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Health care service quality: A comparison of public and private hospitals

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The aim of this paper is threefold: to test the dimensionality of the SERVQUAL instrument in the Northern Cyprus health care industry, to assess the service quality provided in public and private hospitals in Northern Cyprus and to identify the service quality dimensions that play important role on patient satisfaction. Data were collected in two phases from the same sample, which consisted of 806 systematically selected people above the age of eighteen. Factor analysis revealed a three factor solution, namely; reliability-confidence, empathy and tangibles. This result does not support the five factor model of the original SERVQUAL. Gap analysis showed that private hospitals have smaller gaps than public hospitals in all three service quality dimensions. Finally, logistic regression findings indicated that while all three dimensions are somewhat influential on patient satisfaction, in public hospitals tangibles dimension seems to exert no significant influence on satisfaction. Findings are important both for public and private hospital managers and for policy makers.

Key words: Health care, service quality, SERVQUAL, hospitals, logistic regression.

INTRODUCTION

Research has shown that delivering quality service has significant relationship with customer satisfaction (Boulding et al., 1993; Johns et al., 2004; Kara et al., 2005), customer retention (Reichheld and Sasser, 1990), loyalty (Boshoff and Gray, 2004;), costs (Wilson et al., 2008), profitability (Rust and Zahorik, 1993; Zeithaml et al., 1996), service guarantees (Kandampully and Butler, 2001) and financial performance (Buttle, 1996) of service businesses (Sohail, 2003). This forced the businesses to develop a better understanding of what service quality meant to the customer and how it could best be measured (Parasuraman et al., 1985, 1988). Unlike products, where quality can be easily assessed, service quality is an elusive and abstract concept that is difficult to define and measure (Lee et al., 2000). Berry et al. (1988) defined service quality as "conformance to customer specifications" (Sohail, 2003, 205). Parasuraman et al. (1985) defined service quality as the difference between predicted or expected service

(customer expectations) and perceived service (customer perceptions). According to the definition of Zeithaml et al. (1990) service quality is customers' perception of how well a service meets or exceeds their expectations and it is judged by customers, not by organizations. The interactive nature of service process results in the consumers' evaluation of quality immediately after the provision and performance of that service (Douglas and Connor, 2003). Thus, performance is probably the most important competitive weapon in service business (Zeithaml et al., 1992). Performance not only separates one firm from others, it also creates loyal customers who spread favorable "word of mouth" (Youssef, 1996). In their studies, Parasuraman et al. (1988, 1991 and 1994) found a positive and significant relationship between customers' perception of service quality and their willingness to recommend the company. After defining the concept of service quality, researchers needed a tool for measuring the quality level of services. The tool was expected to key out the attributes that require improvement in order to enhance quality, identify the degree or amount of improvement required and identify how the impact of service quality improvement efforts can be assessed. With these concerns, Parasuraman et al.

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(1985, 1988) developed SERVQUAL, which is the most widely used tool to measure service quality to date. SERVQUAL was based on Disconfirmation Model (Oliver, 1980) which proposes that satisfaction is a function of the disconfirmation of perception from expectation (Lee et al., 2000). Although the model provides good relative indication on how the service levels rate against similar competitors, it lacks a quantitative foundation that can be used universally across industries (Baggs and Kleiner, 1996). SERVQUAL was founded on the view that customer's assessment of service quality is paramount. This assessment was conceptualized as a gap between what customer expects from a class of service providers and their evaluations of the performance of a particular service provider (Buttle, 1996). SERVQUAL measures service quality in five dimensions; reliability, tangibles, responsiveness, assurance and empathy by 22 items. Each item is written twice; first to determine customer's expectations from service providers in the service category being investigated, second to measure perceptions of performance of a particular firm (Llosa et al., 1998). SERVQUAL was used in various industries; however, the findings of these studies indicate that the number of dimensions of service is not unique (Llosa et al., 1998). Parasuraman et al. (1988) have claimed that SERVQUAL provided a basic skeleton through its expectations/perceptions format and when necessary, the skeleton can be adopted or supplemented to fit the characteristics or specific research needs of a particular organization.

Service quality in the health care industry

The health care service can be broken down into two quality dimensions: technical quality and functional quality (Gronroos, 1984). While technical quality in the health care sector is defined primarily on the basis of the technical accuracy of the medical diagnoses and procedures or the conformance to professional specifications, functional quality refers to the manner in which the health care service is delivered to the patients (Lam, 1997). In other words, technical quality is about what the customers get, functional quality is about how they get it. Research has shown that technical quality falls short of being a truly useful measure for describing how patients evaluate the quality of a medical service encounter (Bowers et al., 1994). Ware and Snyder (1975) state that although technical quality has high priority with patients, most patients do not have the knowledge to evaluate effectively the quality of the diagnostic and therapeutic intervention process or information necessary for such evaluation is not shared with the patients. Thus, patients base their evaluation of quality on interpersonal and environmental factors, which medical professionals have always regarded as less important. Moreover, most

patients cannot distinguish between the caring performance and the curing performance of medical care providers (Lam, 1997). O'Callaghan (1998) In their studies, Cronin and Taylor (1994) and McAlexander et al. (1994) found that there is a link between the patient's perception of quality of service and patient satisfaction. Research has shown that consumers tend to evaluate the quality of the health care services by focusing on more functional issues like physical facilities, interactions with receptionists or brochures rather than hard-to evaluate technical aspects of the service delivery (Brown and Swartz, 1989; Barnes and Mowatt, 1986; Crane and Lynch, 1988; Davies and Ware, 1981). Research finds that patient satisfaction is positively related to purchase intentions (Cronin and Taylor, 1992), loyalty toward health care providers (John, 1992; Woodside et al., 1989) and adherence to medical treatment recommendations (Hall and Dornan, 1990). According to Oswald et al. (1998), consumers must rely on attitudes toward caregivers and the facility itself in order to evaluate their experiences. They point out that there is a strong connection between health service quality perceptions and customer satisfaction. Healthcare providers' focus is providing the appropriate treatment to their patients. They believe that this actually is the focus of the patients as well (Bopp, 1990). However, as Swartz and Brown (1989) observed, patients' perceptions often differ from those of the physician and physicians may misperceive their patients' evaluations. This causes dissatisfaction on the patient's side and leads the patient to look for an alternative provider and spread negative word of mouth which would affect potential clients (Brown and Swartz, 1989; Swartz and Brown, 1989).

Several tools have been developed to measure patients' perceptions and expectations, but SERVQUAL instrument developed by Parasuraman et al. (1988) is the most widely used tool (Sohail, 2003). While the findings of some studies confirm the five generic quality dimensions of SERVQUAL (Babakus and Mangold, 1992; Youssef 1996), others either identified less number of dimensions (Lam, 1997) or used a modified version of the instrument and identified additional dimensions (Reidenback and Sondifer-Smallwood, 1990). Haywood-Farmer and Stuart (1988) concluded that SERVQUAL was inappropriate for measuring professional service quality since it excluded the dimensions for "care service", "service customization" and "knowledge of the professional".

Reidenback and Sondifer-Smallwood (1990) employed a modified SERVQUAL approach to understand the relationship among patients' perceptions of inpatient, outpatient and emergency room services and their overall perceptions of service quality satisfaction with their care and willingness to recommend the hospital's services to others. Seven dimensions were identified and differential impacts of these dimensions were found in the three hospital settings. "Patient confidence" was found to affect

patient satisfaction in all three settings in addition to influencing perceptions of service quality in both the inpatient and the outpatient settings. Babakus and Mangold (1992) found that SERVQUAL is reliable and valid in the hospital environment. Silvestro and Johnston (1992) identified care as a quality factor. Johnston (1995) further developed the research of Silvestro and Johnston (1992) and found eighteen quality dimensions, namely, cleanliness, aesthetics, comfort, functionality, reliability, responsiveness, flexibility, communication, integrity, commitment, security, competence, courtesy, friendliness, attentiveness, care access and availability. Vandamme and Leunis (1993) suggest that SERVQUAL may not be generalized to hospital services or health care services due to the uniqueness of the services offered.

Bowers et al. (1994) identified two additional quality dimensions, namely, "caring" and "patient outcomes" to the five generic quality dimensions of SERVQUAL. The findings of the study pointed out that empathy, responsiveness; reliability, communication, and caring were strongly correlated with overall patient satisfaction. Similar to Bowers et al. (1994), Gabbott and Hogg (1995) identified "caring" as a dimension, but they decided not to accept it as a separate dimension since it was already covered by the five SERVQUAL dimensions. Anderson (1995) used the SERVQUAL instrument to assess the quality of service offered by a public university health clinic. The findings revealed that the clinic investigated was poor on the assurance dimension. Youssef (1996) investigated patients' satisfaction with National Health Service (NSH) hospitals in the UK using SERVQUAL. The findings showed that reliability was the most important of the five dimensions in influencing patients' overall quality perceptions. Empathy was the second important dimension, closely followed by responsiveness and assurance. Tangibility was found to be the least important of the five SERVQUAL dimensions.

Lam (1997) examined the validity, reliability and predictive validity of SERVQUAL and analyzed its applicability to the health care sector in Hong Kong. Study results show that SERVQUAL is a consistent and reliable scale to measure health care service quality. However, factor analysis did not confirm the five generic quality dimensions. The results of the factor analysis indicated that the scales could be treated as unidimensional, for the results identified one dominating factor representing expectations and perceptions. Sewell (1997) in their study on NHS patients found that the most important quality dimension was reliability followed by assurance. Empathy and responsiveness dimensions were rated as almost equal. Tangibles were identified as the fifth dimension.

Angelopoulou et al. (1998) investigated service quality provided in public and private hospitals in Greece. They found that patients in public hospitals were satisfied about the competence of physicians and nurses. Their findings on private hospitals show that patients are more satisfied

with physical facilities, waiting times and admission procedures compared to the public hospitals' patients. Camilleri and examined public and private hospitals in Malta in terms of their care service quality and concluded that both type of hospitals' services exceeded the corresponding customer's expectations. Dean (1999) conducted research in two different health service settings in Australia to test the transferability of SERVQUAL. It was concluded that quality factors differ not by industry, but also by the type of health service. Lim and Tang (2000) conducted a modified SERVQUAL with six dimensions, namely, tangibles, reliability, assurance, responsiveness, empathy, accessibility and affordability on 252 patients in Singapore hospitals. They concluded that hospitals needed improvements across all six dimensions. Andaleeb (2001) in Urban Bangladesh found out that patient perceptions were sought on five aspects of service quality including responsiveness, assurance, communication, discipline and baksheesh.

In the study, conducted discipline, which was an extension of the tangibles dimension had the greatest impact on customer satisfaction followed by assurance, responsiveness and communication. Baksheesh had the least impact on patient satisfaction. Wong (2002) found that of the five SERVQUAL dimensions responsiveness, assurance and empathy were more important predictors of overall satisfaction. Jabnoun and Chaker (2003) compared public and private hospitals in UAE. Factor analysis resulted in five dimensions; empathy, tangibles, reliability, administrative responsiveness and supporting skills. They found significant differences between private and public hospitals in terms of overall service quality in empathy, tangibles, reliability and administrative responsiveness dimensions. Their findings indicate that public hospitals were perceived to be better than private hospitals on service quality. On the same year, Sohail (2003) attempted to measure the service quality of private hospitals in Malaysia. Factor analysis did not confirm any of the five generic SERVQUAL dimensions.

Boshaff and Gray (2004) conducted their study on patients in private health care organizations in South Africa. They found that the service quality dimensions of nursing staff empathy, assurance and tangibles have positive impact on patients' loyalty measured by purchasing intensions. Kilbourne et al. (2004) used perception only scores of service quality as they proposed that these scores appear to have higher convergent and predictive validity. The results showed that SERVQUAL is capable of capturing even slight quality indicators in a multidimensional way, namely, tangibles, responsiveness, reliability and empathy, as well as the overall service quality. Varinli and Cakir (2004), in their study on patients in a private hospital in Turkey, identified four service quality dimensions; physicians, nurses, process and the personnel. They found that patient satisfaction was influenced by physicians and nurses and slightly by price. The exploratory study conducted to understand health care quality in exploratory the Mauritian context

Ramsuran-Fowder (2005) found two additional dimensions, namely, "core medical outcomes" and "professionalism/skill/competence" and a few additional items within each of the five SERVQUAL quality dimensions. The findings of the study indicate that SERVQUAL dimensions could not be replicated fully to the health care services. Wisniewski and Wisniewski (2005) applied SERVQUAL in a Scottish colposcopy clinic. Instead of factorizing the data, each of the five generic dimensions were evaluated item by item by using mean scores and t-test analysis. Across the five dimensions, statistically significant gap scores were identified for reliability and responsiveness. They found that reliability was the priority dimension given that it had both the largest negative gap and the highest mean weight.

In the same year, Mostafa (2005) investigated how patients perceived service quality in Egypt's public and private hospitals. Factor analysis extracted a three factor solution, thus the five generic dimensions were not confirmed. The discriminant function developed was found to be significant in explaining patients' choice of the type of the hospital. Again in 2005, Gonzalez-Valentin et al. (2005) conducted their research on patients in a regional university hospital in Southern Spain with the purpose of assessing the satisfaction of patients with nursing care by using SERVQUAL. Factor analysis did not reproduce the five dimensions, but extracted three factors only. Yagci and Duman (2006) analyzed the relationship between service quality and customer satisfaction in public, private and university hospitals in Turkey. Quality perceptions were measured with four factors, namely; services before the treatment, physician services, care for private needs, laboratory services and physical environment. It was found that public hospitals had the lowest values in service quality dimensions and overall satisfaction followed by university and private hospitals. Demirel et al. (2009) identified nursing services and trust, treatment, and physical environment as the three factors related to service quality. They also found that perceived service quality has positive correlation with patient satisfaction, willingness to recommend and intention to visit the hospital again.

Research objectives

In several studies it was concluded that the transferability of SERVQUAL scale to different service settings needed to be tested. Research on health care industry has shown that the five generic dimensions of SERVQUAL (Parasuraman et al., 1988) were not fully confirmed indicating the need for further research conducted on samples from different parts of the world.

There are three objectives of the study:

1.) To test the dimensionality of the SERVQUAL instrument in the Northern Cyprus health care industry.

2.) To assess the service quality provided in public and private hospitals in Northern Cyprus.
3.) To identify the service quality dimensions which play important role on customer satisfaction.

MATERIALS AND METHODS

The data collection device

Data collection was done in two phases. The first set of data was collected through questionnaire consisting of four parts. The first two parts consist of the SERVQUAL items (Parasuraman et al., 1985), which measure service quality. In Part I, there were 22 statements measuring the expected service quality from excellent hospitals. In Part II, the same items were measuring the service quality perceptions of public/private hospitals in Northern Cyprus. Here, respondents were asked to identify the public/private hospital they have taken service from within the last six months and evaluate the statements with regard to the hospital(s) they have identified. All of the statements in Part I and Part II were measured on a five point "Agree-Disagree" Likert scale. SERVQUAL scale was previously applied by researchers in Turkey, thus, the Turkish version of the scale was already available. Part III contained one question asking whether they were satisfied with the service quality of the hospital they evaluated or not. This question was measured via yes-no nominal scale. The last part of the questionnaire consisted of demographic questions.

In the second phase, there was only one question asking the respondents to evaluate the three service quality dimensions identified using the data collected in the first phase in terms of their importance.

The sample

The sample was drawn from the people living in Northern Cyprus who were above the age of eighteen. The sample size of the study was determined as 990 with 95% confidence level. With reference to sampling frame population figures, number of people to be selected from each region was calculated. Then, the determined numbers were divided into sample points by systematic sampling.

Data collection process

Data collection process was conducted by KADEM, which is known to be the best professional research company in Northern Cyprus. Training was given to the 12 interviewers who were to collect the data through face to face interviewing technique. The interviewers explained the voluntary nature of the survey and handed a short letter from the researchers whose affiliated university was clearly stated. The letter briefly stated the importance and value of their contribution to the study and included a phone number they would call to get answers to their questions or concerns about the study. Out of the 990 systematically selected people above the age of eighteen, 778 were visited in their homes or offices. Only 28 of the respondents requested telephone interview. The response rate was realized as 81.4%.

The second phase of the data collection was conducted by the researchers. Each respondent, who contributed to the first phase was reached again through telephone and was asked to rate the service quality dimensions, with respect to their importance to identify the weights assigned to each of the dimensions identified. Respondents who could not be reached were called many times. 37 of the respondents refused to participate the telephone interview and were visited in their homes. 806 people (57.6% women, 42.4%

men) contributed both of the studies. 5.6% of the respondents were in the 18-20 age brackets, 22% of them were between 21 - 30, 24.2% were between 31 - 40, 21% were between 41 - 50, 14.4% were between 51 - 60 and 12.7% were above 60 years old. While 64.9% of the respondents were married, 35.1 of them were single. 21.9% of the people interviewed were primary school graduates, 12.6% were secondary school graduates, 34% were high school graduates and 29.5% were holding a university or a higher degree. When the income distribution of the respondents was analyzed, it was seen that 9.5% of the respondents had income below the minimum wage (very low), 33.4% had low income," 34.6% had average income and 22.5% had high income.

Analysis

The first objective of the current study was to test the dimensionality of the SERVQUAL instrument in Northern Cyprus health care industry. To fulfil this objective, the SERVQUAL scale was factor analyzed by principal components method with varimax rotation. Items with factor loadings less than 0.40 were excluded from further analysis. Out of the 22 items in the SERVQUAL instrument, two items (responsiveness#4 and empathy#2) in the non-constrained factor solution were excluded. Cronbach Alpha coefficients of the factors extracted in the analysis were identified to test the reliability of the dimensions. After identifying the factors, to assess the service quality provided both in public and private hospitals the gap model proposed by Parasuraman et al. (1985) was used. The Gap Model positions the key concepts, strategies and decisions in a manner that begins with customer and builds the organisation's tasks around what is needed to close the gap between customer expectations and perceptions.

"Expectations are beliefs about service delivery that serve as standards or reference points against which performance is judged" (Zeithaml et al., 2008,55). On the other hand, perceptions have been described as an individual's opinion of experienced service (Teas, 1993). To determine the service quality gaps for the hospitals under consideration, the generally accepted formula (weighted perception-weighted expectation) was used. Gaps were calculated by multiplying the weight assigned to each dimension by expectation scores and the perception scores of each hospital.

$$Gap_i = (W_i * P_i) - (W_i * E_i)$$

Gap_i: Gap score of the ith service quality dimension
W_i: Weight assigned to the ith service quality dimension
P_i: Perception score of the ith service quality dimension
E_i: Expectation score of the ith service quality dimension

After determining the gap scores for each hospital on all dimensions, logistic regression analysis was conducted to identify the service quality dimensions that influence customer satisfaction by using the formula (Janssens et al., 2008, 185):

$$Z = B_0 + B_1 X_1 + B_2 X_2 + \ldots + B_n X_n$$

Where,
B_n: coefficient estimated on the basis of the data, making use of the maximum likelihood method
X_n: n^{th} independent variable

RESULTS

Three factors were extracted in the factor analysis using a standard eigenvalue of 1.0. These three factors explained 61.5% of the total variance, which exceeds the 60% threshold used in social sciences (Hair et al., 1995). The reliability coefficients exceeded the value of 0.70 for each factor. These values conform to the recommendations of Nunnally (1978). The factors, their reliability coefficients and the items loaded under each factor are presented in Table 1.

Factor 1: Thirteen items loaded under the first factor. All of the statements measuring reliability, responsiveness and assurance and one statement from tangibles (statement # 3 "Employees of excellent hospitals will have neat appealing.") loaded under this factor. Having this specific statement from tangibles is highly logical as receiving the health care service from neat appearing people increases the trust in the service patients receive. Thus this factor can be named as "Reliability-Confidence".

Factor 2: Factor two contains four empathy items retained. Thus the second factor can be named as "Empathy".

Factor 3: Three tangibles items which were about physical facilities, materials and equipment of the hospital loaded under this factor. Thus, factor three can be named as "Tangibles".

Results of the factor analysis revealed that the five factor structure of Parasuraman et al. (1988) for the SERVQUAL scale was not supported in the Northern Cyprus health care setting. However, two of the three factors extracted, namely, empathy and tangibles were found as two distinct factors similar to the study of Parasuraman et al. (1988).

After identifying the service quality dimensions (Phase I), weights assigned to each dimension were identified (Phase II). Results revealed that, reliability-confidence dimension were assigned the highest weight (3.16 out of 5). Empathy was identified as the second (2.85 out of 5) and tangibles was the third (2.67 out of 5) important service quality dimension. Next, weighted gap scores of the hospitals were calculated (Table 2). While negative values in the gap scores signify insufficiency in offering what is expected, positive values are indications of offering beyond what was expected from the organization. The gap scores show that in all three dimensions, perceived service falls behind the expectations, meaning that both public and private hospitals fail to offer the expected service quality. When the gap values of public and private hospitals were compared, it was clearly seen that private hospitals had smaller gap values than the public hospitals, meaning that they are much more successful than their counterparts.

After identifying the gap scores for the hospitals, logistic regression was conducted to identify the service quality dimensions that play an important role in predicting customer satisfaction. The analysis was conducted separately for public and private hospitals.

After eliminating the influential outliers, the suitability of

Table 1. Factors extracted.

Factor 1: Reliability/Confidence (α = 0.933)	Factor loading
R4: Excellent hospitals will provide a service at the time they promise to do so.	0.744
R5: Excellent hospitals will insist on error free records.	0.711
R1: Excellent hospitals will tell patients exactly when services will be performed.	0.706
R2: When patient has a problem, excellent hospitals will show a sincere interest in solving them.	0.697
R3: Excellent hospitals will provide service right at the first time.	0.694
T3: Employees of excellent hospitals will have neat appearing.	0.632
Res 2: Employees of an excellent hospital will give prompt service to patients.	0.632
Res 3: Employees of an excellent hospital will always be willing to help patients.	0.631
Res 1: Employees of an excellent hospital will tell patients exactly when services will be performed.	0.625
A2: Patients of excellent hospitals will feel safe in their transactions.	0.612
A1: The behaviour of employees in excellent hospitals will insist of confidence in hospitals	0.611
A3: Patients of excellent hospitals will be consistently courteous with people.	0.571
A4: Employees of excellent hospitals will have knowledge to answer patients' questions.	0.431
Factor 2: Empathy (α = 0.837)	
E5: Employees of excellent hospitals will understand the specific needs of their patients	0.782
E4: Excellent hospitals will have their patient's best interests at heart.	0.771
E3: Excellent hospitals will have employees who give patients personal attention.	0.756
E1: Excellent hospitals will give patients individual attention.	0.579
Factor 3: Tangibles (α=0.732)	
T1: Excellent hospitals will have modern looking equipment.	0.835
T2: The physical facilities at the excellent hospitals will be visually appealing.	0.816
T4: Materials associated with the service will be usually appealing at the excellent hospitals.	0.539

R: Reliabiliy, Res: Responsiveness, A: Assurance, E: Empathy, T: Tangibles.

"Negelkerke R square" and "R square adjusted count".

Findings for public hospitals

The "Model Chi-square" shows the difference between the "- 2LL" of the null model and the full model (Janssens et al., 2008, 200). Findings show that, the transition from the null model to the full model is accompanied by a significant drop in the "-2LL" of 109.109. Thus for the null model the "-2LL" value is 325.493 (109.109 + 216.384). This indicates that (1) full model is a better predictor; (2) at least one of the regression coefficients of the variables entering the model differs from zero. Considering that Nagelkerke R Square value falls within a range "0" to "1", the value of 0.438 indicates that this model is a good quality model.

Overall, 84.0% of the people were correctly classified. However, this "Overall Percentage Correct", which is also referred to as R^2_{Count}, can be misleading. Thus, it is appropriate to use $R^2_{Adjusted\ Count}$ which corrects R^2_{Count}

with the largest row total. The full model, in comparison with the null model, reduces the prediction error by 3.3%.

According to Table 3, while reliability-confidence and empathy dimensions exert influence on customer satisfaction ($p \leq 0.0001$), tangibles dimension does not seem to influence customer satisfaction ($p \geq 0.05$). Thus the full model for public hospitals is found as:

Z = (-2.445) + (0.492*Reliability-Confidence) + (0.147*Empathy)

Findings for private hospitals

Findings show that, the transition from the null model to the full model is accompanied by a significant drop in the "-2LL" of 53.281. Thus for the null model the "-2LL" value is 89.516 (53.281 + 36.235). Considering that Nagelkerke R Square value falls within a range "0" to "1", the value of 0.651 indicates that this model is a good quality model.

Table 2. Gap scores of the hospitals.

	Weights assigned	Weighted expectation scores (Excellent hospitals)	Weighted perception scores (Public hospitals)	Gap scores (Public hospitals)*	Weighted perception scores (Private hospitals)	Gap scores (Private hospitals)*
Reliability -Confidence	3.16	14.83	9.44	-5.39	13.62	-1.21
Empathy	2.85	12.07	7.34	-4.73	11.30	-0.77
Tangibles	2.67	11.54	7.54	-4.00	11.18	-0.36

*Negative values in the table indicate insufficiency in offering the expected service.

Table 3. Variables in the equation (Public hospitals).

	β	Standard error	df	p
Reliability -confidence	0.492	0.084	1	0.000
Empathy	0.147	0.053	1	0.005
Tangibles	-0.022	0.036	1	0.550
Constant	-2.445	0.492	1	0.000

Table 4. Variables in the equation (Private hospitals).

	β	Standard error	df	P
Reliability - Confidence	0.872	0.256	1	0.001
Empathy	0.276	0.093	1	0.003
Tangibles	0.242	0.092	1	0.008
Constant	-19.053	3.670	1	0.001

Overall, 94.7% of the people were correctly classified, which is a high score. $R^2_{Adjusted\ Count}$, which corrects R^2_{Count} with the largest row total, shows that the full model, in comparison with the null model, reduces the prediction error by 16.7%. According to Table 4, all of the service quality dimensions exert influence on customer satisfaction. Thus the full model for private hospitals is

found as:

$$Z= (-12.432) + (0.872*Reliability-Confidence) + (0.276*Empathy) + (0.242*Tangibles)$$

DISCUSSION

The first objective of this study was to test the dimensionality of SERVQUAL in the Northern Cyprus health care setting. Results of the factor analysis revealed that reliability-confidence, empathy and tangibles are the three dimensions of service quality. Thus the five dimensions proposed by Parasuraman et al. (1988) were not confirmed. Since the sample of the study was representative of the population, these three factors can be used in further studies on health care service quality measurement in Northern Cyprus.

The second objective of the study was to assess the service quality offered in public and private hospitals. Gap scores showed that in all three dimensions, perceived service falls behind the expectations, meaning that both public and private hospitals fail to offer the expected service quality. Findings have some important implications, especially for public hospitals, as the gap scores are much bigger in all dimensions when compared to private hospitals. The largest

gap in public hospitals exists in reliability-confidence dimension which constitutes from reliability, responsiveness and assurance issues. Public hospitals perform poor on the empathy dimension, which is about understanding the specific needs of patients and giving individual attention. Finally, the huge gap in the tangibles dimension indicates that the equipment does not look modern and the physical facilities are not visually appealing. The huge gaps imply mismanagement in public hospitals. The non-profit nature of the public hospitals might be one of the causes of this problem. Since these hospitals are funded by the government, there is never a profit concern. Probably the first action might be to reorganize the management structure of the public hospitals so that health professionals manage the "curing" aspect, while the professional managers handle the "caring" aspect of the service provided. Yet, it is highly advised that the two management units should compliment each other rather than conflicting against each other to offer better health care service to the society. Private hospitals, on the other hand, are perceived as much better service providers than public hospitals, but still they have gaps in all service quality dimensions. The small gaps can be explained by the incentive structure. Unlike public hospitals which have no profit concerns, inefficient use of resources and lack of performance

management, private hospitals are profit organizations which have to raise their own funds, use their resources efficiently as they are not guaranteed by the taxpayer. Besides, private hospitals compete among each other and with the hospitals in the region. In spite of the level of satisfaction provided in private hospitals, there is still room for improvement. Managers of the private hospitals must consider their hospital's performance, understand their strengths and weaknesses and develop strategies to improve their service quality. They should also monitor their competitors' moves not to fall back from competition. Finally, the private hospitals must continuously improve their caring and curing quality so that their customers are not acquired by the hospitals in the region.

Varinli and Cakir (2004) in their study on a private hospital found that while patient satisfaction affected willingness to recommend, price together with patient satisfaction influenced intention to visit the hospital again. Fisk et al (1990), Varinli and Cakir (2004), Zerenler and Ogut (2007) and Demirel et al. (2009) found that recommendations of others was one of the most important factors affecting where to get the health care service from. Thus, it is critical for private hospitals to offer high quality service at the right price to maximize patient satisfaction so that they become loyal and recommend the hospital to others.

The third objective of the study was to identify the dimensions that exert influence on patient satisfaction. Logistic regression analysis has shown that reliability-confidence dimension is significantly effective on satisfaction both in public and private hospitals. This finding indicates that an improvement made on the reliability dimension leads to a significant progress in the service quality, and affects customer satisfaction. Thus, if hospitals are interested in having satisfied customers, they should concentrate on issues like error free records, informing the patients about the exact time of service provision and providing the service at the promised time, showing sincere interest and willingness in understanding and solving the problems of the patients and being courteous. Being empathetic seems to exert influence on customer satisfaction both in public and private hospitals. Although the intensity of its influence is less than reliability-confidence, an improvement will certainly contribute to satisfaction. The only difference in the regression equations of the two types of hospitals is at the tangibles dimension. While tangibles dimension seem to have no significant effect on customer satisfaction in the public hospitals, it is almost equally influential with empathy in the private hospitals context. Receiving free healthcare service from public hospitals might be the reason behind this. People do expect modern looking equipment and visually appealing physical facilities from excellent hospitals, but when public hospitals are considered, these issues do not contribute to their satisfaction level. However, when private hospitals are considered, since people pay for the service they receive,

they probably believe that performing well at tangibles is a prerequisite. Thus, they attach a significant importance to the tangibles dimension. This does not necessarily mean that public hospitals should not allocate resources on the modernization of the equipment and improvement of the visual appeal of the physical facilities. Especially in health care, modernization of the medical equipment is vital. Managers and policy makers should recognize that, enhancement of tangibles is a must, but people do not take tangibles as a reference for satisfaction in public hospitals.

RECOMMENDATIONS FOR FUTURE STUDIES

There are three important recommendations for future research. First, the SERVQUAL scale should be tested on other industries and in different parts of the world. Second, both for public and private hospitals further investigation should be made to find out the underlying causes of the gaps identified within the organizations and suggest solutions to managers to close the gaps and provide high quality service to their customers. Finally, more comprehensive suggestions can be made if price and behavioral intentions are included in the future studies.

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