 15th of February 2013 for the year 2010, the infant mortality rate stand at 3.2 per 1000 live births, the expectation of life at birth was 79 years for males and 82.9 years for females and the number of persons per doctor at 339 (Cyprus Statistical Service, 2010).

Based on the figures for 2010, a total of 400.992 patients visited the casualty departments of all the general hospitals across the island recording a decrease of 2.7% over the previous year. The percentage is expected to be substantially higher for 2011 and 2012 due to the escalation of the financial crisis and the tremendous pressures on the Cyprus economy that have inevitably affected Cypriots' ability to pay for private medical services. Consequently, an important shift from the private to the public medical sector is expected to be reflected on the figures for years 2011 onwards.

The total expenditure on health services during 2010 was estimated at 1260 million Euros of which 574.6 millions represent expenditure of the public sector and 685.4 millions expenditure of the private sector. The share of expenditure on health as a percentage of the country's GDP increased from 6.7% in 2008 to 7.2% in 2009 and 2010 (Cyprus Statistical Service, 2010). The annual expenditure on health for the years 2002 to 2010 is presented in graph 1 that follows.

Graph 1: Annual expenditure on health services in Cyprus



In 2010 hospital beds totaled 2.958. Of these, 1514 were operating in the public sector and 1444 in the private sector. The number of patients per hospital bed was estimated at 280 in 2010, 266 in 2009 and 264 in 2008 indicating a gradually increasing patient turnover per bed. The number of hospital beds per nurse was 0.8 both in 2010 and 2009 (Cyprus Statistical Service, 2010). Table 5 below lists the number of beds per public hospital for the year 2010 across all the major towns in Cyprus. Table 6 that follows is a list of the number of beds in private hospitals and clinics in all the main towns of Cyprus for the year 2010.

Table 5: Number of beds by public hospital, 2010

General Hospital	Number of beds
Lefkosia General	436
Archbishop Makarios III Lefkosia	197
Larnaka General Makarios III	164
Ammochostos General	66
Lemesos General	328
Pafos General	125
Total	**1316**

Table 6: Private hospitals and clinics by district, number of beds and personnel, 2010

District	Number of hospitals/clinics	Number of beds	Number of nurses	Number of midwives	Number of ancillary staff
Lefkosia	24	478	364	22	61
Ammochostos	4	107	39	1	9
Larnaka	15	190	71	8	16
Lemesos	29	435	217	14	43
Pafos	11	234	76	1	10
Total	**83**	**1444**	**767**	**46**	**139**

There were 2442 doctors in 2010 compared to 2313 in 2009 and 2233 in 2008. The public sector numbered 800 doctors of various specialties and the private sector 1642, corresponding to 32.8% and 67.2% respectively indicating a preference by doctors for employment in the private sector. The number of patients per doctor was 339 in 2010, 349 in 2009 and 352 in 2008 (Cyprus Statistical Service, 2010). The ratio of medical personnel in the public versus the private sector for year 2010 is graphically represented in chart 1 that follows.

During 2010, 3117 nurses of various grades were employed in the public sector and 813 in the private sector, compared to 3018 and 788 respectively in 2009. The number of patients per nurse was 216 in 2010, 219 in 2009 and 223 in 2008 (Cyprus Statistical Service, 2010). Interestingly, figures for 2010 show a higher concentration of medical doctors to nurses in the private sector and a much higher number of patients allocated to each doctor compared to the average number of patients allocated to each nurse. The ratio of nursing personnel in the public versus the private sector for year 2010 is graphically represented in chart 2 below.

Chart 1: Ratio of medical personnel in the public versus the private sector

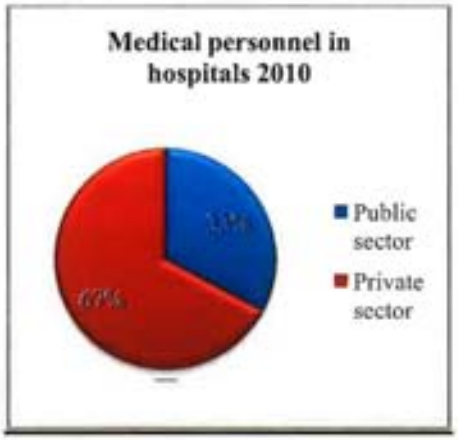
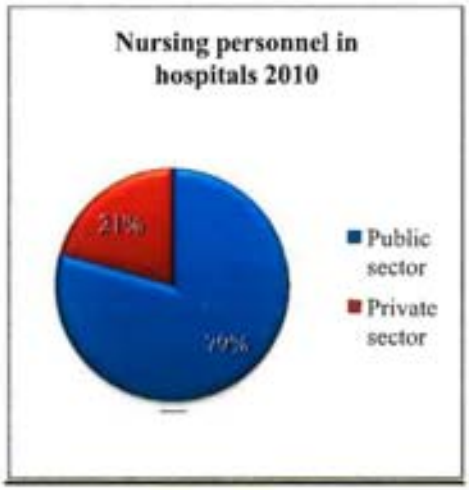


Chart 2: Ratio of nursing personnel in the public versus the private sector



THE MODEL

Methodology

In the present study the Gap Analysis Model of Service Quality developed by Parasuraman *et al.* was used as the instrument to measure service quality (Parasuraman *et al.*, 1985; 1988; 1991). Data collected was analyzed with the use of the *S*tatistical *P*ackage for the *S*ocial *S*ciences software (SPSS) by IBM, version 2.0 in the facilities of Neapolis University Pafos.

Sample and data collection

For simplicity and due to time bounds three hospitals participated in the study, two in the private sector and one in the public sector. From the public sector *Pafos General Hospital* was included in the study and from the private sector *Evangelismos hospital* and *Iasis hospital* took part in the study. The medical profile of the hospitals was similar as all three were general hospitals with a number of different medical specialties. The three hospitals selected were all based and operating in the town of Pafos, Cyprus.

The questionnaire was completed by patients hospitalized in any of the three hospitals. Patients were given brief explanation on the approach and the subject of the study and were completing the questionnaire during their hospitalization. Completion of the questionnaire was performed on a voluntary basis and answers were given unanimously. Patients were asked to read carefully and clearly understand the questions before attempting to complete the questionnaire. Patients were further directed to complete the questionnaire in an unbiased manner for the maximum credibility of results.

When the questionnaire was fully and appropriately completed the patients were asked to return it sealed to the person conducting the study in an A4-size envelope provided. A total of three hundred and sixty (360) questionnaires were distributed in the three hospitals and three hundred (300) were received back successfully completed. This reflected an 83.3% response rate of questionnaires that were acceptable for the purpose of the present study and useable for the statistical analysis by SPSS software.

Questionnaire design and structure

The questionnaire used in the study comprised of three (3) main sections. Section 1 included general information and demographics, section 2 included the evaluation of patients' expectations from a hospital in the town of Pafos and section 3 the evaluation of patients' perceptions of medical services received in one of the three hospitals included in the study.

At the end of the questionnaire the patients were asked to allocate a total of 100 points to five features relating to hospitals and the services they offer. Patients were instructed to allocate the points according to how important each of these features was to them. The more important a feature was to them, the more points they would allocate to it. The purpose of this last stage of the questionnaire was to identify how important each of these features was when the patients were evaluating a hospital's quality of service. In other words, through this stage patients were assigning weights to their answers given throughout the previous sections of the questionnaire. Points were allocated accordingly in order to add up to 100 to the following five sets of features:

1. The appearance of the hospital's physical facilities, equipment, personnel and communications material.
2. The ability of the hospital to perform the promised service dependably and accurately.
3. The willingness of the hospital to help patients and provide prompt services.
4. The knowledge and courtesy of the hospital's employees and their ability to convey trust and confidence.
5. The caring, individualized attention the hospital provides to its patients.

Translating the questionnaires from English to Greek and then back-translating to English was avoided to minimize distortion of the items being evaluated and the meaning of the questions asked. Prior to the data collection the questionnaires were piloted through personal interviews with a sample of ten (10) patients. Minor corrections and amendments were made to the questionnaires and the way some questions were presented in order to facilitate the clear understanding and thus most efficient completion of the questionnaire by the patients.

Timing for the study is considered to be of great importance as pressure on the private healthcare sector due to the escalating economic crisis in Cyprus is now more intense than ever. Patients, in an effort to seek for cheaper alternatives, are moving from private to public hospitals. Consequently, the analysis and identification of those factors that play a critical role on quality could provide valuable information to the senior managements of private healthcare institutions across Cyprus on how to remain competitive and minimize the effects from the economic crisis that has unavoidably affected the private hospitals and medical expenditure in Cyprus.

Furthermore, any findings from the proposed study could effectively be adopted by hospitals in Cyprus and used as the foundation to purse international quality standards certification. International standards of quality pose as a necessity for hospitals in Cyprus and are highly favored by the Cyprus government, in light of the efforts to promote the island as a top class destination for medical tourism. Any results from the proposed study could potentially serve as a tool and guiding map towards an efficient long-term strategy for establishing medical centres of excellence and institutions of high quality and standards on the island.

Objectives of the study

- To identify correlations between patients' expectations and patients' perceptions in hospitals in Cyprus.
- To detect any quality gaps between the patients' expectations and perceptions both in the public and private healthcare sector.
- To identify differences between private and public hospitals on how patients expect and perceive service quality in healthcare.

The hypotheses

Null hypothesis (H0): There is no significant difference in patients' expectations and perceptions on service quality in public and private hospitals in Cyprus. Consequently no quality gaps exist.

Alternative hypothesis (H1): There is significant difference in patients' expectations and perceptions on service quality in public and private hospitals in Cyprus. Thus quality gaps do exist.

RESULTS AND DISCUSSION

Profile of the respondents / demographics

The demographic profile of all the respondents is analyzed in table 7 that follows according to the nine demographic dimensions used. The three hundred respondents from the three participating hospitals were distinguished according to gender, nationality, type of hospital visited, department of hospital visited, area of residence, number of hospital visits annually, educational level, age group and whether patients had a medical insurance coverage or not. All the data on demographics collected is also presented diagrammatically in the charts that follow table 7.

In all three hospitals the number of female respondents was approximately twice the number of male respondents. The finding is consistent with the fact that in all three hospitals the obstetrics and gynaecology department was one of the most highly visited by patients. For Pafos General Hospital the Emergency department accepted the higher volume of visits from all the respondents. This is logical as the emergency department of Pafos General Hospital offers 24 hours medical services and is often visited by patients for simple day care procedures that require no specialized treatment or demanding medical procedures. The surgery department was another relatively busy department in all three hospitals.

The X-ray department of Iasis Private Hospital accepted a much higher volume of visits compared to the corresponding departments in the Pafos General Hospital and Evangelismos Private Hospital. The reason is that the particular department in Iasis Hospital has a reputation among the Pafos local community for its services, and is fully equipped with an MRI and a CT scan. Also, waiting times in Pafos General Hospital for the X-ray department are discouraging and mobilize patients to seek the same services faster in the private sector.

The majority of the respondents were from urban areas of Pafos followed by rural areas and only a small number coming from areas outside the district of Pafos or other towns. The finding was naturally expected since all three hospitals were operating in the town of Pafos.

The great majority of the respondents were Cypriots. A smaller number of respondents came from various different nationalities and in majority were British citizens since over the last decade a great number of Britons have been relocating to Pafos for permanent residency.

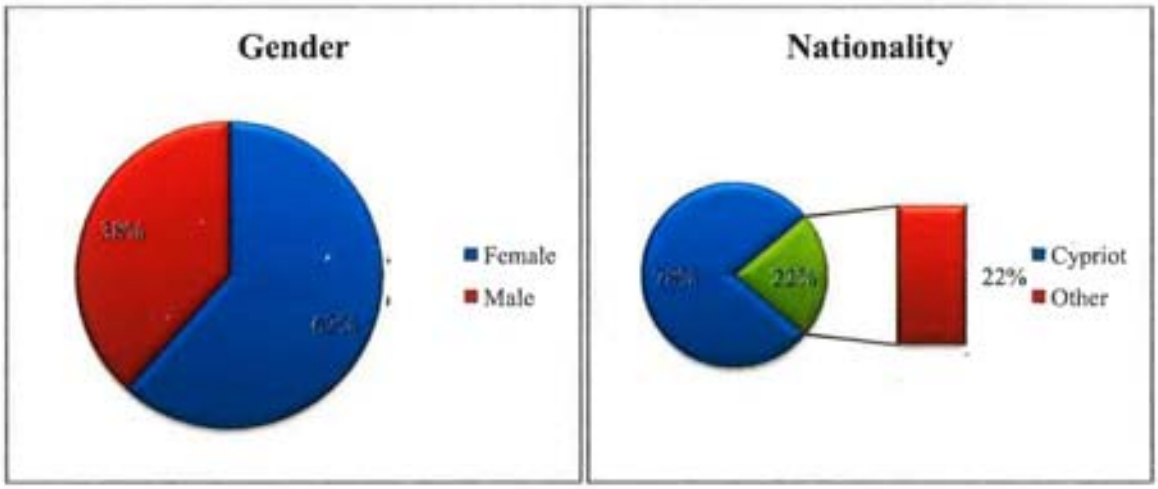
The great majority of patients participating in the study indicated that they visited a hospital not more than 5 times per year. Approximately 70-80% of all the respondents received education at least equal or higher to a college diploma. The ages of all the respondents were spread across all seven age groups and the number of patients that were covered by medical insurance as opposed to those that did not was equally divided 50:50.

Table 7: Demographic profile of respondents

No.	PROFILE VARIABLES	PAFOS GENERAL HOSPITAL	IASIS PRIVATE HOSPITAL	EVANGELISMOS PRIVATE HOSPITAL	TOTAL
A.	GENDER – DEMOGRAPHIC 1				
1.	Female	62	61	62	185
2.	Male	38	39	38	115
	TOTAL	100	100	100	300
B.	NATIONALITY – DEMOGRAPHIC 2				
1.	Cypriot	89	80	65	234
2.	Other	11	20	35	66
	TOTAL	100	100	100	300
C.	TYPE OF HOSPITAL – DEMOGRAPHIC 3				
1.	Public	100	0	0	100
2.	Private	0	100	100	200
	TOTAL	100	100	100	300
D.	HOSPITAL DEPARTMENT – DEMOGRAPHIC 4				
1.	Emergency	42	17	31	90
2.	Surgery	12	25	23	60
3.	X-ray	5	18	5	28
4.	Obstetrics & Gynaecology	32	35	31	98
5.	Clinical Laboratory	4	3	6	13
6.	Administration	0	1	1	2
7.	Other	5	1	3	9
	TOTAL	100	100	100	300
E.	RESIDENCE – DEMOGRAPHIC 5				
1.	Pafos Town (urban)	54	50	68	172
2.	Pafos district (rural)	35	41	30	106
3.	Other	11	9	2	22
	TOTAL	100	100	100	300
F.	HOSPITAL VISITS – DEMOGRAPHIC 6				
1.	< 1 per year	44	40	32	116
2.	1-5 per year	44	38	45	127
3.	6-10 per year	7	8	13	28

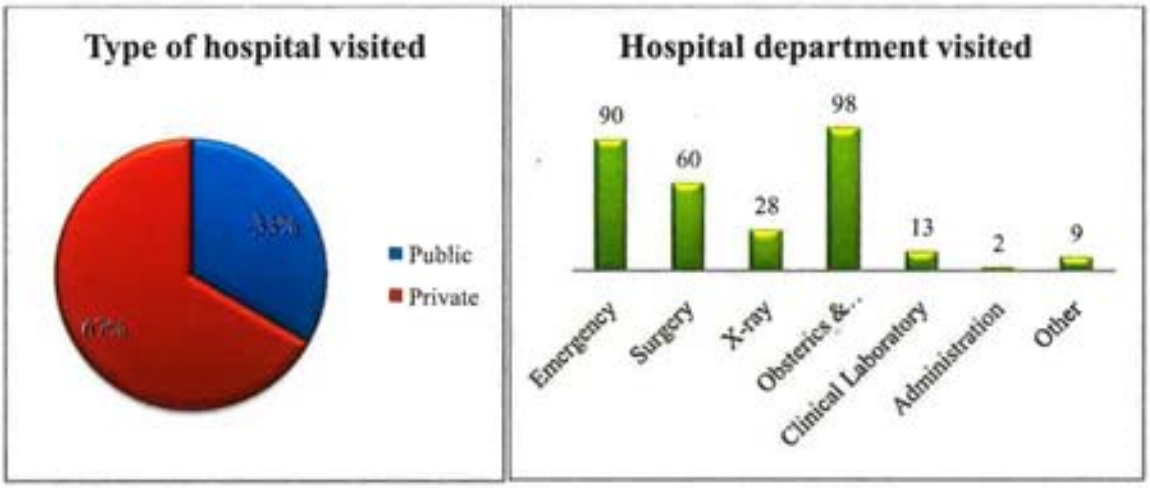
4.	> 10 per year	5	14	10	29
	TOTAL	100	100	100	300
G.	**EDUCATION LEVEL – DEMOGRAPHIC 7**				
1.	High school diploma or equivalent	36	23	24	83
2.	College diploma or equivalent	18	20	20	58
3.	University degree	35	42	29	106
4.	Postgraduate degree or diploma	11	15	27	53
	TOTAL	100	100	100	300
H.	**AGE GROUP – DEMOGRAPHIC 8**				
1.	< 25	12	8	8	28
2.	25-30	13	26	15	54
3.	30-35	24	27	24	75
4.	35-40	17	6	22	45
5.	40-45	11	7	14	32
6.	45-50	10	10	4	24
7.	> 50	13	16	13	42
	TOTAL	100	100	100	300
I.	**MEDICAL INSURANCE – DEMOGRAPHIC 9**				
1.	Yes	41	54	57	152
2.	No	59	46	43	148
	TOTAL	100	100	100	300

Charts 3 & 4: Diagrammatic representation of demographics on respondents' gender and nationality



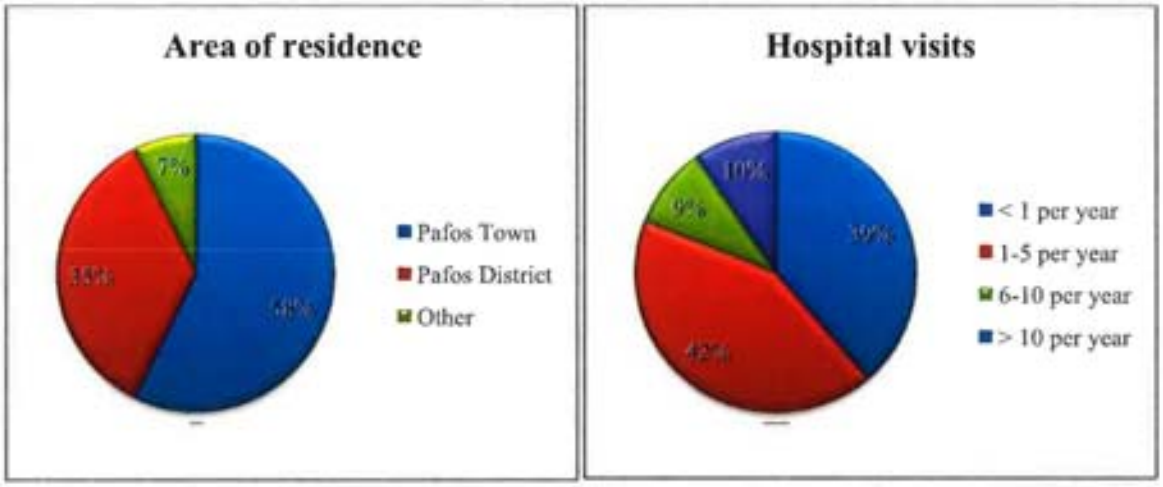
The majority of respondents were Cypriot females most likely due to the high patient turnover of the obstetrics and gynaecology departments of the three participating hospitals.

Chart 5 & graph 2: Diagrammatic representation of demographics on type of hospital and department visited



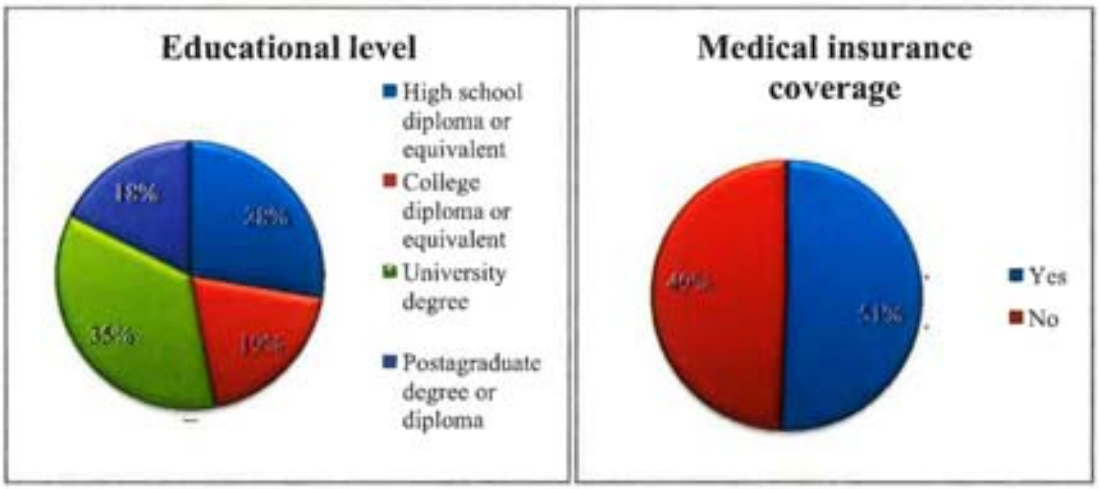
From all the respondents participating in the study, 1/3 visited a public hospital and 2/3 visited a private hospital. In all three hospitals included in the study the busier departments in patient visits were the obstetrics and gynaecology, emergency and surgery departments.

Charts 6 & 7: Diagrammatic representation of demographics on patients' area of residence and number of hospital visits per year



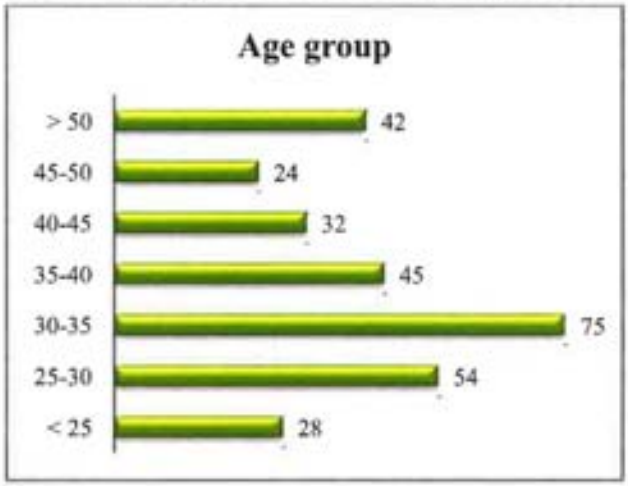
Most of the respondents were residing in the town of Pafos followed by rural areas of Pafos. Most of the patients visited a hospital not more than five times per year.

Charts 8 & 9: Diagrammatic representation of demographics on patients' educational level and medical insurance coverage status



The majority of patients in the study received education equal or higher to a college diploma. Approximately half of the patients were covered by medical insurance with the remaining half not being insured.

Graph 3: Diagrammatic representation of demographics on patients' age



The ages of all three hundred participants were spread across all seven age groups included in the study. Most of them were between the 25 to 35 age window.

Factor analysis

For factor analysis ten (10) measured variables were calculated using SPSS, five quality dimensions measuring patients' expectations and five quality dimensions measuring patients' perceptions. The ten measured variables were Expected Tangibility, Expected Reliability, Expected Responsiveness, Expected Assurance, Expected Empathy, Perceived Tangibility, Perceived Reliability, Perceived Responsiveness, Perceived Assurance and finally Perceived Empathy. In table 8 that follows, the measured variables are respectively numbered from 1 to 10. The factor loading of each of the twenty-two (22) questions included in the questionnaire to the appropriate quality dimension measured is also presented in table 8. The number of questions (items) evaluating each quality dimension is presented in appendix 2 as coding for research data in the appendices section.

All four items measuring *expected tangibility* had a positive weight in the measured variable. Item 6 addressing the effect of visually appealing facilities to the tangibility expected by patients had the highest loading. Item 16 evaluating how clean physical environment and materials affect patients' expectations on tangibles had a very low factor loading. This is possibly because the question needed to be rephrased or was not clearly understood by participants. The Cronbach's alpha coefficient for the quality dimension evaluated was calculated to be higher than 0.7 so the results were considered reliable and were accepted as calculated, including item16.

The five items measuring *expected reliability* all put positive weight on the measured variable with the highest being the ability of the hospital to keep accurate and error-free records and the lowest being the capacity of the hospital to provide services as promised.

Four items were measuring *expected responsiveness* and all had positive weights on the variable. The easy availability of information on services to patients had the highest factor loading on the variable. The willingness of staff to help patients had the lowest weight.

Expected assurance was evaluated by four items and all had positive weights on the variables. Hospital employees instilling confidence in patients had the highest weight and the staff's scientific knowledge to answer patients' questions had the lowest.

Five items were measuring *expected empathy*. The factor loading on the measured variable was positive for all five items. Understanding patients' needs had the highest weight on expected empathy and convenient operating hours the lowest.

Perceived tangibility was evaluated by four items that all had positive weights on the variable. Modern equipment put the highest weight on the variable and the professional appearance of the hospital's employees the lowest.

Perceived reliability was measured by five items all with positive weights on this quality dimension. Providing services at the promised time had the highest weight on reliability and employees showing sincere interest in solving patients' problems the lowest.

Four items were measuring *perceived responsiveness* and all had positive weights on the variable. The willingness of employees' to help patients put the highest weight on the variable. Making information on provided services easily available to patients had the lowest.

Perceived assurance was measured by four items all with positive weights. Employees being polite had the highest weight on the variable and scientific knowledge to answer questions the lowest.

Five items had positive weight on *perceived empathy*. Understanding patients' needs put the highest weight on the variable and convenient operating hours the lowest.

Testing the reliability of data collected

According to Hair et al. (2006) testing for reliability is the assessment of the degree of consistency between multiple measurements of a variable. The reliability of the SERVQUAL instrument used in the present study was measured by calculating the *Cronbach's alpha coefficient (a)*. Alpha was developed by Lee Cronbach to provide a measure of the internal consistency of a test or scale and is expressed as a number between 0 and 1 (Tavakol and Dennick, 2011).

High values of Alpha indicate that the items used to measure a component or concept inter-relate well. Low values of Alpha calculated may indicate a low number of questions used to address a component or concept, poor inter-relatedness between items or even heterogeneous components being evaluated. Alpha values of 0.7 or greater represent satisfactory reliability of the measuring instrument being used and are thus accepted (Nunnally and Bernstein, 1994). If values lower than 0.7 are calculated then items need to be excluded from the analysis or revised in an effort to increase the Alpha values. A maximum alpha value of 0.90 has been recommended by Streiner (2003). Very high values of Alpha approaching 1 may indicate redundancies or overlapping of the items being used to evaluate a component. In other words, it could be that items measuring a component may be testing the same question but in a different wording.

Testing the reliability of the data collected in such an empirical study is critical for the statistical analysis conducted by SPSS as it assess the validity of the data analyzed and helps to provide consistency in the results and outcomes of the analysis. The Cronbach's alpha coefficient was calculated for each of the five RATER quality dimensions evaluated, both considering patients' expectations and perceptions and the results are presented in table 8 that follows.

Table 8: Factor analysis and Cronbach's alpha coefficient (a) values

ITEM	COMPONENT										
	1	2	3	4	5	6	7	8	9	10	
Expe6	0.775	0.749									
Expe1	0.529										
Expe11	0.201										
Expe16	0.090										
Expe21		0.783	0.903								
Expe12		0.705									
Expe17		0.662									
Expe7		0.414									
Expe2		0.354									
Expe3			0.764	0.856							
Expe8			0.479								
Expe18			0.313								
Expe13			0.313								
Expe4				0.707	0.868						
Expe9				0.473							
Expe14				0.397							
Expe19				0.375							
Expe22					0.767	0.873					
Expe20					0.733						
Expe15					0.441						
Expe5					0.423						
Expe10					0.302						
Pere1						0.832	0.871				
Pere16						0.430					
Pere6						0.406					
Pere11						0.213					
Pere17							0.715	0.938			
Pere21							0.692				
Pere12							0.670				
Pere2							0.487				
Pere7							0.462				
Pere13								0.689	0.937		
Pere18								0.623			
Pere8								0.530			
Pere3								0.434			
Pere14									0.665	0.898	
Pere9									0.518		
Pere4									0.470		
Pere19									0.323		
Pere22										0.734	0.924
Pere15										0.698	
Pere20										0.550	
Pere5										0.509	
Pere10										0.251	

Calculating the quality gaps

The mean values for each one of the five quality dimensions were calculated, both for patients' expectations and perceptions. The difference between the patients' expectations and the patients' perceptions were calculated for each of the five dimensions by subtracting the patients' perceptions mean values (P) from the patients' expectations mean values (E) as G=E-P. The calculated values were documented as the service quality gap scores and are listed in table 9 that follows.

From the results it is clear that the quality gaps for all five quality dimensions under study are greater in the public hospital compared to the two private hospitals. For Pafos General Hospital the greater gaps were observed in reliability and responsiveness followed by quality gaps in assurance, empathy and tangibles. The gap in tangibles was smaller compared to the quality gaps in the other four dimensions as patients' expectation mean value was also lower than the expectation values for the other four dimensions. In general, the expectation mean values for all five quality dimensions were lower for Pafos General Hospital compared to the values for the two private hospitals. This reflects a patient's tendency to have lower expectations from the public hospital and expect more from the private ones. This is a logical conclusion as patients are more demanding in the case of services received by private hospitals that they pay as oppose to medical services received by governmental hospitals for which they have low or no charge. In addition, patients seem to understand and clearly realize the limitations of the public healthcare sector in providing services of high quality in an effective manner in the general context of the inefficiencies observed in all governmental institutions and departments.

Quality gaps in the two private hospitals are substantially lower than the gaps in the public hospital but they still exist. This is indicative of the improvement steps needed in the private healthcare sector in order to meet the patients' increasing demands. Also, the special nature of the services offered and the fact that these involve human health and wellbeing leave no space for compromise. For this, even though the perceptions of patients for the two private hospitals for all the quality dimensions assessed are high, the expectations are even higher thus resulting in quality gaps regardless of the high level of services currently offered by the two hospitals. The gaps scores calculated for the three hospitals are listed in table 9 below and are also presented in the radar charts (spider charts) that follow table 9.

Table 9: SERVQUAL gap scores for the five RATER dimensions

No.	QUALITY DIMENSION	EXPECTATION MEAN VALUES	PERCEPTION MEAN VALUES	GAP SCORE (P-E)
A.	**COMPLETE SAMPLE (n=300)**			
1.	Tangibles	6.1300	5.2608	-0.8692
2.	Reliability	6.3567	5.2953	-1.0614
3.	Responsiveness	6.3125	5.2608	-1.0517
4	Assurance	6.4250	5.3900	-1.0350
5.	Empathy	6.3307	5.3780	-0.9527
B.	**PAFOS GENERAL HOSPITAL (n=100)**			
1.	Tangibles	5.7475	4.1250	-1.6225
2.	Reliability	5.9700	3.9340	-2.0360
3.	Responsiveness	5.9275	3.8900	-2.0375
4.	Assurance	6.1000	4.2800	-1.8200
5.	Empathy	6.0200	4.2240	-1.7960
C.	**IASIS PRIVATE HOSPITAL (n=100)**			
1.	Tangibles	6.3350	5.7675	-0.5675
2.	Reliability	6.5520	5.9240	-0.6280
3.	Responsiveness	6.5125	5.9150	-0.5975
4.	Assurance	6.5875	5.8875	-0.7000
5.	Empathy	6.5280	5.8960	-0.6320
D.	**EVANGELISMOS PRIVATE HOSPITAL (n=100)**			
1.	Tangibles	6.3075	5.8900	-0.4175
2.	Reliability	6.5480	6.0280	-0.5200
3.	Responsiveness	6.4975	5.9775	-0.5200
4	Assurance	6.5875	6.0025	-0.5850
5.	Empathy	6.4440	6.0140	-0.4300
E.	**PRIVATE HEALTHCARE SECTOR (n=200)**			
1.	Tangibles	6.3213	5.8287	-0.4926
2.	Reliability	6.5500	5.9760	-0.5740
3.	Responsiveness	6.5050	5.9462	-0.5588
4.	Assurance	6.5875	5.9450	-0.6425
5.	Empathy	6.4860	5.9550	-0.5310

Chart 10: Quality gaps represented on a radar chart for the public healthcare sector

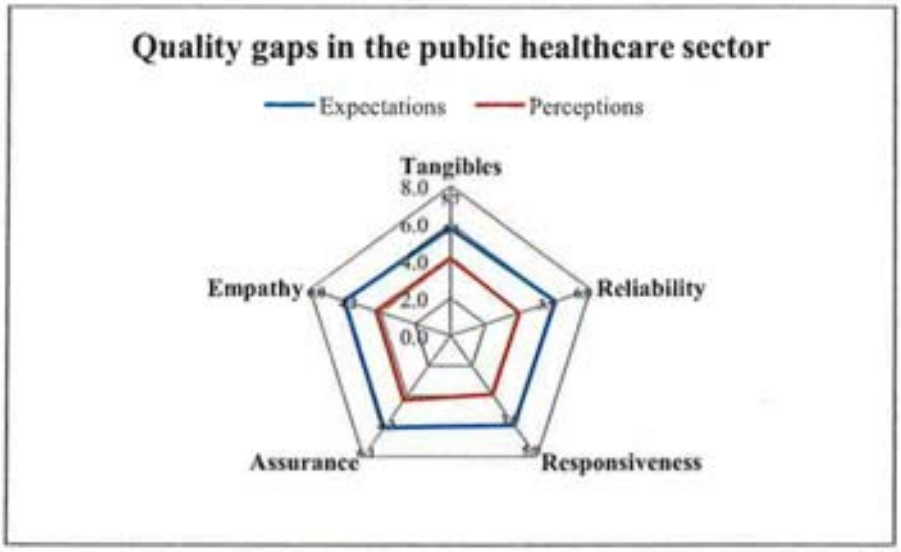


Chart 11: Quality gaps represented on a radar chart for the private healthcare sector

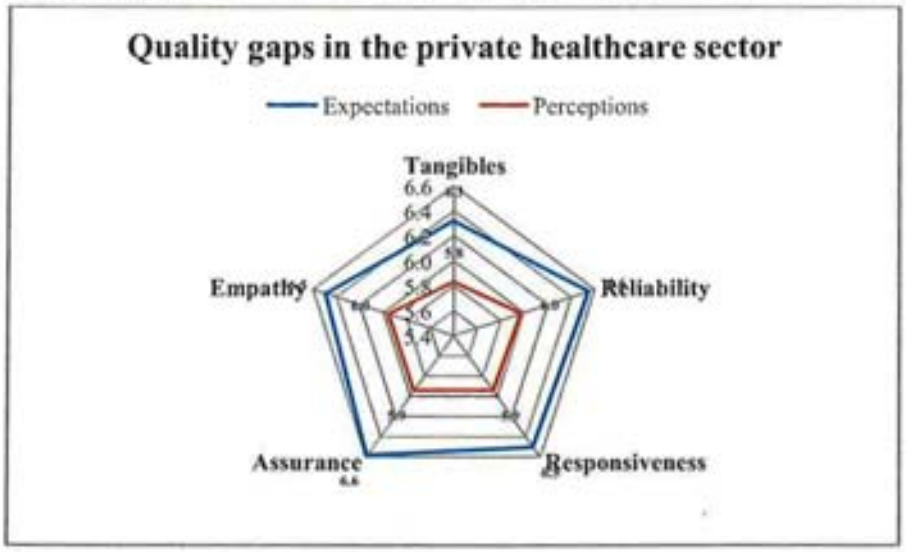


Chart 10 presents how patients from Pafos General Hospital expected service quality for the five quality dimensions and how they perceived the services received. Chart 11 presents how the patients that visited the two private hospitals expected service quality for the five dimensions and how they perceived the services delivered to them in the two hospitals.

Chart 12: Gaps in expected quality in the public versus the private healthcare sector represented on a radar chart

Chart 13: Gaps in perceived quality in the public versus the private healthcare sector represented on a radar chart

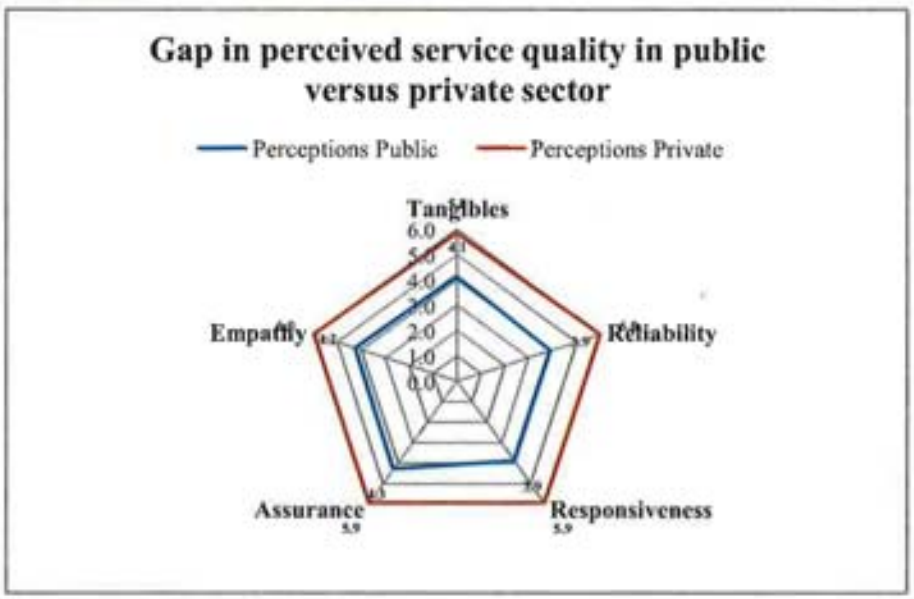


Chart 12 presents the patients' expectations on service quality for the public hospital as oppose to what the patients were expecting from the two private hospitals. Clearly the expectations from the private hospitals (indicated in red) were much higher than the patients' expectations from the public hospital (indicated in blue). Chart 13 presents the patients' perceptions on services received from the public hospital (marked in blue) as oppose to how patients perceived the quality of services received from the two private hospitals (marked in red). Again the perceptions on service quality were higher for the private hospitals compared to the public hospital.

Pearson Correlations

Pearson correlation test of the mean expected and mean perceived values for the five quality dimensions was performed to highlight any correlation between what was expected and what was perceived by patients for the five service quality dimensions tested. Table 10 that follows shows a level of correlation between the mean expected and mean perceived values using the data from the full sample that includes all three hospitals.

Pearson correlation between mean expected and mean perceived values for the two private hospitals showed a level of correlation as is highlighted in table 14 below. The data from the two private hospitals is also analyzed separately for each hospital and are presented in table 12 and table 13 for Iasis Private Hospital and Evangelismos Private Hospital respectively.

The correlation results support the evidence from the gaps analysis in that quality gaps in the private healthcare do exist but are not of the same magnitude as those observed in the public healthcare sector. In fact, the Pearson correlation results from Pafos General Hospital show no correlation at all and are thus inconclusive in supporting the evidence from the gap analysis and the great service quality gaps identified for Pafos General Hospital. The results from the analysis of the data collected from Pafos General Hospital are presented in table 11.

Table 10: Pearson correlations for the complete sample

Pearson Correlations - Complete Sample (n=300)

		ExptTangiability	ExptReliability	ExptResponsiveness	ExptAssurance	ExptEmpathy	PercTangiability	PercReliability	PercResponsiveness	PercAssurance	PercEmpathy
ExptTangiability	Pearson Correlation	1	.810**	.795**	.786**	.787**	.323**	.260**	.288**	.254**	.288**
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	300	300	300	300	300	300	300	300	300	300
ExptReliability	Pearson Correlation	.810**	1	.898**	.880**	.874**	.267**	.281**	.276**	.274**	.285**
	Sig. (2-tailed)	.000		.000	.000	.000	.000	.000	.000	.000	.000
	N	300	300	300	300	300	300	300	300	300	300
ExptResponsiveness	Pearson Correlation	.795**	.898**	1	.892**	.874**	.255**	.289**	.306**	.283**	.298**
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.000	.000	.000	.000
	N	300	300	300	300	300	300	300	300	300	300
ExptAssurance	Pearson Correlation	.786**	.880**	.892**	1	.847**	.255**	.277**	.273**	.312**	.294**
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000	.000	.000	.000
	N	300	300	300	300	300	300	300	300	300	300
ExptEmpathy	Pearson Correlation	.787**	.874**	.874**	.847**	1	.272**	.285**	.295**	.289**	.316**
	Sig. (2-tailed)	.000	.000	.000	.000		.000	.000	.000	.000	.000
	N	300	300	300	300	300	300	300	300	300	300
PercTangiability	Pearson Correlation	.323**	.267**	.255**	.255**	.272**	1	.890**	.886**	.872**	.872**
	Sig. (2-tailed)	.000	.000	.000	.000	.000		.000	.000	.000	.000
	N	300	300	300	300	300	300	300	300	300	300
PercReliability	Pearson Correlation	.260**	.281**	.289**	.277**	.285**	.890**	1	.954**	.913**	.927**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000		.000	.000	.000
	N	300	300	300	300	300	300	300	300	300	300
PercResponsiveness	Pearson Correlation	.288**	.276**	.306**	.273**	.295**	.886**	.954**	1	.924**	.926**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000		.000	.000
	N	300	300	300	300	300	300	300	300	300	300
PercAssurance	Pearson Correlation	.254**	.274**	.283**	.312**	.289**	.872**	.913**	.924**	1	.910**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000		.000
	N	300	300	300	300	300	300	300	300	300	300
PercEmpathy	Pearson Correlation	.288**	.285**	.298**	.294**	.316**	.872**	.927**	.926**	.910**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	
	N	300	300	300	300	300	300	300	300	300	300

**. Correlation is significant at the 0.01 level (2-tailed).

Table 11: Pearson correlations for Pafos general hospital sample

Pearson Correlations - Pafos General Hospital (n=100)

		ExptTangiability	ExptReliability	ExptResponsiveness	ExptAssurance	ExptEmpathy	PercTangiability	PercReliability	PercResponsiveness	PercAssurance	PercEmpathy
ExptTangiability	Pearson Correlation	1	.885**	.869**	.835**	.833**	.044	-.053	-.004	-.021	-.007
	Sig. (2-tailed)		.000	.000	.000	.000	.661	.599	.965	.839	.942
	N	100	100	100	100	100	100	100	100	100	100
ExptReliability	Pearson Correlation	.885**	1	.917**	.915**	.915**	.007	-.029	-.020	.015	.035
	Sig. (2-tailed)	.000		.000	.000	.000	.942	.798	.843	.886	.728
	N	100	100	100	100	100	100	100	100	100	100
ExptResponsiveness	Pearson Correlation	.869**	.917**	1	.916**	.910**	.004	-.019	.009	.031	.028
	Sig. (2-tailed)	.000	.000		.000	.000	.956	.849	.930	.760	.779
	N	100	100	100	100	100	100	100	100	100	100
ExptAssurance	Pearson Correlation	.835**	.915**	.916**	1	.875**	.005	-.002	.005	.093	.067
	Sig. (2-tailed)	.000	.000	.000		.000	.959	.986	.959	.359	.510
	N	100	100	100	100	100	100	100	100	100	100
ExptEmpathy	Pearson Correlation	.833**	.915**	.910**	.875**	1	.055	.034	.053	.066	.100
	Sig. (2-tailed)	.000	.000	.000	.000		.587	.734	.604	.511	.321
	N	100	100	100	100	100	100	100	100	100	100
PercTangiability	Pearson Correlation	.044	.007	.004	.005	.055	1	.830**	.810**	.787**	.782**
	Sig. (2-tailed)	.661	.942	.966	.959	.587		.000	.000	.000	.000
	N	100	100	100	100	100	100	100	100	100	100
PercReliability	Pearson Correlation	-.053	-.029	-.019	-.002	.034	.830**	1	.917**	.860**	.885**
	Sig. (2-tailed)	.599	.798	.849	.986	.734	.000		.000	.000	.000
	N	100	100	100	100	100	100	100	100	100	100
PercResponsiveness	Pearson Correlation	-.004	-.020	.009	.005	.053	.810**	.917**	1	.877**	.883**
	Sig. (2-tailed)	.965	.843	.930	.959	.604	.000	.000		.000	.000
	N	100	100	100	100	100	100	100	100	100	100
PercAssurance	Pearson Correlation	-.021	.015	.031	.093	.066	.787**	.860**	.877**	1	.841**
	Sig. (2-tailed)	.839	.886	.760	.359	.511	.000	.000	.000		.000
	N	100	100	100	100	100	100	100	100	100	100
PercEmpathy	Pearson Correlation	-.007	.035	.028	.067	.100	.782**	.885**	.883**	.841**	1
	Sig. (2-tailed)	.942	.728	.779	.510	.321	.000	.000	.000	.000	
	N	100	100	100	100	100	100	100	100	100	100

**. Correlation is significant at the 0.01 level (2-tailed).

Table 12: Pearson correlations for Iasis private hospital sample

Pearson Correlations - Iasis Private Hospital (n=100)

		ExptTangiability	ExptReliability	ExptResponsiveness	ExptAssurance	ExptEmpathy	PercTangiability	PercReliability	PercResponsiveness	PercAssurance	PercEmpathy
ExptTangiability	Pearson Correlation	1	.713**	.682**	.682**	.755**	.222*	.228*	.232*	.197*	.287**
	Sig. (2-tailed)		.000	.000	.000	.000	.027	.022	.020	.049	.004
	N	100	100	100	100	100	100	100	100	100	100
ExptReliability	Pearson Correlation	.713**	1	.855**	.811**	.862**	.284**	.335**	.312**	.327**	.404**
	Sig. (2-tailed)	.000		.000	.000	.000	.004	.001	.002	.001	.000
	N	100	100	100	100	100	100	100	100	100	100
ExptResponsiveness	Pearson Correlation	.682**	.855**	1	.853**	.862**	.284**	.331**	.387**	.377**	.410**
	Sig. (2-tailed)	.000	.000		.000	.000	.004	.001	.000	.000	.000
	N	100	100	100	100	100	100	100	100	100	100
ExptAssurance	Pearson Correlation	.682**	.811**	.853**	1	.851**	.313**	.379**	.344**	.398**	.410**
	Sig. (2-tailed)	.000	.000	.000		.000	.002	.000	.000	.000	.000
	N	100	100	100	100	100	100	100	100	100	100
ExptEmpathy	Pearson Correlation	.755**	.862**	.862**	.851**	1	.280**	.366**	.366**	.358**	.445**
	Sig. (2-tailed)	.000	.000	.000	.000		.005	.000	.000	.000	.000
	N	100	100	100	100	100	100	100	100	100	100
PercTangiability	Pearson Correlation	.222*	.284**	.284**	.313**	.280**	1	.722**	.711**	.752**	.772**
	Sig. (2-tailed)	.027	.004	.004	.002	.005		.000	.000	.000	.000
	N	100	100	100	100	100	100	100	100	100	100
PercReliability	Pearson Correlation	.228*	.335**	.331**	.379**	.366**	.722**	1	.882**	.847**	.904**
	Sig. (2-tailed)	.022	.001	.001	.000	.000	.000		.000	.000	.000
	N	100	100	100	100	100	100	100	100	100	100
PercResponsiveness	Pearson Correlation	.232*	.312**	.387**	.344**	.366**	.711**	.882**	1	.834**	.852**
	Sig. (2-tailed)	.020	.002	.000	.000	.000	.000	.000		.000	.000
	N	100	100	100	100	100	100	100	100	100	100
PercAssurance	Pearson Correlation	.197*	.327**	.377**	.398**	.358**	.752**	.847**	.834**	1	.871**
	Sig. (2-tailed)	.049	.001	.000	.000	.000	.000	.000	.000		.000
	N	100	100	100	100	100	100	100	100	100	100
PercEmpathy	Pearson Correlation	.287**	.404**	.410**	.410**	.445**	.772**	.904**	.852**	.871**	1
	Sig. (2-tailed)	.004	.000	.000	.000	.000	.000	.000	.000	.000	
	N	100	100	100	100	100	100	100	100	100	100

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Table 13: Pearson correlations for Evangelismos private hospital sample

Pearson Correlations - Evangelismos Private Hospital (n=100)

		ExptTangiability	ExptReliability	ExptResponsiveness	ExptAssurance	ExptEmpathy	PercTangiability	PercReliability	PercResponsiveness	PercAssurance	PercEmpathy
ExptTangiability	Pearson Correlation	1	.497**	.517**	.599**	.582**	.384**	.254*	.300**	.333**	.323**
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.011	.002	.001	.001
	N	100	100	100	100	100	100	100	100	100	100
ExptReliability	Pearson Correlation	.497**	1	.804**	.744**	.702**	.190	.354**	.325**	.298**	.203*
	Sig. (2-tailed)	.000		.000	.000	.000	.059	.000	.001	.003	.043
	N	100	100	100	100	100	100	100	100	100	100
ExptResponsiveness	Pearson Correlation	.517**	.804**	1	.784**	.723**	.158	.337**	.323**	.285**	.248*
	Sig. (2-tailed)	.000	.000		.000	.000	.115	.001	.001	.004	.013
	N	100	100	100	100	100	100	100	100	100	100
ExptAssurance	Pearson Correlation	.599**	.744**	.784**	1	.689**	.198*	.315**	.301**	.312**	.235*
	Sig. (2-tailed)	.000	.000	.000		.000	.048	.001	.002	.002	.018
	N	100	100	100	100	100	100	100	100	100	100
ExptEmpathy	Pearson Correlation	.582**	.702**	.723**	.689**	1	.219*	.288**	.310**	.296**	.256**
	Sig. (2-tailed)	.000	.000	.000	.000		.028	.004	.002	.003	.007
	N	100	100	100	100	100	100	100	100	100	100
PercTangiability	Pearson Correlation	.384**	.190	.158	.198*	.219*	1	.841**	.860**	.869**	.835**
	Sig. (2-tailed)	.000	.059	.115	.048	.028		.000	.000	.000	.000
	N	100	100	100	100	100	100	100	100	100	100
PercReliability	Pearson Correlation	.254*	.354**	.337**	.315**	.288**	.841**	1	.948**	.906**	.871**
	Sig. (2-tailed)	.011	.000	.001	.001	.004	.000		.000	.000	.000
	N	100	100	100	100	100	100	100	100	100	100
PercResponsiveness	Pearson Correlation	.300**	.325**	.323**	.301**	.310**	.860**	.948**	1	.935**	.898**
	Sig. (2-tailed)	.002	.001	.001	.002	.002	.000	.000		.000	.000
	N	100	100	100	100	100	100	100	100	100	100
PercAssurance	Pearson Correlation	.333**	.298**	.285**	.312**	.296**	.869**	.906**	.935**	1	.904**
	Sig. (2-tailed)	.001	.003	.004	.002	.003	.000	.000	.000		.000
	N	100	100	100	100	100	100	100	100	100	100
PercEmpathy	Pearson Correlation	.323**	.203*	.248*	.235*	.256**	.835**	.871**	.898**	.904**	1
	Sig. (2-tailed)	.001	.043	.013	.018	.007	.000	.000	.000	.000	
	N	100	100	100	100	100	100	100	100	100	100

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Table 14: Pearson correlations for the private healthcare sector sample

Pearson Correlations - Private Healthcare Sector (n=200)

		ExptTangibility	ExptReliability	ExptResponsiveness	ExptAssurance	ExptEmpathy	PercTangibility	PercReliability	PercResponsiveness	PercAssurance	PercEmpathy
ExptTangibility	Pearson Correlation	1	.605**	.601**	.642**	.664**	.307**	.240**	.267**	.270**	.303**
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.001	.000	.000	.000
	N	200	200	200	200	200	200	200	200	200	200
ExptReliability	Pearson Correlation	.605**	1	.830**	.779**	.776**	.230**	.343**	.315**	.307**	.290**
	Sig. (2-tailed)	.000		.000	.000	.000	.001	.000	.000	.000	.000
	N	200	200	200	200	200	200	200	200	200	200
ExptResponsiveness	Pearson Correlation	.601**	.830**	1	.820**	.788**	.212**	.330**	.345**	.321**	.317**
	Sig. (2-tailed)	.000	.000		.000	.000	.003	.000	.000	.000	.000
	N	200	200	200	200	200	200	200	200	200	200
ExptAssurance	Pearson Correlation	.642**	.779**	.820**	1	.770**	.248**	.341**	.314**	.346**	.311**
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000	.000	.000	.000
	N	200	200	200	200	200	200	200	200	200	200
ExptEmpathy	Pearson Correlation	.664**	.776**	.788**	.770**	1	.238**	.315**	.327**	.315**	.334**
	Sig. (2-tailed)	.000	.000	.000	.000		.001	.000	.000	.000	.000
	N	200	200	200	200	200	200	200	200	200	200
PercTangibility	Pearson Correlation	.307**	.230**	.212**	.248**	.238**	1	.795**	.803**	.825**	.811**
	Sig. (2-tailed)	.000	.001	.003	.000	.001		.000	.000	.000	.000
	N	200	200	200	200	200	200	200	200	200	200
PercReliability	Pearson Correlation	.240**	.343**	.330**	.341**	.315**	.795**	1	.922**	.883**	.884**
	Sig. (2-tailed)	.001	.000	.000	.000	.000	.000		.000	.000	.000
	N	200	200	200	200	200	200	200	200	200	200
PercResponsiveness	Pearson Correlation	.267**	.315**	.345**	.314**	.327**	.803**	.922**	1	.898**	.880**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000		.000	.000
	N	200	200	200	200	200	200	200	200	200	200
PercAssurance	Pearson Correlation	.270**	.307**	.321**	.346**	.315**	.825**	.883**	.898**	1	.892**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000		.000
	N	200	200	200	200	200	200	200	200	200	200
PercEmpathy	Pearson Correlation	.303**	.290**	.317**	.311**	.334**	.811**	.884**	.880**	.892**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	
	N	200	200	200	200	200	200	200	200	200	200

**. Correlation is significant at the 0.01 level (2-tailed).

Each one of the three hundred participants was asked to allocate a total of 100 points to five sets of characteristics relating to the services provided by the hospital. The aim was for each patient to assign weights to his/her answers according to how important each set of characteristics was for the patient personally. The five sets of characteristics are listed below in table 15 and correspond to the five RATER quality dimensions that were evaluated in the present study. Mean weight values were calculated for all five dimensions using data collected, for the complete sample and the three participating hospitals separately. The results are presented in table 16 that follows. What was consistently found was the fact that patients were allocating lower weights for the quality dimensions of tangibles and empathy while higher scores were observed for the three remaining dimensions of reliability, responsiveness and assurance. These findings applied for the complete sample and the three hospitals separately. Consequently, no major difference was observed on how patients were prioritizing the different dimensions of service quality in the public and private sector. From the findings it can be concluded that regardless of the type of hospital visited, public or private, patients were giving more attention to the reliability, responsiveness and assurance the hospital conveyed to them. This was followed by a lower weight on empathy and an even less attention on the tangibles such as the physical facilities and appearance of the hospital, its equipment or how the personnel looked like.

Table 15: Five sets of characteristics corresponding to the five RATER quality dimensions of the SERVQUAL model

No.	WEIGHT NUMBER	SET OF CHARACTERISTICS	CORRESPONDING QUALITY DIMENSIONS
1.	Weight 1	The appearance of the hospital's physical facilities, equipment, personnel and communications material	Tangibles
2.	Weight 2	The ability of the hospital to perform the promised service dependably and accurately	Reliability
3.	Weight 3	The willingness of the hospital to help patients and provide prompt services	Responsiveness
4.	Weight 4	The knowledge and courtesy of the hospital's employees and their ability to convey trust and confidence	Assurance
5.	Weight 5	The caring, individualized attention the hospital provides to its patients	Empathy

Table 16: Weight allocation on the 5 RATER quality dimensions of the SERVQUAL model

No.	WEIGHTED QUALITY DIMENSION	MEAN VALUES
A.	**COMPLETE SAMPLE (n=300)**	
1.	Weight 1 – Tangibles	16.87%
2.	Weight 2- Reliability	21.19%
3.	Weight 3- Responsiveness	20.96%
4	Weight 4 - Assurance	21.70%
5.	Weight 5 - Empathy	19.31%
	TOTAL	100%
B.	**PAFOS GENERAL HOSPITAL (n=100)**	
1.	Weight 1 – Tangibles	16.47%
2.	Weight 2- Reliability	20.58%
3.	Weight 3 – Responsiveness	20.98%
4.	Weight 4- Assurance	22.32%
5.	Weight 5 – Empathy	19.65%
	TOTAL	100%
C.	**IASIS PRIVATE HOSPITAL (n=100)**	
1.	Weight 1- Tangibles	16.45%
2.	Weight 2- Reliability	22.06%
3.	Weight 3- Responsiveness	21.05%
4.	Weight 4- Assurance	21.44%
5.	Weight 5- Empathy	19.10%
	TOTAL	100%
D.	**EVANGELISMOS PRIVATE HOSPITAL (n=100)**	
1.	Weight 1- Tangibles	17.70%
2.	Weight 2 – Reliability	20.94%
3.	Weight 3 – Responsiveness	20.84%
4	Weight 4 – Assurance	21.34%
5.	Weight 5 – Empathy	19.18%
	TOTAL	100%

The findings from the weight allocation are interesting as they provide an indicative picture from the patient's perspective on the importance of each one of the five quality dimensions in a hospital setting. Even though all five constitute an integral part of the SERVQUAL model it is clear from the results that patients allocate a different importance to each one of the five. In the current study respondents were allocating more points and thus assigning higher importance to the dimensions of reliability, responsiveness and assurance. Empathy followed the three and finally tangible aspects of a hospital's services were weighed as last in priority. The results were more or less consistent for all three hospitals showing no difference on how patients prioritize the five quality dimensions between the public and private healthcare sector. One could argue that the findings are driven and influenced from the nature of

services provided by hospitals and the fact that respondents are patients that evaluate the services received under very special circumstances both physically but also emotionally. Based on this, patients are very sensitive for issues like the delivery of the promised service, fast and effective or feeling safe and being able to trust the medical and nursing staff. Issues relating to the visual appearance of the hospital or even the caring fashion with which the medical services are offered affect them to lesser extent as long as the services are offered within the expected level of reliability, responsiveness and assurance.

This information can be effectively utilized by the managements of the three hospitals in order to concentrate their efforts on improving service quality where it will mean the most for the patient. In addition, resources can more efficiently be allocated in improving those quality dimensions that are more important to patients. In this manner important resources that are scarce can be directed and successfully targeted from less important quality dimensions to quality dimensions that are more important in improving customer satisfaction for the patients. The findings from the weights patients have allocated to the five RATER dimensions can be used to construct a performance – importance matrix. The matrix would provide meaningful information as to where the hospital is possibly over-performing without the appropriate benefit and where the hospital should concentrate its efforts in order to achieve the maximum level of patient's satisfaction and thus gain benefit.

Limitations of the present study

Problems that appeared during the present study included difficulties in approaching patients in the three participating hospitals. Due to the special and sensitive nature of the business environment the study was conducted it was not an easy task to get hold of patients while in stress and pressure because of their medical condition in order to complete the questionnaire. However, the large number of questionnaires circulated in the three hospitals and the involvement of nursing staff in collecting the data buffered up to an extent this limitation and facilitated the collection of a large number of successfully completed questionnaires.

Lack of time and the pressure to keep the study on a relatively simple form limited the study to only three hospitals. In any case though, participating hospitals represented an important market share of both the public and private medical sector in the town of Pafos and thus reliable and meaningful data were deducted from the information collected.

English language used in the survey posed a limitation due to difficulties by some patients to understand the essence of the questions asked and the concept behind each question. The problem was even more intense in the case of participants that belong to higher age groups or of lower educational level. In addition, the present study did not take into account the different size of the medical organizations investigated. The number of patients hospitalized and the workload during regular operating hours was substantially higher in the case of the public hospital compared to the two private hospitals included in the study.

It is important to note that the SERVQUAL model intended to address the expectations of patients from a hospital in the town of Pafos. In both the cases of the public hospital and the two private hospitals patients had to be well aware of any limitations and special characteristics of the healthcare sector in Cyprus that are beyond the control of the hospitals' senior management. It is thus essential in similar studies that may be conducted in the future to clarify to all patients answering the questionnaire the difference between expectations from ideal versus expectations from the hospital visited versus perceptions from the hospital visited. In the present study the patients were specifically asked to assess their expectations from a hospital in the town of Pafos and not their expectations from an ideal hospital. Patients' expectations from an ideal hospital

might be an utopia to achieve under limitations that may apply for the healthcare sector in Cyprus. In support of this is the fact that for the two private hospitals patients had high expectations but not the absolute maximum. For Pafos General Hospital the results were even more realistic as patients had low expectations even though one could argue that a patient should expect the absolute maximum on service quality from any hospital visited, whether public or private. However, the data collected prove this to be far from true.

A drawback of the present study was the fact that in some instances patients participating in the study that were hospitalized in a private hospital were answering the questionnaire based on expectations and experiences from a past visit they had in a public hospital. Such questionnaires could still be used for information collected for the public hospital but did pose a confusion factor in the study. For this, patients had to be well and clearly instructed on how to complete the questionnaire.

Outliers were another problem that had to be tackled in the present study. Because of a very positive experience or a very negative experience some patients were allocating very high or very low scores in all the quality dimensions evaluated that did not reflect reality. In such cases the respondents' judgment was driven by an exceptionally good or bad experience and led to misleading results that could potentially harm the credibility of the study. Such outliers had to be excluded for the purpose of the present study.

An extension of the outliers' problem was the fact that some patients were answering the questionnaire having in mind the experience from a single doctor and not the hospital as a whole. The problem is even more profound in the case of local hospitals and small communities, like the town of Pafos, where patients are associating with the doctor as a person and not the hospital as a medical facility. Obviously, the aim of the present study was to evaluate service quality delivered to patients by medical institutions as a whole and not individually by doctors of various medical specialties. To clarify the distinction and minimize the problem patients had to be educated on how to answer the questionnaire and clearly be explained how to address the various questions.

Future work

An expansion of the current study could include a set of personal interviews with the hospitals' managements in an effort to detect correlations of the quality gaps identified with different management styles. Such an approach could indicate that quality gaps can be bridged following certain leadership styles and management practices. Similarly, the approach could link highlights of the service quality evaluation of a hospital with management practices that have proven successful and can thus be reinforced and strengthen. In any case, the ultimate goal of either enhancing a successful management style or correcting practices that have proven weak should be towards improving the quality of medical services provided and maximizing customer satisfaction. A future study could also include a question on patient satisfaction or dissatisfaction in order to correlate the findings from the five quality dimensions and the quality gaps identified with overall patients' satisfaction. One could then proceed further and identify continuous improvement practices a hospital can adopt to achieve maximum customer satisfaction. Additionally, the quality gaps identified could be exploited to construct a performance – importance matrix, represented in figure 13 below, the senior management could use to direct improvement efforts to those aspects of the hospital's operations that mean the most to the patient.

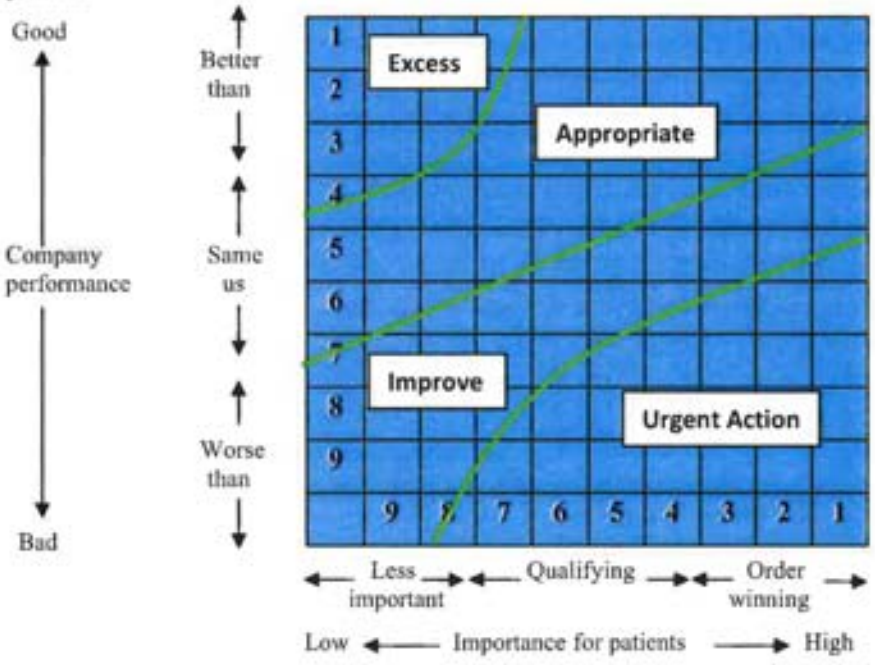


Figure 13: Performance – importance matrix

Based on the findings from the construction of a performance – importance matrix, resources can then be efficiently relocated from operations and activities with little importance for the patient on activities and operations that have the maximum importance to patients and can thus result in increasing patient satisfaction levels. For example an investment on physical facilities or the engagement of resources on tangibles like the appearance of the hospital's staff and the communication material might prove of lower priority based on the findings from the patients' weight allocation. Over performing on this quality dimension could provide no further added value to a hospital's offered services as the patients are prioritizing other quality dimensions. Thus, a relocation of resources targeting the dimensions of reliability, responsiveness and assurance could prove a more wise and cost effective approach to follow. This would ensure that a hospital's resources are concentrating were the maximum positive effect on the patient is achieved.

Future work on the material collected from the present study could focus on screening the results based on age, gender, educational level, socio-economical background and other demographic dimensions included in this study. Such an approach could identify a pattern of responses on service quality expectations or perceptions clustered depending on the patients' age group, educational background, site of residence or gender. Such a distinction would provide a powerful tool for hospitals to customize their strategies depending on the target market they want to focus on and effectively direct their marketing and promotional activities accordingly. In addition the research pool and data source could be further expanded by including hospitals from all the major towns of Cyprus. An expanded study could even include all the private and public hospitals on the island in order to represent findings of the healthcare sector in Cyprus as a whole.

An alternative approach to the present study could use different quality dimensions to evaluate service quality in healthcare or even different items, in the form of questions in the questionnaire, to measure the quality dimensions. More industry-specific items, in line with studies performed internationally on evaluating service quality in healthcare, could possibly address service quality in healthcare more effectively compared to the generic questions used in the original SERVQUAL questionnaire. A series of personal interviews with medical and

nursing staff as well as patients, prior to setting up the items in the questionnaire and the quality variables to be measured, could lead to a validated and reliable tool adopted to the special characteristics of healthcare in Cyprus. Such a tool could capture the essence of measuring service quality in hospitals in Cyprus and generate results that represent the closest to reality results for the healthcare sector in Cyprus.

The research conducted for the purpose of the present study revealed a scarcity of information on service quality and the applicability of the SERVQUAL model in local businesses. Consequently, this study could provide a backbone approach and serve as the foundations to conduct similar studies in other business sectors and industries in Cyprus. The results of such studies could then be used in a cross-sector analysis in order to conduct an industry comparison and investigate differences and/or similarities that might appear between business sectors in Cyprus. An expansion of the present study could only include the manufacturing sector as part of a two-dimensional investigation that would analyze differences and/or similarities between the service and the manufacturing sectors in Cyprus.

Use of findings

The results of the present study can potentially be used as the basis for effective healthcare management and a guiding map for the senior managements of hospitals across Cyprus to build their business strategy and quality improvement plans.

The study's findings are particularly important for the services sector. The results and conclusions from the study can be utilized to improve quality of offered services in hospitals across Cyprus and potentially strengthen the island's position as a regional provider of medical and healthcare services in the Middle East and Eastern Mediterranean region. Improved quality can effectively be used as a core competence on which to build competitive advantages. By doing so, the country's healthcare business sector will achieve that level of diversification and innovation necessary in order to excel as a medical service provider in the region.

CONCLUSION

The present study revealed some interesting findings in regard to the perception of patients on the medical services received from hospitals in Cyprus. From the analysis of the data collected on SPSS it is obvious that the gap between patients' expectations (what they expect to find) and patients' perceptions (what they actually find) is greater in hospitals of the public sector compared to hospitals of the private sector. This is a result of the low ratings on service quality as it is perceived by patients hospitalized in a public hospital compared to those hospitalized in the private hospitals. Also, an interesting finding is the fact that patients' expectations on service quality are by default lower in the public than the private sector. Patients have to pay a price for receiving private medical care and this also reflects on their expectations on the service they receive from the private hospital. In other words, they naturally expect more when it comes to medical care by a private hospital. Patients visiting a private hospital pay a price for the medical services they receive and are thus more demanding in all possible ways as to the level of service quality they expect to experience in a private medical facility.

On the contrary, patients' expectations are naturally lower from a public hospital. Limitations and accumulating problems of the government sector and consequently the public hospitals serve as a pre-warning sign as to what someone should expect from a public hospital. Unfortunately in many instances these limitations have to do no just with operational practical problems but also with the whole philosophy of customer service, efficiency and effectiveness. Most patients are familiar with these issues of the public sector and are prepared to accept the flaws and drawbacks of receiving medical care in a public general hospital. In some instances these low expectations and the fact that patients are more or less prepared to receive medical care of limited, if not low quality, somewhat minimizes the quality gap between the patients' expected and perceived service quality. In reality what happens is that patients enter the public hospital with low expectations on service quality and anything they receive as medical care that exceeds their low expectations is considered as a fair level of service quality.

It is thus made clear from the findings that patients are more demanding when it comes to the services they receive from a private hospital compared to what they demand from a public governmental hospital. This obviously is a reflection and is directly influenced by the amount of

money they have to spend to receive medical care in the private sector as opposed to their expenditure in the public sector. The two private hospitals evaluated for their service quality both have an above average level rating in all five quality dimensions. However, as expectations by patients are high a quality gap is detected in all five dimensions for both hospitals. The finding is indicative of the potential for further improvement in all five quality levels. For this, a consistent business strategy that would incorporate continuous improvement and concepts of total quality management would provide the appropriate tool for a hospital to minimize the quality gaps identified and achieve high levels of customer satisfaction. Such a strategy would assist a hospital to diversify from competition and at the same time meet the ever increasing demands of patients. This could prove critically important for the healthcare sector due to the special nature of the services provided and the different status of a patient receiving medical care from a private hospital compared to any other type of customer consuming a product or a service.

Based on the findings the issues for the public medical care are greater and more difficult to tackle. The quality gaps also exist and are of greater magnitude compared to the private healthcare sector, so efforts are needed to bridge those gaps. What is equally interesting though is the fact that based on the low expectation ratings patients do not expect much from a public hospital. There is a general disbelief among patients that hospitals in the public sector can actually offer services of high quality. Patients doubt the capacity of a public hospital to offer medical care of equal quality to the medical care offered by private hospitals. Consequently, the challenge for the senior management of Pafos General Hospital is to reverse the situation by regaining people's trust on public medical care. Obviously, continual improvement practices need to be adopted to close to the extent possible the quality gaps detected in this study. At the same time radical steps should be made towards improving the picture patients have of public hospitals in Cyprus. For the latter both the hospitals' management but also the Ministry of Health have a role to play through a general policy plan that will reshape medical care in Cyprus. The general health plan promoted might be an important step towards this direction. However, courageous decisions need to be taken and foundational changes should be implemented in order to achieve quality improvement at all possible levels of healthcare in Cyprus. In any case, the unquestionable and consistent target should be delivering the maximum benefit and customer satisfaction to any patient receiving medical care services in Cyprus.

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SURVEY ON MEASURING QUALITY AND ASSESING CUSTOMER SATISFACTION IN CYPRUS HOSPITALS

APPENDICES

Appendix 1 – SERVQUAL questionnaire

Neapolis University Pafos

Introduction: The purpose of this study is to measure service quality and assess customer satisfaction in the healthcare sector in Cyprus. Furthermore, the study aims to identify any differences and quality gaps between private and public hospitals in Cyprus. Any results from the present study can be used to bridge gaps between patients' expected and perceived quality of healthcare services in Cyprus and may potentially improve quality of services offered by hospitals in Cyprus. All responses given will be treated with the utmost confidence. The results will be used for research purposes only and no attempt will be made to identify any individual or organization in any publication. Any results and/or findings may be reported to scientific and/or academic journals.

Instructions: This questionnaire consists of three (3) main sections. Section 1 is general information and demographics, section 2 is the evaluation of your expectations from a hospital in Cyprus and section 3 is the evaluation of your perception of service experienced in a hospital. The questionnaire should be completed by patients hospitalized in the hospital. Completion of the questionnaire is performed on a voluntary basis and answers are given unanimously. You are asked to read carefully and clearly understand the questions before attempting to complete the questionnaire. Please complete the questionnaire in an unbiased manner for the maximum credibility of results. When the questionnaire is fully and appropriately completed please return sealed to the person conducting the study in the A4-size envelope provided.

For further information on the survey or clarifications on the questions and/or the procedure for successfully completing the questionnaire please contact Mr. Panayiotis A. Vorkas on **99603582** or by email at **pvorkas@lifebanklab.com**.

Additional information on the survey and the MBA program can be provided by Neapolis University Pafos, School of Business & Marketing, 2 Danais Avenue, 8042 Pafos, Cyprus, Tel: 00357 2684 3602, Fax: 00357 2693 1944.

Thank you for your time and cooperation.

Panayiotis A. Vorkas

*For completing section 1 of the questionnaire please tick accordingly below in the appropriate box [ ].

SECTION 1

GENERAL INFORMATION

1. **GENDER**
   Female [ ]
   Male [ ]

2. **NATIONALITY**
   Cypriot [ ]
   Other (please indicate) ..... [ ]

3. **TYPE OF HOSPITAL VISITED** (one answer only)
   Public (please indicate) ..... [ ]
   Private (please indicate) ..... [ ]

4. **DEPARTMENT OF HOSPITAL VISITED**
   Emergency [ ]
   Surgery [ ]
   X-Ray [ ]
   Obstetrics & Gynaecology [ ]
   Clinical Laboratory [ ]
   Administration [ ]
   Other (please indicate) ..... [ ]

5. **PLACE OF RESIDENCE**
   Pafos Town [ ]
   Pafos District (please indicate) ..... [ ]
   Other (please indicate) ..... [ ]

6. **NUMBER OF TIMES ATTENTING A HOSPITAL IN A YEAR**
   <1 per year [ ]
   1-5 per year [ ]
   6-10 per year [ ]
   >10 per year [ ]

7. **HIGHEST LEVEL OF EDUCATION ATTAINED** (mark one answer only)
   High school diploma or equivalent [ ]
   College diploma or equivalent [ ]
   University degree [ ]
   Postgraduate degree or diploma [ ]

8. **AGE GROUP**
   < 25 [ ]
   25-30 [ ]
   30-35 [ ]
   35-40 [ ]
   40-45 [ ]
   45-50 [ ]
   > 50 [ ]

9. **MEDICAL INSURANCE**
   Yes [ ]
   No [ ]

*The following section of the questionnaire investigates your expectations from an ideal hospital. For completing section 2 of the questionnaire please circle the number that you feel is most appropriate for each statement according to the scale below.

1 = Strongly Disagree
2 = Moderately Disagree
3 = Slightly Disagree
4 = Neither Agree nor Disagree
5 = Slightly Agree
6 = Moderately Agree
7 = Strongly Agree

SECTION 2

EVALUATION OF EXPECTANIONS

Please circle your response accordingly		"Please show the extent to which you think a hospital should possess the following features"						
		Strongly Disagree	Moderately Disagree	Slightly Disagree	Neither Agree nor Disagree	Slightly Agree	Moderately Agree	Strongly Agree
1.	Modern equipment	1	2	3	4	5	6	7
2.	Provide services as promised	1	2	3	4	5	6	7
3.	Make information on services easily available to patients	1	2	3	4	5	6	7
4.	Employees should instill confidence in patients	1	2	3	4	5	6	7
5.	Give patients individual attention	1	2	3	4	5	6	7

Please circle your response accordingly		"Please show the extent to which you think a hospital should possess the following features"						
		Strongly Disagree	Moderately Disagree	Slightly Disagree	Neither Agree nor Disagree	Slightly Agree	Moderately Agree	Strongly Agree
6.	Visually appealing facilities	1	2	3	4	5	6	7
7.	Sincere interest in solving patients' problems	1	2	3	4	5	6	7
8.	Give prompt service to patients	1	2	3	4	5	6	7
9.	Patients should feel safe in their interactions with employees	1	2	3	4	5	6	7
10.	Convenient operating hours to all patients	1	2	3	4	5	6	7
11.	Employees with professional appearance	1	2	3	4	5	6	7
12.	Perform services right the first time	1	2	3	4	5	6	7

Please circle your response accordingly		"Please show the extent to which you think a hospital should possess the following features"						
		Strongly Disagree	Moderately Disagree	Slightly Disagree	Neither Agree nor Disagree	Slightly Agree	Moderately Agree	Strongly Agree
13.	Always be willing to help patients	1	2	3	4	5	6	7
14.	Employees should be polite	1	2	3	4	5	6	7
15.	Deal with patients in a caring fashion	1	2	3	4	5	6	7
16.	Clean physical environment and materials	1	2	3	4	5	6	7
17.	Provide services at the promised time	1	2	3	4	5	6	7
18.	Readiness to respond to patients' requests	1	2	3	4	5	6	7
19.	Scientific knowledge to answer patients' questions	1	2	3	4	5	6	7

Please circle your response accordingly		"Please show the extent to which you think a hospital should possess the following features"						
		Strongly Disagree	Moderately Disagree	Slightly Disagree	Neither Agree nor Disagree	Slightly Agree	Moderately Agree	Strongly Agree
20.	Have the patients' best interest at heart	1	2	3	4	5	6	7
21.	Keep accurate and error-free records	1	2	3	4	5	6	7
22.	Understand patients' needs	1	2	3	4	5	6	7

*The following section of the questionnaire investigates your perceptions of service experienced in this hospital. For completing section 3 of the questionnaire please circle the number that you feel is most appropriate for each statement according to the scale below.

1 = Strongly Disagree
2 = Moderately Disagree
3 = Slightly Disagree
4 = Neither Agree nor Disagree
5 = Slightly Agree
6 = Moderately Agree
7 = Strongly Agree

SECTION 3

EVALUATION OF PERCEPTIONS

Please circle your response accordingly		"Please show the extent to which these statements reflect your perception of service in this hospital"						
		Strongly Disagree	Moderately Disagree	Slightly Disagree	Neither Agree nor Disagree	Slightly Agree	Moderately Agree	Strongly Agree
1.	Modern equipment	1	2	3	4	5	6	7
2.	Provide services as promised	1	2	3	4	5	6	7
3.	Make information on services easily available to patients	1	2	3	4	5	6	7
4.	Employees instill confidence in patients	1	2	3	4	5	6	7

Please circle your response accordingly		"Please show the extent to which these statements reflect your perception of service in this hospital"						
		Strongly Disagree	Moderately Disagree	Slightly Disagree	Neither Agree nor Disagree	Slightly Agree	Moderately Agree	Strongly Agree
5.	Give patients individual attention	1	2	3	4	5	6	7
6.	Visually appealing facilities	1	2	3	4	5	6	7
7.	Sincere interest in solving patients problems	1	2	3	4	5	6	7
8.	Give prompt service to patients	1	2	3	4	5	6	7
9.	Patients feel safe in their interactions with employees	1	2	3	4	5	6	7
10.	Convenient operating hours to all patients	1	2	3	4	5	6	7
11.	Employees with professional appearance	1	2	3	4	5	6	7

Please circle your response accordingly		"Please show the extent to which these statements reflect your perception of service in this hospital"						
		Strongly Disagree	Moderately Disagree	Slightly Disagree	Neither Agree nor Disagree	Slightly Agree	Moderately Agree	Strongly Agree
12.	Perform services right the first time	1	2	3	4	5	6	7
13.	Always willing to help patients	1	2	3	4	5	6	7
14.	Employees are polite	1	2	3	4	5	6	7
15.	Deal with patients in a caring fashion	1	2	3	4	5	6	7
16.	Clean physical environment and materials	1	2	3	4	5	6	7
17.	Provide services at the promised time	1	2	3	4	5	6	7
18.	Readiness to respond to patients' requests	1	2	3	4	5	6	7
19.	Scientific knowledge to answer patients' questions	1	2	3	4	5	6	7

Please circle your response accordingly		"Please show the extent to which these statements reflect your perception of service in this hospital"						
		Strongly Disagree	Moderately Disagree	Slightly Disagree	Neither Agree nor Disagree	Slightly Agree	Moderately Agree	Strongly Agree
20.	Have the patients' best interest at heart	1	2	3	4	5	6	7
21.	Keep accurate and error-free records	1	2	3	4	5	6	7
22.	Understand patients' needs	1	2	3	4	5	6	7

POINT ALLOCATION QUESTION

Listed below are five features relating to hospitals and the services they offer. We would like to know how important each of these factors is to you when you evaluate a hospital's quality of services. Please allocate a total of 100 points among the five features according to how important each factor is to you. The more important a feature is to you, the more points you should allocate to it. Please ensure that the points you allocate to the five features add up to 100.

1. The appearance of the hospital's physical facilities, equipment, personnel and communications material.
   ….. Points
2. The ability of the hospital to perform the promised service dependably and accurately.
   ….. Points
3. The willingness of the hospital to help patients and provide prompt service.
   ….. Points
4. The knowledge and courtesy of the hospital's employees and their ability to convey trust and confidence.
   ….. Points
5. The caring, individualized attention the hospital provides to its patients.
   ….. Points

TOTAL POINTS ALLOCATED **100 Points**

THANK YOU FOR PARTICIPATING IN THIS STUDY. ALL RESPONSES WILL BE TREATED AS STRICTLY CONFIDENTIAL AND NO SINGLE SET OF ANSWERS WILL BE IDENTIFIABLE.

Appendix 2 – Coding research data

CODING RESEARCH DATA – SERVQUAL QUALITY DIMENSIONS – 2ND ORDER	QUESTIONNAIRE SECTION	EVALUATION ITEMS – 1ST ORDER	ITEM REFERENCE QUESTIONS
TANGIBILITY	2 & 3	▪ Modern equipment ▪ Visually appealing facilities ▪ Employees with professional appearance ▪ Clean physical environment and materials	▪ 1 ▪ 6 ▪ 11 ▪ 16
RELIABILITY	2 & 3	▪ Provide services as promised ▪ Sincere interest in solving patients' problems ▪ Perform services right the first time ▪ Provide services at the promised time ▪ Keep accurate and error free records	▪ 2 ▪ 7 ▪ 12 ▪ 17 ▪ 21
RESPONSIVENESS	2 & 3	▪ Information on services easily available to patients ▪ Give prompt service to patients ▪ Always be willing to help patients ▪ Readiness to respond to patients' requests	▪ 3 ▪ 8 ▪ 13 ▪ 18
ASSURANCE	2 & 3	▪ Employees instill confidence in patients ▪ Patients feel safe in their interactions with employees ▪ Employees should be polite ▪ Scientific knowledge to answer patients' questions	▪ 4 ▪ 9 ▪ 14 ▪ 19
EMPATHY	2 & 3	▪ Give patients individual attention ▪ Deal with patients in a caring fashion ▪ Have the patients' best interest at heart ▪ Understand patients' needs ▪ Convenient operating hours to all patients	▪ 5 ▪ 15 ▪ 20 ▪ 22 ▪ 10

Appendix 3 – Tables used for graphs and charts

Table used for constructing **graph 1** – Annual expenditure on health services in Cyprus.

Year	Expenditure in public sector	Expenditure in private sector
2002	€ 338.4	€ 386.0
2003	€ 392.8	€ 406.7
2004	€ 389.1	€ 422.2
2005	€ 408.2	€ 476.2
2006	€ 449.6	€ 524.7
2007	€ 457.4	€ 554.7
2008	€ 511.0	€ 632.1
2009	€ 551.1	€ 660.5
2010	€ 574.6	€ 685.4

Table used for constructing **chart 1** – Ratio of medical personnel in the public versus the private sector.

Healthcare sector	Number of doctors
Public sector	800
Private sector	1642

Table used for constructing **chart 2** - Ratio of nursing personnel in the public versus the private sector.

Healthcare sector	Number of nurses
Public sector	3117
Private sector	813

Table used for constructing **chart 3** - Diagrammatic representation of demographics on respondents' gender.

GENDER	NUMBER OF RESPONDENTS
Female	185
Male	115
TOTAL	300

Table used for constructing **chart 4** - Diagrammatic representation of demographics on respondents' nationality.

NATIONALITY	NUMBER OF RESPONDENTS
Cypriot	234
Other	66
TOTAL	300

Table used for constructing **chart 5** - Diagrammatic representation of demographics on type of hospital visited.

TYPE OF HOSPITAL VISITED	NUMBER OF RESPONDENTS
Public	100
Private	200
TOTAL	300

Table used for constructing **graph 2** - Diagrammatic representation of demographics on hospital department visited.

HOSPITAL DEPARTMENT VISITED	NUMBER OF RESPONDENTS
Emergency	90
Surgery	60
X-ray	28
Obsterics & Gynaecology	98
Clinical Laboratory	13
Administration	2
Other	9
TOTAL	300

Table used for constructing **chart 6** - Diagrammatic representation of demographics on patients' area of residence.

AREA OF RESIDENCE	NUMBER OF RESPONDENTS
Pafos Town	172
Pafos District	106
Other	22
TOTAL	300

Table used for constructing **chart 7** - Diagrammatic representation of demographics on patients' number of hospital visits per year.

HOSPITAL VISITS PER YEAR	NUMBER OF RESPONDENTS
< 1 per year	116
1-5 per year	127
6-10 per year	28
> 10 per year	29
TOTAL	300

Table used for constructing **chart 8** - Diagrammatic representation of demographics on patients' educational level.

EDUCATIONAL LEVEL	NUMBER OF RESPONDENTS
High school diploma or equivalent	83
College diploma or equivalent	58
University degree	106
Postagraduate degree or diploma	53
TOTAL	300

Table used for constructing **graph 3** - Diagrammatic representation of demographics on patients' age.

AGE GROUP	NUMBER OF RESPONDENTS
< 25	28
25-30	54
30-35	75
35-40	45
40-45	32
45-50	24
> 50	42
TOTAL	300

Table used for constructing **chart 9** - Diagrammatic representation of demographics on patients' medical insurance coverage status.

MEDICAL INSURANCE COVERAGE	NUMBER OF RESPONDENTS
Yes	152
No	148
TOTAL	300

Table used for constructing **chart 10** - Quality gaps represented on a radar chart for the public healthcare sector.

QUALITY DIMENSIONS	Expectations	Perceptions
Tangibles	5.7	4.1
Reliability	6.0	3.9
Responsiveness	5.9	3.9
Assurance	6.1	4.3
Empathy	6.0	4.2

Table used for constructing **chart 11** - Quality gaps represented on a radar chart for the private healthcare sector.

QUALITY DIMENSIONS	Expectations	Perceptions
Tangibles	6.3	5.8
Reliability	6.6	6.0
Responsiveness	6.5	5.9
Assurance	6.6	5.9
Empathy	6.5	6.0

Table used for constructing **chart 12** - Gaps in expected quality and perceived quality in the public healthcare sector.

QUALITY DIMENSIONS	Expectations Public	Expectations Private
Tangibles	5.7	6.3
Reliability	6.0	6.6
Responsiveness	5.9	6.5
Assurance	6.1	6.6
Empathy	6.0	6.5

Table used for constructing **chart 13** - Gaps in expected quality and perceived quality in the private healthcare sector.

QUALITY DIMENSIONS	Perceptions Public	Perceptions Private
Tangibles	4.1	5.8
Reliability	3.9	6.0
Responsiveness	3.9	5.9
Assurance	4.3	5.9
Empathy	4.2	6.0