Research Article

The Effect of Total Quality Management, Perceived Service Quality and Expectation on Customer Satisfaction

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Abstract

Objects: Total Quality Management (TQM), Perceived Service Quality (PSQ), and expectations are key factors that improve Customer Satisfaction (CS). This study investigates an integrated model that includes total quality management, perceived service quality, and expectations related to consumer satisfaction.

Methods: A survey was conducted at the highest Hospital, Vietnam, in April 2018. A self-administered questionnaire was delivered to respondents. A confirmatory factor analysis was used to test the structural equation modelling of the proposed hypotheses.

Findings: The study's hypotheses are supported. Total quality management, perceived service quality, and expectations directly influence customer satisfaction.

Originality: These findings reveal that TQM plays a mediator role in the PE and PSQ, PSQ is a mediating factor in the relationship between TQM and PS.

Practice Implications: Our study has implications for managers and policymakers when considering factors' effects on satisfaction, including total quality management, perceived service quality, and expectations in strategic planning, and aims to improve customer satisfaction.

Keywords: Total quality management, Perceived, Expectation, Satisfaction

Introduction

Perceived Service Quality (PSQ) plays a key role in determining consumer satisfaction levels. Therefore, evaluating the satisfaction level through the customer's lens improves service quality. This study aims to examine the influence of factors on satisfaction, including Total Quality Management (TQM), PSQ, and expectations of customer satisfaction. The TQM factor focuses on process quality, interaction quality, and environmental quality. PSQ and expectation factors consider the tangibility, reliability, and responsiveness of aspects of service quality. Finally, the satisfaction factor measures the service quality of the service provider.

Recent findings show that PSQ positively influences consumer satisfaction with the service organization [1]. The relationship between these two factors in service has attracted the attention of researchers [2,3]. These studies have investigated the quality of service using the Service Quality (SERVQUAL) model, which is a widely used scale to measure different quality dimensions [4]. Other researchers have examined the relationship between PSQ and customers' behavioural intentions in the context of the service industry, showing that PSQ significantly affects consumers' behavioural intentions [5,6]. Consumers' behavioural intentions can be determined by their PSQ [5]. Therefore, evaluation of customer satisfaction is a useful tool for measuring the quality of services from a user's perspective [7]. In the healthcare sector, patient health is the primary outcome addressed by any health care organization. However, Patient Satisfaction (PS) is another important outcome,

as it can affect the extent to which patients adhere to their health care or service quality of the service providers.

Service quality is considered a success factor for organizations to differentiate themselves from competitors [8]. Studies have been conducted to determine the dimensions of service quality [9,10]. Service quality is a measure of how well a delivered service matches customer expectations [11]. Thus, customer satisfaction is especially important in the business industry as the ability of service providers to create a high degree of satisfaction based on service quality competition attracts users [8]. Researchers have found that customer satisfaction can lead to repurchase intention [1]. Health care is a growing sector that has received a lot of attention from practitioners worldwide for measuring and evaluating service quality in the health sector by the lens of the patient [12]. Patients are health care beneficiaries who are involved in their health decisions when selecting a health care organization [13]. The relationship between service quality and PS is considered a critical factor in service organizations [14]. Evaluating the satisfaction level of users who benefit from healthcare services is important to improve healthcare service quality [15]. PS is assessed as their satisfaction with aspects of healthcare quality, including tangibles, reliability, responsiveness, assurance, and empathy [3].

Customer satisfaction can be improved according to an evaluation process wherein customers compare their expectations with perceived quality [16]. Healthcare service providers will be able to turn patients into loyal customers by meeting their expectations [17]. Therefore, service quality is perceived as a key factor in satisfaction and patient loyalty. Our study focuses on the effect of TQM, PSQ, expectations, and satisfaction with the service quality of the provider, while most of the existing literature only considers perceived quality and satisfaction with service quality. The remainder of this paper proceeds as follows. The next section reviews the literature that has assessed the relationship between TQM, perceived quality, expectations, and satisfaction. The following section describes the methodology employed in the analysis. The results are presented and discussed. Finally, the paper concludes with remarks for both academics and practitioners and includes the limitations and possibilities for future research.

Literature Review

The authors present a literature review related to the scope of this study. The purpose of this study is to examine factors affecting customer satisfaction, including TQM, PSQ, and Patient Expectation (PE) of PS.

Total Quality Management

Healthcare is a sector of the public services market, which is increasing competition and significant changes [8]. In a highly competitive market, TQM is a leadership tool that focuses on customer satisfaction [18]. Therefore, service firms create a strong relationship with customers, which could be followed by their loyalty, building a sustainable competitive advantage [8]. PSQ is a core factor related to satisfaction and customer loyalty [19]. The aspects

of service quality were assessed through the PSQ by the customer of tangibility, reliability, responsiveness, assurance, and empathy [20]. Customer satisfaction with the components of service is a tool useful to improve the service quality of the service company [21]. Service organizations fulfil customers' expectations and perceived quality, and various parts of service can improve customer satisfaction [11], building for repurchase intention [17]. Providers should consider improving service quality to develop and maintain customer satisfaction and loyalty [22]. The key factors of TQM include process quality, interaction quality, environment quality, and cost [23]. Our study only focuses on process, interaction, and environmental quality as appropriate factors of the research hospital, Vietnam, and indicators for the sample size of the SEM.

Patient Expectation

Expectations are frequently used as a standard of service against which customer satisfaction [24]. Customer expectations and perceived quality were measured with respect to various dimensions of service quality, including tangibility, reliability, responsiveness, assurance, and empathy [25]. Therefore, expectations are closely related to PSQ [26]. They are predictive factors of satisfaction-predictive expectation is generally defined as consumer beliefs about the level of service that a specific service firm is likely to offer [16]. This expectation influences consumer satisfaction and loyalty [6]. Thus, service organizations improve satisfaction by fulfilling their expectations [11], thereby building customer loyalty [13].

Perceived Service Quality

PSQ is the process of the overall assessment of utilizing the service according to their perception of what is received from the service provider [27]. This process is measured considering various aspects of the service, including tangibility, reliability, responsiveness, empathy, and assurance [3]. It is measured to evaluate the service quality of the service firm by comparing the gap between expectations and perceptions of service quality Marion, et al., A close relationship between expectations and receiving has been established [16]. Perceived quality directly affects consumer satisfaction and behavioral intention [1].

Patient Satisfaction

High-quality service is the core factor of the service provider in competition in today's globalized world [8]. The measurement and evaluation of service processes focus on customer satisfaction [23]. Service quality is increased by assessing processes wherein customers compare their expectations with their perceptions of the quality of the service received [11]. Expectation and service quality are predictors of client satisfaction [16] and loyalty [17]. Customer satisfaction is directly related to behavioural intention or acts as a mediator between perceived quality and behavioral intention [5]. Therefore, customer satisfaction is a useful tool for measuring service quality in service organizations [18].

Research Hypotheses

TQM is a management tool that focuses on the customer to de-

velop service quality [18]. Service quality was measured based on the customer's perceived quality in terms of service quality [3]. Perceived quality is closely related to expectations and is a predictor of satisfaction [16] and loyalty [17]. Studies have supported consumers' expectations and perceived quality in situations where perceived quality falls short of expectations [28,7]. Service providers increase satisfaction by improving perceived quality and fulfilling customer expectations [16], thereby building loyalty [17]. Service quality competition is related to perceived quality and consumer satisfaction [8]. Therefore, based on these discussions, the study tests the following hypothesis.

H1: TQM has a positive relationship with PSQ: Customer satisfaction is a key metric of service quality [3]. Perceived quality and expectations are predictive factors for customer satisfaction [16]. Various aspects of TQM are related to customer satisfaction, including process, interaction, and environmental quality, as well as cost [23]. This process was measured through customers' comparison between expectations and their perceptions of the quality of the service received [28]. Expectations play a mediating role in perceived quality and customer satisfaction [11]. PSQ and expectations are key factors in determining customer satisfaction [16]. Against this background, the second hypothesis is proposed.

H2: TQM has a positive influence on PS: Measurement and evaluation of service quality from a consumer viewpoint into the gap between perceived quality and expectations [7]. Perceived quality and expectations are key factors in customer satisfaction [16]. Customer expectations are higher than the perceived quality [29]. Service organizations fulfil consumers' expectations to increase perceived quality related to satisfaction [11] and customer loyalty [17]. Thus, both PSQ and customer expectations are predictive elements of customer satisfaction [11]. Considering these findings, the third hypothesis is set as follows.

H3: PSQ is positively correlated to PS: Customer expectation is assessed based on the perception of communicative interaction and satisfaction related to the fulfilment of expectations [24]. Customer expectations and PSQ are predictive factors of satisfaction [6] and loyalty [17]. This proves that expectations are related to perceived quality with respect to various parts of services [25]. A gap exists between expectations and PSQ with respect to service quality [7]. The fulfilment of expectations focused on perceived quality [11]. In addition, the fulfilment of users' satisfaction and expectations significantly affects service outcomes [24]. Thus, the following hypothesis is proposed.

H4: PE has a positive influence on TQM: Expectations are related to consumer satisfaction [16] and loyalty [17]. There are significant correlations between customer expectations and PSQ [30]. Customer expectations and PSQ are shown to predict satisfaction [11]. This relationship is measured based on a comparison between customer expectations and perceived quality by the customer on service aspects, in which expectation is higher than perceived quality [31]. Therefore, service quality is improved based on the fulfilment of customer expectations that maintain user satisfaction meet

customer expectations and the perceived quality of service aspects [11]. Perceived quality is directly related to consumer satisfaction [1]; indirectly, loyalty through satisfaction plays a mediating role [17]. Accordingly, the fifth hypothesis of this study is as follows.

H5: PE is significantly related to PS.

Research Method

The study recruited assistant members who were trained for one day for the purpose of the study. The sample size required is 500 participants, based on the study of Wolf, et al., for structural equation modelling. Those who signed the participant information sheets and consent forms participated in the survey. Then, the research assistants confirmed that they completed as required after the participants had completed the questionnaire. The population of the study was randomly selected from 22% of the total 2,500 inpatients per day of 39 clinical departments that treated cancer specialist medical fields in the National Cancer Hospital, Viet Nam. Finally, 550 participants were recruited to this survey to compensate for incomplete questionnaires.

The data were collected using a self-administered questionnaire, including 49 questions with two main parts. First, regarding socio-demographic factors, six questions on age, sex, marital status, educational level, occupation, and method of paying hospital fees were included. Second, 43 questions refer to TQM factors, PSQ, PE, and PS. Of the 12 questions related to TQM factors, 4 relate to process quality (TQM1-TQM4); 5, interaction quality (TQM5-TQM9); and 3, environmental quality (TQM10-TQM12). These items were based on a prior study by Zarei, et al. (2015a, 2015b) that changed the fit for the research hospital context. Next, the PSQ factor was assessed through 14 questions, including 5 related to tangibility (PSQ13-PSQ17); 5, reliability (PSQ18-PSQ22); and 4, responsiveness (PSQ23-PSQ26). These items were based on previous research [4]. Similarly, the PE factor was constructed of 14 questions, including 5 related to tangibility (PE27-PE31); 5, reliability (PE32-PE36); and 4, responsiveness (PE37-PE40). Finally, the PS factor was assessed through three questions (PS41-PS43). A five-point Likert scale was used, ranging from 'very strongly agree' (5) to 'very strongly disagree' (1).

The data set was analyzed using the Statistical Package of Social Sciences (SPSS) software (version 25.0) for descriptive statistics of respondents' socio-demographic characteristics. Confirmatory factor analysis was used to support the issues of dimensionality and convergent and discriminant validity. Structural equation modelling was used to test the proposed hypotheses of the research model using AMOS 25.0.

Results and Discussion

Reliability Statistics

The Cronbach's alpha coefficient was used to evaluate the construct reliability and validity of the five-point Likert scale used in this study; it considers indicators consistently and stably reflecting a given construct. This analysis was performed using SPSS version

25.0 (Table 1). As shown in Table 1, Cronbach's alpha values range from 0.79 to 0.96 [cut-off=0.70], which proves that the scales were adequately internally consistent. Specifically, the Cronbach's alpha value of the TQM factor ranged from 0.82 to 0.90, PSQ was between 0.85 and 0.87, the PE was from 0.94 to 0.96, and PS was 0.79. Moreover, two items were omitted to ensure sufficient reliability of the scales for which of the 43 original items.

Table 1: Reliability statistics.

Constructs	Items	Cronbach's Alpha
Total Quality Management		
Process quality	4	0.896
Interaction quality	5	0.89
Environment quality	3	0.823
Perceived Service Quality		
Tangibility	5	0.873
Reliability	5	0.854
Responsiveness	4	0.845
Patient Expectation		
Tangibility	5	0.942
Reliability	3	0.955
Responsiveness	4	0.939
Patient Satisfaction	3	0.792

Confirmatory Factor Analysis

CFA was used for structural equation modelling, in which each variable was examined to assess the construct and correct assignment of variables [32]. The authors examined standardized regression weights, Composite Reliabilities (CR), and Average Variance Extracted (AVE) [32], as presented in (Table 2). Table 2 illustrates that the standardized coefficients were around between 0.63 and 0.93 [cut-off=0.5]. The AVE values ranged 0.51 and 0.71 [cut-off of 0.50], which indicated high discriminant validity [32], and a large part of the variances was supported by our findings. The CR values for factors ranged from 0.80 to 0.97 [cut-off=0.70], indicating adequate internal consistency. The findings show that our model is supported.

Model Goodness-of-Fit

The fit of the research model is categorized into three general groups: absolute, incremental, and parsimony fit measures, and basic elements underlying all the basis of goodness-of-fit measures. These are shown in Table 2. As shown in Table 2, the ratio of χ^2 to the degrees of freedom was 2.700 (P=0.000), and the fit indices used include [GFI]=0.834 [cut-off=0.80]; Normalized Fit Index [NFI]=0.896 [requirement=value of 0-1]; Root Mean Squared Error of Approximation [RMSEA]=0.057 [requirement=value from 0.05-0.08]; Comparative Fit Index [CFI]=0.932; Adjusted Goodness Of Fit Index [AGFI]=0.811 [cut-off=0.80]; and Tucker-Lewis Index [TLI]=0.926 [cut-off=0.9], [32-36]. Our research model was supported by reliability and validity requirements.

Table 2: Confirmatory factor analysis results and model goodness-of-fit.

Construct Measures	Standardized Coefficients	Average Variance Extracted (AVE)	Composite Reliability (CR)
Total Quality Management (TQM)		**0.601**	**0.943**
TQM1<---TQM	0.817		
TQM2<---TQM	0.735		
TQM3<---TQM	0.787		
TQM4<---TQM	0.826		
TQM5<---TQM	0.821		
TQM6<---TQM	0.794		
TQM7<---TQM	0.783		
TQM8<---TQM	0.794		
TQM9<---TQM	0.699		
TQM10<---TQM	0.748		

TQM12<---TQM	0.712		
Perceived Service Quality (PSQ)		**0.514**	**0.936**
PSQ13<---PSQ	0.63		
PSQ14<---PSQ	0.671		
PSQ15<---PSQ	0.713		
PSQ16<---PSQ	0.752		
PSQ17<---PSQ	0.687		
PSQ18<---PSQ	0.714		
PSQ19<---PSQ	0.745		
PSQ20<---PSQ	0.73		
PSQ21<---PSQ	0.745		
PSQ22<---PSQ	0.692		
PSQ23<---PSQ	0.787		
PSQ24<---PSQ	0.746		
PSQ25<---PSQ	0.744		
PSQ26<---PSQ	0.66		
Patient Expectation (PE)		**0.705**	**0.966**
PE27<---PE	0.701		
PE28<---PE	0.749		
PE29<---PE	0.774		
PE30<---PE	0.774		
PE31<---PE	0.802		
PE34<---PE	0.884		
PE35<---PE	0.914		
PE36<---PE	0.925		
PE37<---PE	0.867		
PE38<---PE	0.885		
PE39<---PE	0.881		
PE40<---PE	0.886		
Patient Satisfaction (PS)		**0.57**	**0.798**
PS41 <---PS	0.674		
PS42 <---PS	0.8		
PS43 <---PS	0.785		
Chi-square (CMIN/DF)=2.700; CMIN= 1949.306; DF= 722; P=0.000			
GFI=0.834; AGFI=0.811; CFI=0.932; TLI= 0.926; NFI= 0.896; RMSEA= 0.057			

Hypotheses Testing

The hypotheses of this study are shown by the path, the values of standardized coefficients, and significance (sig) in (Table 3). Hypothesis H1: TQM is related to PSQ, which is presented by the path coefficient (TQM--->PSQ) at a statistical significance of 0.905 (p=0.001). In this study, PSQ was assessed on aspects of service quality, such as tangibility, reliability, and responsiveness. This is consistent with previous research that has supported the idea that PSQ is measured from the customer's insight [7]. The development of quality has focused on improving perceived quality to ultimately increase customer satisfaction and customer loyalty [22]. Moreover, customer expectations are fulfilled by increasing perceived quality, which improves consumer satisfaction [11]. Insert Table 3 here Hypothesis H2: TQM on PS was supported by the coefficient of the path (TQM--->PS) at a statistical significance of 0.230 (p=0.045). This proves that TQM has a significant influence on PS, consistent with previous research by Lin, et al., that the improvement of service quality is a predicting factor in maintaining customer satisfaction and loyalty [20]. The measurement and evaluation of service quality focused on the perceived quality of parts of services [15]. Perceived quality is directly related to satisfaction [20] and directly related to loyalty [17] or indirectly related to loyalty through satisfaction plays a mediating role [20]. Perceived quality is closely related to expectations that are considered to predict satisfaction [11] and loyalty [17].

Table 3: Hypothesis test results.

Hypothesis	Path	Standardized Coefficients	Sig.	Results
H1	TQM--->PSQ	0.905	***	Accepted
H2	TQM--->PS	0.23	0.045	Accepted
H3	PSQ--->PS	0.486	***	Accepted
H4	PE--->TQM	0.454	***	Accepted
H5	PE--->PS	0.11	0.01	Accepted
Hypotheses were evaluated by standardized coefficients and path coefficients with significance (sig.) less than 0.05. *** represents sig.=0.001). TQM: total quality management, PSQ: perceived service quality, PE: patient expectation, and PS: patient satisfaction.				

Hypothesis H3: PSQ on PS was indicated by the path (PSQ--->PS) at a statistical significance of 0.486 (p=0.001), proving that PSQ has a positive influence on PS. This was also supported by Mosahab, et al., and Javed, et al., Providers should consider the aspects of perceived quality, including tangibility, reliability, and responsiveness, to increase customer satisfaction and loyalty [6]. Moreover, service providers should develop strategic plans to improve perceived quality by developing TQM to maintain customer satisfaction [23] and loyalty [17]. In addition, the fulfilment of client expectations focuses on perceived quality and contributes to increased satisfaction [11]. Hypothesis H4: PE on TQM was measured in terms of service quality, including tangibility, reliability, and responsiveness. It was presented by the path of PE→TQM at a standardized coefficient of 0.454 (p=0.001). Similarly, Ruiz-Moral, et al., showed the fulfilment of expectations related to healthcare outcomes. Increasing perceived quality reduces the gap between quality and expectations, thereby increasing consumer satisfaction [8]. This implies that the service provider may develop total service quality by meeting consumers' expectations that contribute to client satisfaction [10] and [17].

Hypothesis H5: PE was related to PS through the path (PE→PS), with a standardized coefficient of 0.110 at a p-value of 0.010. It was also supported by Almsalam, et al., who considered perceived quality and expectation as predictors of satisfaction [11]. Customer expectations are directly related to satisfaction [16] and directly related to loyalty [17] or indirectly via satisfaction plays a mediating role [20]. Moreover, perceived quality is closely related to the expectation that providers should be meeting expectations focuses on the perceived quality of the aspect of service quality, thereby increasing satisfaction [10] and building loyalty [17].

Implications for Practice

This study reveals that TQM, PSQ, and PE are directly related to satisfaction. The findings have implications for providers, managers, and policymakers to consider factors including TQM, PSQ, and PE in the goal of strategic planning when improving customer satisfaction. This improvement focuses on aspects of service quality, such as tangibility, reliability, and responsiveness, to increase consumer satisfaction.

Conclusion and Recommendation

This study investigated the influence of TQM, PSQ, and PE on PS.

A self-administered questionnaire was administered at a tertiary-level hospital in Vietnam in April 2018, with 516 documents that were analyzed. Confirmatory factor analysis was used for structural equation modelling to examine the hypotheses of the proposed hypotheses model. The hypotheses of this study are accepted. The findings showed that TQM, PSQ, and PE are related to PS, TQM on PSQ, and PE on TQM. Therefore, TQM, PSQ, and PE are key factors in improving customer satisfaction. Therefore, providers' satisfaction should focus on PSQ factors, including tangibility, reliability, responsiveness, and the TQM factor, which consists of process, interaction, and environmental quality. In addition, the study also adds knowledge of our understanding of how various factors pertaining to service quality affect client satisfaction. The study only focused on the impact of TQM, PSQ, and PE on satisfaction; it did not study its impact on loyalty. Therefore, future studies should focus on the impact of these factors on customer loyalty.

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Conflict of Interest

The authors declare that the study has no conflicts of interest.

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