Private healthcare quality: applying a SERVQUAL model

Mohsin Muhammad Butt and Ernest Cyril de Run

Faculty of Economics and Business, Universiti Malaysia, Sarawak, Malaysia

Abstract

Purpose – This paper seeks to develop and test the SERVQUAL model scale for measuring Malaysian private health service quality.

Design/methodology/approach – The study consists of 340 randomly selected participants visiting a private healthcare facility during a three-month data collection period. Data were analyzed using means, correlations, principal component and confirmatory factor analysis to establish the modified SERVQUAL scale's reliability, underlying dimensionality and convergent, discriminant validity.

Findings – Results indicate a moderate negative quality gap for overall Malaysian private healthcare service quality. Results also indicate a moderate negative quality gap on each service quality scale dimension. However, scale development analysis yielded excellent results, which can be used in wider healthcare policy and practice.

Research limitations/implications – Respondents were skewed towards a younger population, causing concern that the results might not represent all Malaysian age groups.

Originality/value – The study's major contribution is that it offers a way to assess private healthcare service quality. Second, it successfully develops a scale that can be used to measure health service quality in Malaysian contexts.

Keywords SERVQUAL, Health services sector, Malaysia

Paper type Research paper

Introduction

Malaysia is a multiethnic society with more than 24 million people including Malays, Chinese, Indians and numerous indigenous communities living side-by-side (Anonymous, 2006). Despite the country's astonishing economic growth in the last two decades, the Malaysian healthcare sector is still developing. Currently 117 public and 224 private hospitals operate (Elaine, 2003). The Malaysian government spends around 3 per cent of its Gross Domestic Product (GDP) on healthcare, considerably lower than other developing countries in the region. Although the Malaysian government continuously allocates funds to improve its public healthcare infrastructure, others allege that government officials indirectly encouraged the private sector by allocating insufficient funds for the public sector healthcare (Ramesh and Wu, 2008). In comparison to neighboring countries such as Thailand, with highly state funded public health sector, the Malaysian government has managed to maintain a balance between private and public healthcare. Malaysia has achieved this balance mainly through gradually reducing public hospital funds, while avoiding any political backlash (Ramesh and Wu, 2008). This has resulted into significant private healthcare provider growth particularly in urban areas.

Today, private healthcare plays a significant role in Malaysian overall healthcare sector growth. This is also evident by recent growth projections – that Malaysian

private health carers will be responsible for half its needs by 2020 (Ramesh and Wu, 2008). These trends indicate that a highly competitive healthcare industry is emerging in Malaysia, where private healthcare will face competition from existing public healthcare facilities and the growing private enterprise. Traditionally, private healthcare providers are perceived to provide healthcare more efficiently and robustly (Bhatta, 2001).

The difference between private and public sector organization is well documented in the literature (Zeppou and Sotirakou, 2003). These differences are largely environmental – the situation in which these organizations operate. The private sector is considered more efficient compared to public sector owing to different incentives, market orientation and a decentralized business model (Bhatta, 2001). These fundamental differences provide strategic advantages leading to private sector growth and profitability. Nevertheless, these advantages are costly. The biggest is raising customer expectation regarding service quality (SQ) provided by private healthcare institutions. The only way private healthcare providers can manage and exceed these expectations is by continuously measuring customer expectations and perception. This allows a service provider to better align itself, to ever demanding customers, without losing them. This requires a robust and reliable instrument that captures service quality expectations and perceptions from a customer's perspective.

Customer perception

Customers' quality perceptions have an undisputed effect on selecting healthcare providers. Customers are concerned about healthcare providers' ability to cure their diseases, while upholding their best interest at a lowest possible cost (Ramsaran-Fowdar, 2005). Researchers argue that private healthcare sector growth is the direct consequences of customer's negative perception about the quality offered by public healthcare institutions (Lafond, 1995). Therefore, it is important for private healthcare providers to understand how the country's general population perceives health service quality. A satisfied customer will more likely to continue to use the service, spread positive views that help healthcare providers get new customers without additional cost such as advertising (Zeithaml and Bitner, 2000). Therefore, it is important for healthcare providers to continuously monitor and measure customer service expectations (SEREXP) and perceptions (SERPER).

In a highly competitive market, such as healthcare, delivering services that satisfy customer needs is an important customer satisfaction antecedent and a vital strategy for retaining them (Cronin and Taylor, 1992; Parasuraman *et al.*, 1991b). Moreover, healthcare is unique because customers lack ability to properly gauge clinical service quality technical aspects such as surgeon's skills, or general practitioner's diagnostic abilities (Bakar *et al.*, 2008). Traditionally, heath service quality is measured in more technical terms that customers may not understand, making it difficult for them to properly respond. For example a customer is not qualified to judge that the test suggested by a doctor to diagnose a disease was appropriate and conducted properly. Nevertheless, customers are considered adequately qualified to measure functional quality such as the lab technician's personal hygiene – the person who carries out those tests – and lab cleanliness. Research affirms that customers are better able to assess functional than technical quality (Bakar *et al.*, 2008; Devebakan and Aksarayli, 2003).

Marketing
Marketers advocate a functional approach when it comes to measuring service quality. Their focus on customer perception rather than technical service delivery is largely owing to significant differences in process through which a customer normally analyzes and perceives service quality compared to an expert, such as professional auditor. This makes it inappropriate to use technical measures for gauging customer perceptions (Donabedian, 1980). Customer satisfaction and service quality research is dominated by SERVQUAL, which suggests that service quality is fundamentally a gap between customer expectations regarding a service provider's general class and their estimation of its actual performance (Cronin and Taylor, 1992; Parasuraman *et al.*, 1991a).

The SERVQUAL approach is considered a major departure from the traditional way of using perception-based measure as a customer satisfaction predictor. Instead of using perception, SERVQUAL suggest using expectation/perception – the service quality gap – as an enduring perception that predicts customer satisfaction with a service provider (Babakus and Mangold, 1992; Parasuraman *et al.*, 1991a). The relationship between service quality and customer satisfaction is somewhat reciprocal. Previous research on the relationship can be divided into two schools: one argues a satisfied customer with good perceptions about service quality, thus considering customer satisfaction as an service quality antecedent (Bolton and Drew, 1991); while the second suggest that service quality leads to customer satisfaction, considering service quality as a customer satisfaction antecedent (Antreas and Opoulos, 2003; Cronin and Taylor, 1992; Spreng and MacKoy, 1996). Nevertheless, both schools agree there is a strong correlation between customer satisfaction and service quality.

Generally, SERVQUAL is considered to be a robust scale for measuring service quality across service sectors. To measure a particular industry's service quality, one should carefully evaluate and modify the scale items to cater for the industry specific needs (Ramsaran-Fowdar, 2005). Healthcare service quality research, using the SERVQUAL model, brings mixed results. Few have found SERVQUAL a reliable instrument, while others suggest there are certain healthcare service dimensions that are not captured by the original SERVQUAL scale (Babakus and Mangold, 1992; Bowers *et al.*, 1994). Therefore, it is important to tailor the SERVQUAL scale to a sector's specific needs, culture or nation. Although the scale has been modified and tested in several healthcare environments, most research was conducted in developed western societies, leaving gaps about developing societies. The purpose of our research, therefore, is to test and report SERVQUAL scale results in developing nation's private healthcare sector.

Literature review
Service quality and SERVQUAL
Understanding service quality is indispensable for service providers aspiring to attract and retain customers. Crosby (1979) defined quality as zero defects, Juran (1980), measured it as conformance to requirement and others measured quality by counting internal and external failures (Garvin, 1983). However these definitions tend to be better interpreted in manufacturing sectors. Quality of goods, measured objectively by indicators such as durability, defects, reliability, etc. is difficult to replicate in service environments (Parasuraman *et al.*, 1988). In the service industry, quality definitions

tend to focus on meeting customer requirements and how well service providers meet their expectations (Lewis and Booms, 1983, pp. 99-107), usually by an encounter between customer and service contact person. Service quality is defined as "a global judgment or attitude relating to the overall excellence or superiority of the service" (Parasuraman *et al.*, 1988, p. 16). One common way is to conceptualize service quality as a customer's overall service quality evaluation is by applying a disconfirmation model – the gap between service expectations and performance (Cronin and Taylor, 1992; Parasuraman *et al.*, 1991b; Potter *et al.*, 1994).

The SERVQUAL developers initially identified ten service quality dimensions, which they collapsed into five: reliability (RABE); assurance (ASSE); tangibility (TANE); empathy (EMTE); and responsiveness (RESE) (Buttle, 1996; Parasuraman *et al.*, 1988). However, one can argue that these dimensions can be grouped into two: core services; and augmented services that help deliver core services smoothly and encourage recovery (McDougall and Levesque, 1994). Others are unconvinced that a straightforward SERVQUAL adaptation is appropriate (Carman, 1990). The SERVQUAL model's fundamental criticism is adapting its expectation – disconfirmation model rather than simply measuring attitudes (Cronin and Taylor, 1992). Critics argue that a performance-based measure is more appropriate for measuring service quality because it is purely a consumer attitude (Sureshchandar *et al.*, 2001). The service's intangible nature has also forced many researchers to discard expectation when measuring service quality. They conclude that service performance is the key customer satisfaction antecedent (Patterson *et al.*, 1997; Sharma and Ojha, 2004). However, despite criticism in the service quality literature, SERVQUAL remains a preferred model for measuring service quality across different sectors. It is a generic instrument for measuring service quality. It begins with an assumption that service quality is the difference between overall sector service expectations (E) and perception of a particular service provider in that particular sector (P), (Curry and Sinclair, 2002; Zeithaml *et al.*, 1993). Service quality and customer satisfaction study results show that SERVQUAL is an effective service quality measure (Cronin and Taylor, 1992; Zeithaml *et al.*, 1993). According to SERVQUAL developers, service quality should be measured by subtracting customer perception from expectation scores ($Q = P\text{-}E$). Positive scores signify higher service quality and vice-versa (Parasuraman *et al.*, 1985). Consequently, as a diagnostic tool, SERVQUAL helps providers identify their strengths and weaknesses. However, SERVQUAL proponents strongly recommend tailoring and modifying the scale for a particular sector or culture (Parasuraman *et al.*, 1991a).

Previous research exploring customer satisfaction, with hospital service determinants, resulted in a five-dimension model: communication; cost; facility; competence; and demeanor (Andaleed, 1998). Others identified: security; performance; aesthetics; convenience; economy and reliability as SERVQUAL dimensions (Raduan *et al.*, 2004). On the other hand, Bowers *et al.* (1994) consider that caring and patient outcome are two dimensions that were not captured by the original SERVQUAL scale. They suggest that caring involves human interaction during healthcare, while patient outcome reflects relief from pain and suffering following treatment. Others consider SERVQUAL inappropriate for measuring healthcare quality. They argue that measuring the services' functional dimensions does not capture healthcare service's technical nature (Haywood-Farmer and Stuart, 1988). These mixed results indicate that healthcare quality is far from being resolved.

Method

The SERVQUAL scale was developed to offer a generic tool for measuring service quality. SERVQUAL is primarily concerned with measuring service quality's functional dimensions. Despite being a generic scale, it requires modification to address a particular sector's needs. Consequently, in line with past research recommendations, we prepared an initial questionnaire based on published research. We improved it by consulting experts such as local healthcare professionals and academics (Andaleed, 1998; Babakus and Mangold, 1992). The modified questionnaire measured respondents' agreement on five-service quality dimensions: reliability, responsiveness; assurance empathy; and tangibles from a customer expectation and perception perspective. In total, 17 items were selected to capture these five service quality dimensions (Babakus and Mangold, 1992; Wisniewski and Wisniewski, 2005). One section measured customer expectations and the other customer perceptions (see Table I). This simultaneous expectation and perception measurement is consistent with past research (Parasuraman *et al.*, 1988). We used a seven-point Likert-scale, from 1 (strongly disagree) to 7 (strongly agree). The questionnaire also included questions regarding respondent demographics. Questionnaires were distributed to those visiting Malaysian private doctors or hospitals in the preceding three-months. A total of 400 questionnaires were distributed to eligible respondents, of these, 340 were usable for further analysis. Non-response and missing answers accounted for the rest. Data were analyzed using the Statistical Package of Social Sciences (SPSS) version 15 and AMOS version 7 for calculating means, correlation and conducting exploratory and confirmatory factor analysis.

Variable	Perception		Expectation		Gap
	Mean	SD	Mean	SD	
Overall	5.69	0.8445	5.20	0.9545	− 0.49
Tangible	5.79	0.8029	5.31	0.9558	− 0.48
Have up to date facilities	5.72	0.9055	5.30	1.011	− 0.42
Its physical environment is appealing	5.76	0.8710	5.27	1.001	− 0.49
Have modern-looking equipment	5.82	0.9121	5.23	1.062	− 0.49
Reliability	5.72	0.8056	5.14	0.9808	− 0.58
Provides its service at the time it promises to do so	5.85	0.8868	5.24	1.082	− 0.61
When it promises to do something by a certain time, it does so	5.79	0.9025	5.32	1.082	− 0.47
Performs the service right the first time	5.89	0.8625	5.25	1.151	− 0.64
Consistent in its performance	5.88	0.8678	5.29	1.091	− 0.59
Responsiveness	5.60	0.8811	5.04	0.9701	− 0.56
The personnel give me prompt service	5.78	0.9197	5.22	1.090	− 0.56
The personnel are never too busy to respond to my request	5.70	0.9700	5.26	1.087	− 0.44
The personnel are always willing to provide service	5.85	0.9794	5.12	1.095	− 0.73
The personnel are always ready to provide service	5.65	0.9397	5.23	1.113	− 0.42
Assurance	5.74	0.9222	5.28	1.061	− 0.46
I feel safe in my visits there	5.80	0.8434	5.27	1.054	− 0.53
Have knowledgeable employees to answer my questions	5.73	0.9115	5.30	1.050	− 0.43
The actions of its personnel instil confidence in me	5.69	1.025	5.29	1.079	− 0.40
Empathy	5.71	1.001	5.23	1.036	− 0.48
Have my best interests at heart	5.72	1.027	5.23	1.043	− 0.49
The personnel understand my specific needs	5.71	0.9766	5.22	1.028	− 0.49
The personnel give me special attention	5.70	1.007	5.25	1.049	− 0.45

Table I.
Expectation, perception
and mean gaps

Exploratory factor analysis (EFA) (a glossary can be found in the Appendix) was conducted using principal component extraction method with Varimax rotation. Three separate exploratory factor analyses were conducted on expectation, perception and their combined items. To further validate exploratory factor analysis, data were subjected to confirmatory factor analysis (CFA) using AMOS version 7.0. The model was assessed using multiple fit measures such as: chi-square; Goodness of Fit Index (GFI); Normal Fit Index (NFI), and Root Mean Square Error of Approximation (RMSEA). This GFI omnibus is used to demonstrate how data fitted the model. This battery included absolute fit measure like the chi-square statistic, which demonstrates that predicted and actual matrices differences are non significant for a model to be acceptable. Owing to test sensitivity to deducting minute differences, especially for large sample size, other GFIs are used. The GFI is a commonly used absolute fit indices. A result 0.9 or above indicates acceptable model fit (Meyers *et al.*, 2006). The second category, RMSEA, is the average of the residual between the observed correlation/covariance from the sample and the expected model estimation of the population (Byrne, 2001). The other fit indices include relative fit measures like CFI and NFI. These are measures of fit relative to the independent model (Meyers *et al.*, 2006). A researcher needs to use omnibuses of fit to deduce how well data suit the proposed model.

Data analysis and results
Data were analyzed in line with scale validity and reliability literature (Churchill, 1979). Coefficient alphas were used to measure: internal reliability for each expectation and perception subscale (for example, empathy); and overall expectation and perception scales (see Table II). Content validity was assessment using exploratory and confirmatory factor analysis. Reliability analysis determines data trustworthiness obtained from questionnaires and is depicted in Table II. Results are strong overall. Table I shows item means, dimension and overall expectation and perception scale. It also provides the mean gap score for each item, standard deviation scale dimension and overall scale for expectation and perception.

The respondent profile is presented in Table III. Malaysian health service user expectation and perception analysis depicts a moderate gap between customer expectation and perception regarding actual service delivery (see Table I). The overall mean gap reflects a moderate negative score (0.49), representing an unenthusiastic assessment of private healthcare service quality. All five SERVQUAL dimensions and their respective items also yield negative gap scores.

Separate exploratory factor analysis using principal component extraction with Varimax rotation was conducted for SERVQUAL expectation and perception items. Finally a third exploratory factor analysis was conducted using all expectation and

Dimension	Items	Expectation	Perception
Tangibles	3	0.817	0.863
Reliability	4	0.854	0.873
Responsiveness	4	0.854	0.881
Assurance	3	0.833	0.851
Empathy	3	0.861	0.863
Combined scale	17	0.951	0.961

Table II.
SERVQUAL attribute
internal reliability

Table III.
Respondents' profile

Variable	Frequency	(%)
Gender		
Male	162	47.6
Female	178	52.4
Age		
20 or below	44	12.9
21-25	119	35.0
26-30	73	21.5
31-35	44	13.5
36-40	18	5.3
41-45	26	6.5
46-50	13	3.8
51-55	4	1.2
56-60	1	0.4
Highest level of education		
No formal education	0	0.0
Primary school	34	10.0
Secondary school	152	44.7
Diploma	90	26.5
Degree	55	16.2
Postgraduate degrees	4	1.2
Professional	5	1.5

perception items. This was done to assure that expectation and perception scale items are two separate service quality constructs. The Kaiser Meyer Olkin (KMO) expectation scale sampling adequacy measure was 0.943, indicating that present data were suitable for principal component analysis (Hair *et al.*, 2007; Meyers *et al.*, 2006). Similarly, Bartlett's test = 4015.8 was significant ($p = 0.0001$), indicating sufficient correlation between items to proceed with analysis (Meyers *et al.*, 2006). Using the Kaiser Guttman retention criterion for eigenvalues greater than 1, a single factor solution was obtained. The single factor account for 56.43 per cent of the variance extracted, all items were heavily loaded on the first factor (see Table IV).

The perception scale KMO was 0.957 indicating sampling adequacy for the scale, Bartlett's test = 4669.48 was also significant ($p = 0.0001$) confirming significant correlation between scale items and variance. The single factor accounts for 61.65 of the variance extracted; all items were heavily loaded on the first factor (see Table V).

The third factor analysis was conducted on combined expectation and perception items. The KMO for the combined scale was 0.956, indicating the data's suitability for principal component analysis. Bartlett's test $= 9010.07, p = 0.0001$ was significant indicating inter-item correlation. In line with established retention criteria of eigenvalues greater than 1, a two factor solution was obtained, accounting for 59.26 per cent of the total variance (see Table VI). All expectation and perception scale items heavily loaded on their appropriate factor. These results indicate that Malaysian private healthcare quality is a two-dimension construct.

Perception and expectation scale exploratory factor analysis did not indicate the five-dimension model proposed by Parasuraman *et al.* (1988). In their revised service quality model, they suggest that service quality can be measured using its five

SERVQUAL attributes	Expectation
Have up-to-date facilities	0.679
Its physical environment is appealing	0.724
Have modern-looking equipment	0.702
Provides its service at the time it promises to do so	0.732
When it promises to do something by a certain time, it does so	0.749
Performs the service right the first time	0.743
Consistent in its performance	0.758
The personnel give me prompt service	0.736
The personnel are never too busy to respond to my request	0.803
The personnel are always willing to provide service	0.748
The personnel are always ready to provide service	0.774
I feel safe in my visits there	0.764
Have knowledgeable employees to answer my questions	0.782
The actions of its personnel instil confidence in me	0.786
Have my best interests at heart	0.752
The personnel understand my specific needs	0.783
The personnel give me special attention	0.744
Initial eigenvalues	9.59
Per cent variance	56.43

Table IV.
Principal component
factor analysis for
healthcare service
expectation

SERVQUAL attributes	Expectation
Have up-to-date facilities	0.765
Its physical environment is appealing	0.764
Have modern-looking equipment	0.782
Provides its service at the time it promises to do so	0.759
When it promises to do something by a certain time, it does so	0.791
Performs the service right the first time	0.754
Consistent in its performance	0.832
The personnel give me prompt service	0.783
The personnel are never too busy to respond to my request	0.787
The personnel are always willing to provide service	0.801
The personnel are always ready to provide service	0.823
I feel safe in my visits there	0.817
Have knowledgeable employees to answer my questions	0.792
The actions of its personnel instil confidence in me	0.797
Have my best interests at heart	0.746
The personnel understand my specific needs	0.767
The personnel give me special attention	0.784
Initial eigenvalues	10.48
Per cent variance	61.65

Table V.
Principal component
factor analysis for
healthcare service
perception

dimension (for example tangibility (TANE), empathy, etc.) as reflective indicators. They recommend that five new observed variables should be created as a composite from each subscale as an indicator variable, which can be used to test the single factor service quality perception and expectation model (Parasuraman *et al.*, 1988). Although initial exploratory factor analysis results, did not indicate five dimensions, this could be due to the service dimensions' highly correlated nature, also experienced in other

SERVQUAL attributes	Expectation	Perception
Have up to date facilities	0.747	0.675
Its physical environment is appealing	0.755	0.698
Have modern-looking equipment	0.770	0.690
Provides its service at the time it promises to do so	0.743	0.728
When it promises to do something by a certain time, it does so	0.748	0.736
Performs the service right the first time	0.727	0.732
Consistent in its performance	0.774	0.715
The personnel give me prompt service	0.751	0.722
The personnel are never too busy to respond to my request	0.747	0.789
The personnel are always willing to provide service	0.787	0.713
The personnel are always ready to provide service	0.812	0.717
I feel safe in my visits there	0.790	0.692
Have knowledgeable employees to answer my questions	0.758	0.730
The actions of its personnel instil confidence in me	0.735	0.740
Have my best interests at heart	0.663	0.682
The personnel understand my specific needs	0.679	0.727
The personnel give me special attention	0.726	0.670
Initial eigenvalues	15.55	4.59
Per cent variance	45.74	13.52
Cumulative per cent	45.74	59.26

Table VI.
Principal component
factor analysis on
healthcare perception and
expectation

service quality research (Babakus and Mangold, 1992). Therefore, we proceed with creating a composite variable based on a priori dimensions. This method was recommended in the past literature particularly where the objective was to reduce the model complexities (Bagozzi, 1981; Joachimsthaler and Lastovicka, 1984; Babakus and Mangold, 1992). To address scale convergent and discriminant validity criteria and also to test SERVQUAL's theoretical structure, data were subjected to confirmatory factor analysis using these new reflective indicators.

In line with past research, five expectation and perception dimensions were used as reflective indicators (Babakus and Mangold, 1992; Parasuraman et al., 1988). Each reflective indicator variable was computed as a composite score obtained from its respective subscale. Reflective indicators suggest that the change in these measured indictors is caused by the underlying latent construct. Therefore, the conformity model points from latent to observed variables (Jarvis et al., 2003). New correlation matrices were created based on these reflective indicators. Results indicate that within-construct correlations were consistently higher than between-construct correlations, thus meeting convergence and discrimination measurement scale criteria (Bagozzi, 1981) (see Tables VII-IX). Before running the confirmatory factor analysis, perception and expectation indicators were subject to principal component analysis using Varimax rotation to ensure that these reflective variables indicate a two-factor service quality model. Analysis resulted into a two-factor model with all items heavily loading on their respective expectation and perception dimensions (see Table X). The KMO was 0.915, Bartlett's test = 2255.47 was significant ($p = 0.000$) and the total explained variance was 73.27 per cent (see Table X).

The first-order confirmatory analysis was carried out using statistical software package AMOS 7.0. The model examines how well service perception and expectation indicator variables fit the data. The model was assessed using maximum likelihood

procedure and evaluated using chi-square, GFI, CFI and REMSA. The first order model retains all its original variables (see Table XI and Figure 1). Chi-square was significant = 55.78, df34, $p < 0.05$. Other indices also indicate that both CFI (0.99) and NFI (0.976) are excellent fits (Hu and Bentler, 1999). Mean Square Error of Approximation measures the discrepancy between sample and population coefficients; values closer to

	E1	E2	E3	E4	E5
Tangible (E1)	1				
Reliability (E2)	0.600*	1			
Responsiveness (E3)	0.609*	0.720*	1		
Assurance (E4)	0.596*	0.672*	0.716*	1	
Empathy (E5)	0.579*	0.617*	0.646*	0.672*	1

Note: *Correlation is significant at the 0.01 level (two-tailed)

Table VII.
Correlation matrix: composite service quality indicators formed from expectation dimensions for ($n = 340$)

	P1	P2	P3	P4	P5
Tangible (P1)	1				
Reliability (P2)	0.721*	1			
Responsiveness (P3)	0.668*	0.753*	1		
Assurance (P4)	0.654*	0.685*	0.748*	1	
Empathy (P5)	0.624*	0.649*	0.668*	0.681*	1

Note: *Correlation is significant at the 0.01 level (two-tailed)

Table VIII.
Correlation matrix: composite service quality indicators formed from perception dimensions ($n = 340$)

	Tangible (E1)	Reliability (E2)	Responsiveness (E3)	Assurance (E4)	Empathy (E5)
Tangible (P1)	0.326*	0.367*	0.373*	0.331*	0.321*
Reliability (P2)	0.354*	0.464*	0.405*	0.409*	0.376*
Responsiveness (P3)	0.323*	0.403*	0.374*	0.383*	0.324*
Assurance (P4)	0.317*	0.390*	0.361*	0.364*	0.326*
Empathy (P5)	0.355*	0.407*	0.390*	0.415*	0.437*

Note: *Correlation is significant at the 0.01 level (two-tailed)

Table IX.
Correlation matrix: composite service quality indicators formed from perception and expectations dimensions ($n = 340$)

SERVQUAL attributes	Expectation	Perception
Responsiveness	0.868	0.846
Assurance	0.852	0.838
Reliability	0.842	0.809
Tangible	0.826	0.808
Empathy	0.781	0.774
Initial eigenvalues	5.52	1.80
Per cent variance	55.23	18.03
Cumulative per cent	55.23	73.27

Table X.
Principal component factor analysis on healthcare expectations and perception indicators

Model fit indices	Chi square	df	p	CMIN/df	GFI	AGFI	CFI	NFI	RMSEA
First order CFA	55.783	34	0.011	1.641	0.969	0.949	0.990	0.976	.043
Second order CFA	55.783	34	0.011	1.641	0.968 (RFI)	0.990 (IFI)	0.990	0.976	.043

Notes: * CMIN/df – minimum discrepancy divided by its degrees of freedom with an acceptable ratio of 2 to 1 to as high as 5; GFI – Goodness of Fit Index, between 0 and 1, where 1 indicates a perfect fit; RFI – Relative Fit Index, where values close to 1 indicate a very good fit; IFI – Incremental Fit Index, where values close to 1 indicate a very good fit; AGFI – Adjusted Goodness of Fit Index, bounded above by 1, not bounded below by 0, where 1 indicates a perfect fit; CFI – Comparative Fit Index, where values close to 1 indicate a very good fit; RMSEA – Root Mean Square Error of Approximation, where a value of 0.05 indicates a close fit
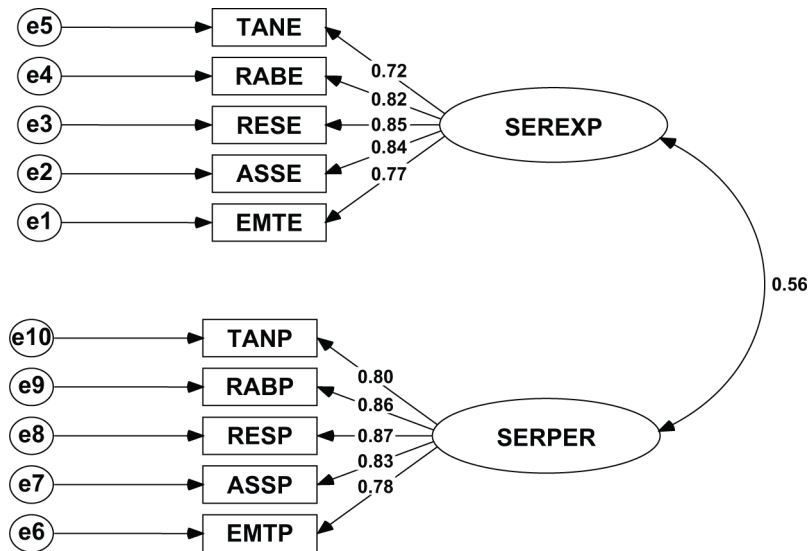
Table XI.
Malaysian healthcare
quality

Figure 1.
First order confirmatory
factor model for healthcare
quality

zero indicating a well-fitting model. The RMSEA was 0.043, indicating an excellent fit (Hu and Bentler, 1999).

Finally, the representation was tested for second order confirmatory analysis to demonstrate that service quality is a two-factor model (service expectation and perception). This was important to achieve a valid model as well as theoretical support (see Figure 2). To resolve the identification problem at the second order CFA, error terms SEREXP and SERPER were equally constrained. Chi-square was significant $= 55.78$, df $= 34$, $p < 0.05$. Other indices also indicate that both CFI (0.990) and NFI (0.976) are an excellent fit (Hu and Bentler, 1999). The RMSEA was 0.043, indicating an excellent fit (Hu and Bentler, 1999).

Conclusions
Our study aimed to test SERVQUAL in a Malaysian private healthcare context. The modified scale proves to be a robust and reliable instrument that can be used to resolve quality gaps in Malaysian healthcare. We used SERVQUAL as a diagnostic tool for
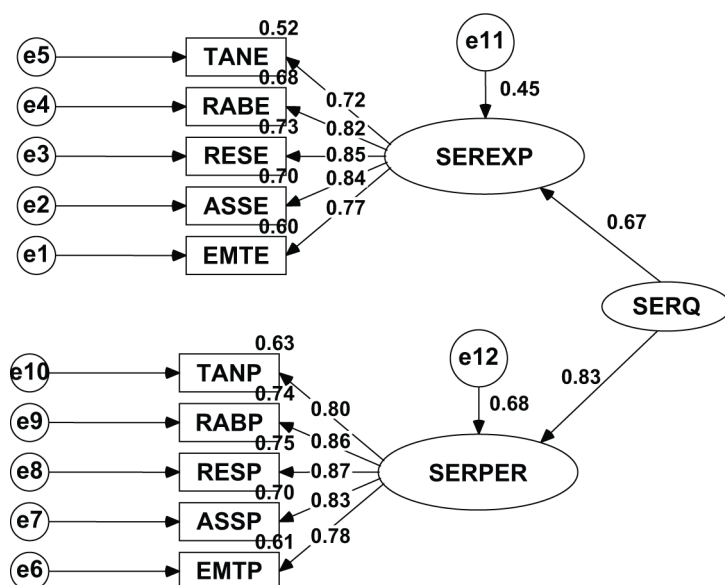
organizations striving for continuous improvement. Changing demographics, preferences and competition require continuous customer expectation and perception monitoring and measurement so that long-term business survival can be assured. Apart from individual and organizational perspective, a quality conscious healthcare industry can directly benefit overall society. A better healthcare system can lower mortality, diminish illness severity, reduce in-patient stays and increase life expectancy. Thus, SERVQUAL helps when limited organizational resources are available and allows managers to focus on areas where a maximized return is possible. The SERVQUAL approach clearly indicates the areas (by estimating quality gaps) where service staff are performing well below customer expectations. Any attempt by organizations to close these gaps is bound to increase the service quality perception that would ultimately lead to higher customer satisfaction. For example, a negative responsiveness score indicates that more efficient workforce management might be required to improve overall response time. Similarly, a negative tangibility score indicates that a service provider needs significant infrastructure improvement.

The study's limitations need to be acknowledged. Respondents' ages were skewed towards younger generations; people least expected to visit medical facilities. This means that a more stratified sample might generate results that could be applicable to all demographic groups in Malaysia. Also, future studies can incorporate behavioral intention measures to study service quality effects on purchaser objectives, word of mouth, etc. It can also broaden its scope by directly measuring satisfaction and its relation to service expectation and perception.

Discussion
Understanding service user encounters from a consumer's perspective is highly relevant in healthcare. Providers can establish a partnership rather than a paternalistic approach

to their customers if expectation and perception differences are made clearer and addressed properly (Crosby, 1979). Quality healthcare is imperative for individuals, organization and overall society. It is also essential for the organization staff providing these services. Failing to meet or exceed customers' quality needs is not an option for any organization, but particularly in a healthcare provider's case this could only lead to a disaster. Therefore, developing a measure that systematically gauges health service quality could significantly contribute towards service improvement. An instrument that can measure customer expectation and perception helps to: identify opportunities; and improve overall as well as specific service quality. Thus, SERVQUAL measures global as well as individual service quality dimensions in a given setting thereby allowing service providers to systematically analyze service delivery processes and enable them to allocate resources where maximum benefit can be achieved. Nevertheless, this does not mean that service providers can ignore those dimensions that reflect lesser quality gaps.

Our study indicates that SERVQUAL is a robust instrument for measuring Malaysian healthcare service providers. The scale's expectation and perception dimensions emerged as a uni-dimensional construct showing high reliability and validity. Therefore, the scale is an excellent tool for objectively measuring health service expectation and perception. Our results also revealed that healthcare perception and expectation indicators are highly correlated on their respective dimensions. Therefore, failing to meet any single indictor could lead to an overall negative perception towards the service provider. Existing research provides an excellent tool for private healthcare practitioners to start addressing quality issues by measuring service quality gaps and taking corrective actions on a regular basis.

Our results indicate that Malaysian patient healthcare service expectations surpass their perception of actual healthcare delivery. The gaps are modest in terms of each service dimension and for the complete scale; nevertheless all are in negative territory indicating a serious problem. The negative gap on individual items, subscale and overall scale suggest an urgent need to address these quality gaps. Service reliability and responsiveness received the highest negative scores, which indicates that healthcare providers, are mistrusted, by their customers. Service users reported that they did not receive services on time and doubted that they will receive the right service first time. Responsiveness negative scores indicate that easy-going attitudes among Malaysians are no more acceptable in healthcare service (Asma and Lrong, 2001; Asma and Pedersen, 2003). This is understandable as customers normally come to a hospital feeling stressed and delays responding to their problem could aggravate suffering. To be competitive in an ever-increasing private healthcare industry, Malaysian private hospital staff, need to emphasize employee training that reduces response times and institute genuine urgency when dealing with customers.

References

Andaleed, S.S. (1998), "Determinants of customer satisfaction with hospital: a managerial model", *International Journal of Health Care Quality Assurance*, Vol. 11 No. 6, pp. 181-7.

Anonymous (2006), "Malaysia People-2006", available at www.theodora.com/wfbcurrent/malaysia/malaysiapeople.html (accessed 24 September 2007).

Antreas, D.A. and Opoulos, A.I. (2003), "Modeling customer satisfaction in telecommunication: assessing the multiple transaction points on perceived overall performance of the provider", *Production and Operation Management*, Vol. 12 No. 2, pp. 224-45.

Asma, A. and Lrong, L. (2001), "Cultural dimensions of Anglos, Australians and Malaysians", *Malaysian Management Review*, Vol. 36 No. 2, pp. 1-17.

Asma, A. and Pedersen, P.B. (2003), *Understanding Multicultural Malaysia; Delights, Puzzles and Irritations*, Prentice-Hall, Selangor.

Babakus, E. and Mangold, W.G. (1992), "Adapting the SERVQUAL scale to hospital services: an empirical investigation", *Health Services Research*, Vol. 26 No. 6, pp. 767-88.

Bagozzi, R.P. (1981), "Evaluating structural equation models with unobservable variables and measurement error: a comment", *Journal of Marketing Research*, Vol. 18, pp. 375-81.

Bakar, C., Akgün, S. and Al Assaf, A.F. (2008), "The role of expectations in patients' hospital assessments: a Turkish university hospital example", *International Journal of Health Care Quality Assurance*, Vol. 21 No. 5, pp. 503-16.

Bhatta, G. (2001), "Corporate governance and public management in post-crises Asia", *Asian Journal of Public Administration*, Vol. 23 No. 1, pp. 1-32.

Bolton, R.N. and Drew, J.H. (1991), "A longitudinal analysis of the impact of service changes on consumer attitude", *Journal of Marketing*, Vol. 55 No. 1, pp. 1-10.

Bowers, M.R., Swan, J.E. and Koehler, W.F. (1994), "What attributes determine quality and satisfaction with healthcare delivery?", *Healthcare Management Review*, Vol. 19 No. 4, pp. 49-55.

Buttle, F. (1996), "SERVQUAL: a review critique research agenda", *European Journal of Marketing*, Vol. 30 No. 1, pp. 8-32.

Byrne, B.M. (2001), *Structural Equation Modeling with Amos. Basic Concepts, Applications and Programming*, Lawrence Erlbaum, Mahwah, NJ.

Carman, J.M. (1990), "Consumer perceptions of service quality: an assessment of the SERVQUAL dimensions", *Journal of Retailing*, Vol. 66 No. 1, pp. 33-55.

Churchill, G.A. Jr (1979), "A paradigm for developing better measures of marketing constructs", *Journal of Marketing Research*, Vol. 16 No. 1, p. 64.

Cronin, J. and Taylor, A. (1992), "Measuring service quality: a re-examination and extension", *Journal of Marketing*, Vol. 56, pp. 55-68.

Crosby, P. (1979), *Quality Is Free*, McGraw-Hill, New York, NY.

Curry, A. and Sinclair, E. (2002), "Assessing the quality of physiotherapy services using SERVQUAL", *International Journal of Health Care Quality Assurance*, Vol. 15 No. 5, pp. 179-205.

Devebakan, N. and Aksarayli, M. (2003), "The usage of SERVQUAL scores for the measurement of quality of perceived service in health facilities and implementation of private Altinordu hospital", *Journal of Institute of Social Sciences*, Vol. 5 No. 1, pp. 38-53.

Donabedian, A. (1980), *Explorations in Quality Assessment and Monitoring: The Definition of Quality and Approaches to its Assessment, Vol. 1*, Health Administration Press, Ann Arbor, MI.

Elaine, Y. (2003), "Tapping into the healthcare services sector of Malaysia", available at: www. ambcwa.org/articles/ArticleHealth Care services.pdf (accessed 20 September 2007).

Garvin, D. (1983), "Quality on the line", *Harvard Business Review*, Vol. 61, pp. 65-73.

Hair, J.F. Jr, Anderson, R.E., Tatham, R.L. and Black, W.C. (2007), *Multivariate Data Analysis*, 6th ed., Prentice-Hall International, Upper Saddle River, NJ.

Haywood-Farmer, J. and Stuart, F. (1988), "Measuring the quality of professional services: the management of service operations", *Proceedings of the 3rd Annual International*

Conference of the UK Operations Management Association, London, University of Warwick, Warwick.

Hu, L. and Bentler, P.M. (1999), "Cut of criteria for fit indices in covariance structure analysis: conventional criteria versus new alternatives", *Structural Equation Modeling*, Vol. 6, pp. 1-55.

Jarvis, B.C., Mackenzie, B.S. and Podsakoff, M.P. (2003), "A critical review of construct indicators and measurement model misspecification in marketing and consumer research", *Journal of Consumer Research*, Vol. 30, pp. 198-218.

Joachimsthaler, E.A. and Lastovicka, J.L. (1984), "Optimal stimulation level exploratory behavior models", *Journal of Consumer Research*, Vol. 11, pp. 830-5.

Juran, J.M. (1980), *Quality Planning and Analysis: From Product Development through Use*, McGraw-Hill, New York, NY.

Lafond, A.K. (1995), "Improving the quality of investment in health: lessons on sustainability", *Health Policy and Planning*, Vol. 10, pp. 63-76.

Lewis, R.C. and Booms, B.H. (1983), "The marketing aspects of service quality", in Berry, L.L., Shostack, G.L. and Upah, G. (Eds), *Emerging Perspectives in Services Marketing*, American Marketing Association, Chicago, IL.

McDougall, G. and Levesque, T. (1994), "A revised review of service quality dimension: an empirical investigation", *Journal of Professional Service Marketing*, Vol. 11 No. 1, pp. 189-210.

Meyers, L.S., Gamst, G. and Guarino, A.J. (2006), *Applied Multivariate Research: Design and Interpretation*, Sage Publications, Thousand Oaks, CA.

Parasuraman, A., Zeithaml, V.A. and Berry, L.L. (1985), "A conceptual model of service quality and its implications for future research", *Journal of Marketing*, Vol. 49, pp. 41-50.

Parasuraman, A., Zeithaml, V.A. and Berry, L.L. (1988), "SERVQUAL: a multiple item scale for measuring consumer perceptions of service quality", *Journal of Retailing*, Vol. 64 No. 1, pp. 12-40.

Parasuraman, A., Zeithaml, V.A. and Berry, L.L. (1991a), "Refinement and reassessment of the SERVQUAL scale", *Journal of Retailing*, Vol. 67 No. 4, pp. 420-50.

Parasuraman, A., Zeithaml, V. and Berry, L.L. (1991b), "Understanding customer expectations of service", *Sloan Management Review*, Vol. 32 No. 3, pp. 39-48.

Patterson, P.G., Johnson, L.W. and Spreng, R.A. (1997), "Modeling the determinants of customer satisfaction for business-to-business professional services", *Journal of the Academy of Marketing Science*, Vol. 25 No. 1, pp. 4-17.

Potter, C., Morgan, P. and Thompson, A. (1994), "Continuous quality improvement in an acute hospital: a report of an action research project in three hospital departments", *International Journal of Health Care Quality Assurance*, Vol. 7 No. 1, pp. 4-29.

Raduan, C.R., Uli, J., Mohani, A. and Kim, L.N. (2004), "Hospital service quality: a managerial challenge", *International Journal of Health Care Quality Assurance*, Vol. 17 No. 3, pp. 146-59.

Ramesh, M. and Wu, X. (2008), "Realigning public and private healthcare in southeast Asia", *The Pacific Review*, Vol. 21 No. 2, pp. 171-87.

Ramsaran-Fowdar, R.R. (2005), "Identifying healthcare quality attributes", *Journal of Health and Human Service Administration*, Vol. 27 No. 4, Spring, pp. 428-43.

Sharma, N. and Ojha, S. (2004), "Measuring service performance in mobile communications", *The Service Industries Journal*, Vol. 24 No. 6, pp. 109-28.

Spreng, R.A. and MacKoy, R.D. (1996), "An empirical examination of a model of perceived service quality and satisfaction", *Journal of Retailing*, Vol. 72 No. 2, pp. 201-14.

Sureshchandar, G.S., Rajendran, C. and Kamalanabhan, T.J. (2001), "Customer perceptions of service quality: a critique", *Total Quality Management*, Vol. 12 No. 1, pp. 111-24.

Wisniewski, M. and Wisniewski, H. (2005), "Measuring service quality in a hospital colposcopy clinic", *International Journal of Health Care Quality Assurance*, Vol. 18 No. 3, pp. 217-28.

Zeithaml, V.A. and Bitner, M.J. (2000), *Services Marketing: Integrating Customer Focus across the Firm*, McGraw-Hill, Boston, MA.

Zeithaml, V.A., Berry, L.L. and Parasuraman, A. (1993), "The nature and determinants of customer expectation of service", *Journal of the Academy of Marketing Science*, Vol. 21 No. 1, pp. 1-12.

Zeppou, M. and Sotirakou, T. (2003), "The STAIR model: a comprehensive approach for managing and measuring government performance in the postmodern era", *International Journal of Public Sector Management*, Vol. 16, pp. 320-2.

Further reading

Fei, Y. (1988), "Advantages and disadvantages of privatization of village clinics", *Chinese Rural Health Administration*, Vol. 5, pp. 39-40 (in Chinese).

Meng, Q.Y. and Liu, X.Z. (1994), "History and trends of developing private health sector in China", *Chinese Health Service Management*, Vol. 3, pp. 32-5.

Appendix. Glossary

EFA	Exploratory factor analysis
CFA	Confirmatory factor analysis
TANE	Tangibility
RABE	Reliability
RESE	Responsiveness
ASSE	Assurance
EMTE	Empathy
SEREXP	Service expectation
SERPER	Service perception
SQ	Service quality
e1-e11	Error term

Corresponding author
Mohsin Muhammad Butt can be contacted at: mohsinbutt@hotmail.com