Effects of total quality management practices on financial, operational performance of hospitals

Songul Zehir * and Cemal ZEHİR

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Article

Effects of Total Quality Management Practices on Financial, Operational Performance of Hospitals

Songul Zehir * and Cemal ZEHİR

[1] Affiliation 1; e-mail@e-mail.com
[2] Affiliation 2; e-mail@e-mail.com
* Correspondence: e-mail@e-mail.com; Tel.: (optional; include country code; if there are multiple corresponding authors, add author initials).

Abstract: The main aim of this study is to examine the effects of Total Quality Management (TQM) practices (leadership of management, decision making, continuous improvement, customer focus, employee involvement, process management and relations with suppliers) on the financial and operational performance of hospitals in service industry. The data of the study were collected by the questionnaire prepared in the light of published studies and the suggestions of medical and administrative staff. Medical and administrative staff were chosen as target participants that reflect perspectives of hospitals. 1069 questionnaires were answered in 6 private and 26 public hospitals in the Marmara region in Turkey. The results claim that "customer focus" affects both operational performance as well as the financial performance of hospitals more than other TQM practices. While "process management" and "customer focus" explain the variance of financial performance significantly. "Process management" does not explain variance of operational performance.

Keywords: total quality management; performance; hospitals; structural equation modelling

1. Introduction

There has been scant empirical research on the multidimensional perspective of TQM [1]. Success of total quality management practices are confirmed in the manufacturing industry. Commitment of top management, employee involvement, data driven performance, understanding variation, continuous improvement contribute to assure quality as a result of interdependent processes [2]. Despite these positive outcomes, implementation of these practices in the healthcare industry are hesitating. Lack of standard uniform product in healthcare, lack of an assembly line in healthcare, difference in cultural setting, difficulty of measuring or defining healthcare quality, belief that higher quality would lead to higher cost are some of the reasons of this hesitation [2].

On the other hand, it is rather difficult to have satisfied customers in hospitals. This is because evaluating the quality of health care services might be perceived as more complex and risky. Reasons of these difficulties to evaluate quality of healthcare services can be ordered as; firstly, the intangible nature of healthcare services make it difficult to determine customer expectations. Secondly, the skills and manners of employees who offer service to customers are evaluated as important criteria [3]. Thirdly, customers may not have technical expertise to assess the service quality in the hosptial. Some participants take into consideration the price of health services to evaluate quality. Some participants consider the level to which his or her health recovers [4]. Another evaluation criterion in the sight of customers is that a good doctor or nurse is expected to be competent, courteous, empathetic and expected to communicate and relate well to [5]. These service characteristics can be decisive among customers when they are choosing a healthcare [6]. As such, the involvement of many participants with different interests makes it difficult to define quality.

Although there are concerns about quality in the healthcare industry, increased importance of quality in the healtcare industry lead to occurence of various methods to assure quality in the hospitals. Quality in the healthcare industry is improved and audited with different methods like accredition, continuous professional development, clinical audit, peer reviews [7]. Providing service

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quality concluded with positive effects on patient satisfaction and productivity. Awareness of organizations regarding these positive outcomes make quality issues more attractive.

Although evaluating the quality of health care services might be perceived as more complex and risky, implementing TQM becomes indispensable for hospitals to have competitive advantage and satisfied customers. Creating new products/services and delivering them to customers, better and faster than any other competitors, at a lower cost and higher quality are the proofs of competitive advantage. Other factors such as controlling costs, improving productivity, structuring flexible human resources, applying new technologies, and maintaining continuous improvement protect the competitive situation of hospitals [8].

In addition to role of implementing TQM to have competitive advantage, competition among hospitals trigger to represent quality in their services. In the US, England and the Netherlands, there has been significant attention paid to the potential for hospital competition to drive increases in quality and efficiency. According to wider economic theory gives a clear response: under a fixed regime, competition will improve quality. Like to previous work from Kessler and Geppert [9], Cooper et al. [10] supported that to current efforts in England to increase the amount of publicly available information on quality and promote hospital competition.

The aim of this study is to examine the effects of TQM practices (management leadership, decision making, continuous improvement, customer focus, employee involvement, process management, and supplier relationships) on the financial, operational performance of hospitals. Also the effect of operational performance on financial performance is investigated. Hospitals are determined as a field to examine. Because, they have different systems than manufacturing industries. Even, they are diffeent than some of the other service industries like finance and education. Health care services consist of interconnected processes and these processes can be separated into distinct processes [2]. In addition, hospitals have more complex organizational culture dominated by physicians and professional power [11]. Implementation of TQM practices within these processes and complexity may represent different findings.

In addressing these objectives, we emphasized service quality and its importance for hospitals. Then, TQM practices and performance dimensions were discussed depending on a literature review. Second, a theoretical framework and hypotheses were proposed that enable us to determine the effects of TQM on hospitals. In the research methodology section, basic information related to sampling, data collection, and the measurement instrument were given. Analysis procedure started with exploratory factor analysis to reveal the items related with the variables. After testing the validity and reliability of the variables, confirmatory factor analysis was used to test the fitness of the model. Finally, conclusions and discussions were shared.

2. Materials and Methods

Literature review and hypotheses development

Forces such as upgrading standards of living and education, competitive pressures, medical advancements, alternative healthcare delivery mechanisms, changing cost structures, monitoring by public and private groups, increased information availability, and better informed customers make it necessary to reevaluate strategies for hospitals [12]. Additionally, strengthening positions of the customers, increasing awareness on patient safety put pressure on hospitals to improve the efficieny in line with cost effectiveness and quality of care [11]. While hospitals are attempting to be in more powerful position, they search for different processes. TQM practices with their positive effects on customer satisfaction and competitive advantage have potential to response their needs.

At the initial stage of applying industrial model of quality to health care, professionals and managers consider that the concept of quality management has been beneficial for manufacturing industry. They believed, that it may not be beneficial for the hospital context. In particular, “zero defects” and “statistical process control” techniques have been given as reasons of difficulties of using. Applicability of quality management in the hospitals is encouraged in different studies by emphasizing different alternatives to implement and evaluate quality. Tomes and Peng [5] stated that

patient satisfaction in addition to medical care and technical aspects should be added to define, implement and evalute quality. Rodger, Pendharkar and Paper [13] indicated measurements should include appropriateness, continuity, effectiveness, efficacy, efficiency, timeliness, availability, respect and caring, and safety. Nilsson, Johnson and Gustafsson [14] advocated that many services are individually intensive and they should be adaptable to very distinct needs.

Hospitals should be aware of the definition of the service quality firstly. Service quality is defined as the difference between customer expectations and customer perceptions [3,15,16]. Historically, the quality of a hospital defined in terms of the technical delivery of its care. Recently, however, patients' perceptions and expectations play an important role on the quality of hospitals [17,18]. Service quality of hospitals has been distinguished into two categories [16]: technical quality and functional quality. Technical quality relates to the clinical and operating skills of doctors', nurses' familiarity with drugs, and laboratory technicians' expertise. Functional quality is evaluated through which medical care is delivered such as the communication skills of the staff, the facilities, cleanliness, and the quality of food [3,6,16].

Indispensability of implementing TQM is studied in the literature by emphasizing its benefits. Douglas and Judge [19] confirmed that the greater degree of TQM practices, the greater probability of improving organizational performance. To measure and improve quality, some TQM practices are included in the literature. The decision regarding which management practices should be included for effective TQM implementation is a field of study. Wardhani et al. [11] examined 533 publication. Organizational culture, design, leadership for quality, physician involvement, quality structure and technical competence are indicated as supportive factors of TQM implementation in hospitals [11]. Sureshchander et al. [20] defined critical quality practices for service organizations as top management commitment, human resource management, technical system, information and analysis system, benchmarking, continuous improvement, customer focus, employee satisfaction, union intervention, social responsibility,service scapes, service culture. Yang [21] mentioned similar content that includes customer focus, continuous improvement, employees participation, teamwork, process focus, systemization, empowerment, leadership.

After we thoroughly reviewed the literature, the TQM practices included in our study are management leadership, employee involvement, decision making, supplier relationships, process management, customer focus, and continuous improvement based on the ISO 9001:2000 quality assurance system. Although not exhaustive, these factor areas have often been considered the critical factors of TQM [22–24]. Also, these practices have "synergistic" effect for successful TQM implementation [7] (p.544).

Research model firstly indicates these critical practices to conduct TQM successfully. And then, effects of these practices on operational performance and financial performance are investigated separately. Lastly, relationship between operational performance and financial performance is interrogated. Prior to explain hypotheses about these relationships, each of the TQM practices and their outcomes explained under this title.

Management leadership

Management leadership has an important role on implementation of TQM as stated by quality gurus [25,26]. Puffer and McCarthy [27] provided a framework for evaluating leadership in a TQM context and claimed that creating a vision and promoting change is an essential talent for top management to implement TQM successfully. For quality management, managers should put aside their traditional administrative status and become leaders who define goals and who direct the quality initiative in the right path [28].

Implementing TQM practices as strategy increases the role of leaders to execute these TQM strategies. Because leadership is related to quality planning, human resource management, learning and customer focus [29]. If managers want to manage these practices effectively, leadership is the primary key [30]. Leaders may influence the behavior of people to adopt new practices necessary for TQM. Motivated, persuaded employees by leaders are considerable in the service industry as in the hospitals. Service is executed by employees. Motivated, persuaded employees in hospitals with

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leadership skills of managers contributes to operational and financial performance. As stated by Mosadeghrad [7] leadership positively influence implementation of TQM practices successfully.

Decision making

Decision making is one of the major responsibilities of management and requires selecting from alternatives. Decision makers choose alternatives to realize organizational goals, strategic objectives, and adapt to the external environment. Service intangibility, however, makes it difficult to make decisions on how consumers perceive services and service quality. When a service provider knows how the consumer will evaluate the service, they will be able to suggest how to influence these evaluations in the desired direction [3]. Lee et al. [31] stated that the most important contributing factor for quality improvement in Korean hospitals is the use of scientific decision making procedures.

In TQM, the decision-making process does not belong simply to managers, but employees also play a role in this process. Participating in decision making can speed up the process, and this speed can affect different performance criteria in a positive way [32]. Operational and financial performance are some of them. Organizations face many managerial and adoption problems through TQM implementations. They should define their priorities to allocate their resources. Good decision making facilitates to solve problems, allocate resources and accomplish the goals [30]. Hospitals that race against time for the health of people, give importance to solve problems, choose the best. If they have well structured decision making processes, these processes contributes to execute different TQM practices within the organization.

Process management

Ittner and Larcker [33] (p.523) explained, "A process is a set of activities that, taken together, produce a result of value to a customer". A process thus leads to actions as a structure. And, this structure should produce value that improves efficiency and thus result in satisfied customers [14,34]. Process management is very important for quality management system. Because, building processes means that leaders, individuals and teams day by day try to practice the needed values and competencies based on the principle of continuous improvement and the company's mission, vision, goals and strategies [35].

Service process in the hospital context differs from manufacturing. However; this is because it includes complex and high-level interactive procedures, which are supervised by the customer. Employees, customers, and managers are part of this process. Thus, process orientations have a significant and direct impact on customers' satisfaction with services [14,36]. Well managed processes may conclude with high operational quality performance. Sustainability of the operational and quality performance also intensively depend on process management. Because process management provides structure to represent same quality service any time.

Continuous improvement

Quality assessment is a process that requires consideration and continuous attention [17]. Therefore, continuous improvement is one of the significant elements of quality management. It is defined by Daft [30] (p.49) as " the implementation of small incremental improvements in all areas of the organization on an ongoing basis". Continuous improvement mean never-ending attention to detail, which reduces the effort and time that it takes to conduct operations [34].

Organizations must update their quality processes based on technical and administrative activities. Hospitals that aim to have long term success in the health care sector, should adopt main philosophy of continuous improvement. Improving things a little bit at a time, all the time contributes to high performance success [30]. Undeniable importance of continuous improvement programs appeared on the better performance results [8,37].

Employee involvement

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Through the continuous improvement process, employees' acceptance of responsibility is another requirement [38,39]. Widening boundaries of authority for employees contributes to their acceptance of responsibility [39]. At that point top management's attempt to attract employees' attention to the philosophy of quality management is essential [40].

Involving the employees through the TQM implementation process is an indispensable necessity for organizations [41]. As emphasized in the cited studies, healthcare management should begin to improve service quality by involving and adapting their employees in any quality programs and strategies [4,5,36,38]. They have an important role in quality management success in service industry [7,42]. Management literature discusses that the behavioral traits of employees can play an important role in the success of total quality management (TQM). However, little empirical research exists in this regard [43]. Failure on employees involvement to quality pratices may conclude with failure on all TQM practices. Especially in the service industries, managing employees requires more care. Employees are the face of organizations that encounter the customer directly. If they do not feel that their organization gives value to their suggestions, knowledge and experiences, their intention to represent their full potential to implement TQM practices will decrease.

Relations with suppliers

Producing quality products depends on the timely delivery of quality materials and suppliers who are devoted to quality and continuous improvement. From the supplier's point of view, it is essential to meet the buyer's specifications and standards for quality [44–46].

Kannan and Tan [47] indicated that managing the supply chain effectively can drive the decline in lead times and material costs and increase improvements in product quality and responsiveness. Krause, Handfield and Scannell [48] posited that to have a source of competitive advantage, suppliers' performance must be managed and adapted to meet the buying firms' needs. Close relationships with suppliers must be facilitated to fulfill this process. This also increases the possibility that the provider and the supplier are working toward the same goal based on the principles of total quality management. Effective supplier management enhances the quality of purchased products, reduces the cost [7] and positively influences process management [49]. A hospital may use hundreds of suppliers to conduct the service. Cooperative relationships with suppliers leads to lower cost, higher quality and faster service in the healthcare industry. Benefits of close relationships with suppliers can be seen on the operational and financial performance of hospitals.

Customer focus

To run a business more efficiently, organizations should include customers in all improvement processes. This provides added value and enhances long-term customer relationships [50]. Zineldin [50] demonstrated that a company must create a triangular relationship among quality, customer relationship management, and customer loyalty for better position in a competitive marketplace. Samson and Terziovski [51] found that customer focus is one of the strongest antecedents of organizational performance.

Patients that acquire services from the hospital are customers. Wu and Chan [52] defended perceived service quality by customer has a major impact on the purchase decisions and sustainability of business operations. Factors such as minimal waiting time, flexible operating hours, staff availability, and cost effective treatment, however, do not automatically lead to satisfied patients. Dimensions of patient satisfaction also include reliability, responsiveness, assurance, empathy, and other tangibles that contribute to improve the quality of service [53].

Evaluating the quality of service and getting feedback from customers, however, are difficult in hospitals. Lack of mechanisms for measuring satisfaction and low levels of information from customers about healthcare services create a performance evaluation problem [38]. Defining necessities and expectations of customers, measuring their satisfaction, getting their feedback lead organizations to improve quality of services [7]. An effective customer database, for example, helps hospitals understand customer needs and demands and also differentiate it from competitors. When

hospitals develop solutions to find out what customers want and need, customer focus orientation may conclude with better financial performance.

Operational performance

Parkan and Wu [54] defined operational performance as a concept that defines how well a production unit uses its resources when converting them into output. To compare the relative operational performance of product unit may involve activities that have implications for consuming and generating resources. Organizations have operational goals in addition to their strategic goals like deliveries on time, fewer mistakes, less waiting time [30]. TQM practices enable to reach operational goals and increase operational performance. Samson and Terziovski [51] (p.393) explained "the categories of leadership, customer focus and management of people were the strongest significant predictors of operational performance".

This study supposes that TQM practices affect the operational performance positively. Leadership, decision making, process management, continuous improvement, employee involvement, supplier relations, and customer focus create potential for well production unit based on organizational resources. This is because TQM practices create value, time-based competition, quality, and low prices, all of which are required for competition. Factors such as fewer mistakes, fewer delays, and less rework, increase productivity. Preventing the cost of fatal mistakes will also create competitive advantage, especially in hospitals [49,55]. With these assumptions, the following hypothesis is proposed:

H_1: There is a positive relationship between "TQM practices (management leadership, decision making, process management, continuous improvement, employee involvement, relations with suppliers, customer focus)" and "operational performance"in hospitals of service industry

Financial performance

Organizations define goals to accomplish mission and create optimal value. One of these goals are related to financial performance. High revenues in existing and new markets, high productivity and efficiency are indicators of financial performance [30].

Although some organizations have cancelled TQM practices because of their negative impact on profits [56], TQM practices have potential to increase financial performance. Customer satisfaction has been shown to lead to positive financial performance [38,57–59]. Satisfied customers will contribute to profitability through increased spending and word of mouth communication [15,60,61]. Likewise, customer dissatisfaction leads to consumer complaints and negative word of mouth. These behaviors reduce business volume within the organization [15].

On the other hand, operationally well worked hospitals contributes to customer satisfaction with fewer mistakes, less waiting time, less rework. Improvements on operational performance of hospitals show its benefit on customer satisfaction. To be preferred hospital by customers creates improvement on financial performance.

In line with the aim of this study, TQM principles such as low costs, high quality, speedy service, and customer satisfaction, however, absolutely influence financial performance. In this context, we propose the following hypotheses:

H_2: There is a positive relationship between "TQM practices (management leadership, decision making, process management, continuous improvement, employee involvement, relations with suppliers, customer focus)" and "financial performance" in hospitals of service industry

H_3: There is a positive relationship between "operational performance" and "financial performance" in hospitals of service industry

3. Results

Research methodology

This section provides an overview of the research model, measurement instruments, sampling process, collecting data and analyzing.

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The nature of the research

Research model of this study examines the effects of TQM practices (management leadership, decision making, process management, continuous improvement, employee involvement, supplier relations, and customer focus) on operational performance and financial performance of hospitals as illustrated in (Figure 1).

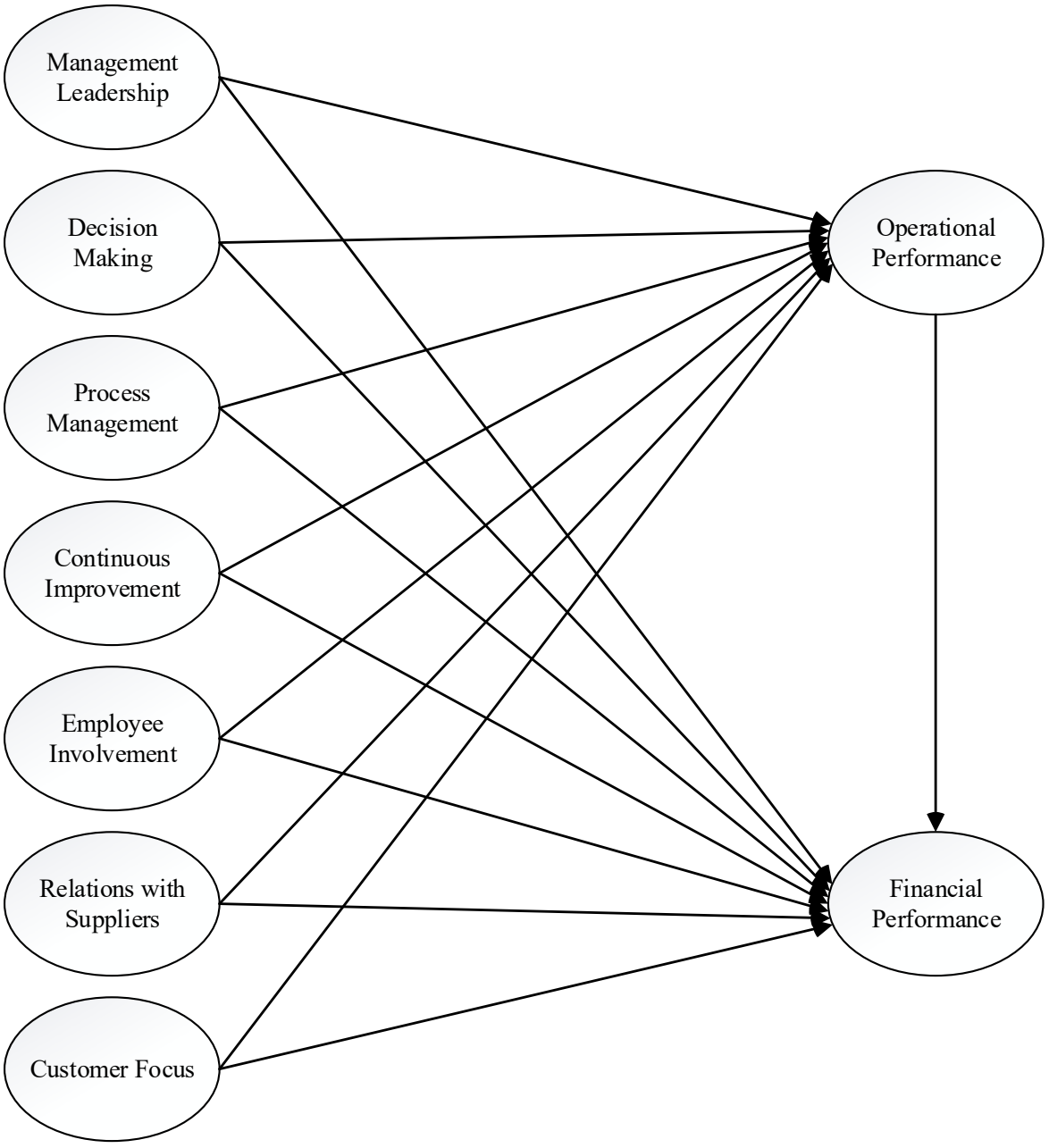

Figure 1. Research model.

Based on the research model, hospitals that implement TQM practices will have chance to increase their financial performance in accordance with their operational performance.

Measurement instrument for TQM practices

Although many studies have examined total quality management, we found that no measurement instrument has validity and reliability of all components of TQM that we describe here. To fill this gap, we did not use a measurement instrument from any single study, but preferred to create a unique one.

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To construct the measurement instrument, we applied the methodology to develop measurement scales in social sciences [62]. In general, the procedure that allows one to move from the concept to its measurement requires a four-stage process: 1) literary definition of the concept, 2) specification of dimensions, 3) selection of observed indicators, and 4) synthesis of indicators or elaboration of indexes.

TQM practices that were determined as management leadership, decision making, process management, continuous improvement, employee involvement, supplier relations and customer focus were derived from the quality management principles based on the ISO 9001:2000 quality assurance system.

To measure these TQM practices, items were generated based on the literature and interview with people from the healthcare industry. In determining questionnaire items from the literature, some questions were not applicable to implementing TQM for hospitals, as they were used in research for industrial context. Therefore, a group consisting of doctors, nurses, and administrative employees of hospitals brainstormed ways in which the questions could be integrated into the hospital context. Their experiences and notions contributed to the process of preparing the questionnaire.

Management leadership factor items were customized from the studies of Cua, McKone and Schroeder [63]; decision-making factor items were adapted from Cua et al. [63], Fuentes-Fuentes et al. [64], Saraph, Benson and Schroeder [65]; process management factor items were taken from the studies of Cua et al. [63], Kaynak [49]; continuous improvement factor items were drawn from the studies of Kaynak [49], Rahman and Bullock [66], Fuentes-Fuentes et al. [64]; employee involvement factor items were adapted from the studies of Cua et al. [63], Rahman and Bullock [66], Fuentes-Fuentes et al. [64]; supplier relations factor items were drawn from the studies of Kannan and Tan [47], Rahman and Bullock [66] and customer focus factor items were adapted from the studies of Rahman and Bullock [66], Fuentes-Fuentes et al. [64], Chong and Rundus [67].

Effects of TQM practices on performance was evaluated in two dimensions as operational performance and financial performance. Operational performance factor items were adapted from the studies of Kaynak [49] and Fuentes-Fuentes et al. [64], whereas financial performance factor items were taken from the studies of Fuentes-Fuentes et al. [64]. Fifty items were assessed using a 5-point Likert scale. Respondents indicated their disagreement (1 = strongly disagree) or agreement (5 = strongly agree) on TQM practices, operational and financial performance of hospitals.

Sample demographics

The sample of this study includes administrative and medical employees of hospitals. The cross-sectional survey methodology was implemented in 32 hospitals. To increase the response rate, the confidentiality of the responses was guaranteed. A total of 1,069 questionnaires were correctly completed and collected from 26 public and 6 private hospitals.

Among these, 69,1% (739) of the employees were from the public hospitals, and 30,9% (330) of the employees were from private hospitals. The size of these hospitals ranged from 50-2,300 employees. Approximately 71,6% (765) of the respondents were positioned in hospitals that employed 200-1,100 employees. These hospitals served in both regional (35,5%) and national (63,3%) areas.

Statistical analysis

For analysis, we used the statistic software program AMOS 5.0. First, all of the 50 items were included in the analysis to form a scale of TQM practices, financial, performance, and operational performance. We referred to Cronbach's alpha to assure reliability of variables. As a result of the analysis, the Cronbach's alpha value was high at 0,925. Second, we looked at the corrected inter-item correlation. It was found that the resulting values were 0,500 and above, except for one item (0,418), CF5 ("Managers and supervisors encourage patient satisfaction development activities"). According to these findings, variable CF5 was removed from the scale.

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The specified structural validity of TQM practices, financial performance and operational performance instrument consisted of 49 items in nine basic components as a result of the principal component analysis. In the data reduction procedure, items having eigen-values greater than 1 were used to determine the number of factors in the data set. Principal component analysis was applied with promax rotation to identify key TQM practices, financial performance, and operational performance factors. Factor loadings of these variables that we took into account were 0,500 and above (0,630-0,964). According to the principal component analysis, the Kaiser-Meyer-Olkin measurement of sampling adequacy is 0,964.

Table 1. Model Purification Process.

Factor name	Reason for Elimination	CMIN/df	GFI	AGFI	NFI	IFI	TLI	CFI	RMSEA
CF5	Eliminated in EFA	3,937	,848	,829	,888	,914	,907	,914	,052
PM6	SR	3,800	,859	,841	,894	,920	,913	,914	,051
PM7	SR	3,743	,863	,845	,898	,923	,916	,923	,051
RS1	SR	3,738	,865	,847	,900	,925	,918	,925	,051
OQP1	MI; SR	3,503	,877	,861	,908	,932	,926	,932	,048
OQP7	MI; SR	3,374	,884	,867	,912	,936	,930	,936	,047
EI1	MI; SR	3,298	,889	,873	,915	,939	,933	,939	,046
DM1	MI; SR	3,230	,895	,879	,919	,943	,937	,943	,046
OQP2	MI; SR	3,072	,902	,886	,924	,948	,942	,948	,044
L1	MI; SR	2,979	,907	,891	,929	,952	,946	,951	,043
DM2	MI	2,975	,910	,894	,931	,953	,948	,953	,043
OQP9	SR	2,950	,913	,897	,934	,955	,950	,955	,043
CF 1	MI; SR	2,886	,918	,937	,957	,958	,952	,958	,042

(SR = Standard Residual Covariances; MI = Modification Index).

To assess the validity and reliability of the scale developed for this study, the following analyses suggested by Bagozzi and Philips [68] were used: content validity, unidimensionality, reliability, convergent validity, discriminant validity, and predictive validity.

Confirmatory factor analysis (CFA) was used to test model fitness. CFA is the most well-known statistical procedure used to test the structures with factorial component generated by establishing hypotheses. Model fitness was evaluated based on multiple fit indexes. In the framework of the CFA procedure, the chi-square statistic is the most popular index to evaluate goodness of fit between the specified and actual models. Wheaton et al. [69] suggested that the researcher also compute a relative chi-square (χ^2/df). They suggested a ratio of approximately five or less as reasonable. This ratio indicates that the null model and data are appropriate with one another [70]. In our experience, however, the ratio of chi-square (χ^2) to degrees of freedom (df) fell in the range of 2 to 1 or 3 to 1 indicated an acceptable fit between the hypothetical model and the sample data [71].

Because of the sensitivity of the chi-square test to the sample size, however, insufficient sample size makes it difficult to find existing differences between the groups and deviations from multiple variables normality. We therefore used multiple fit indexes to reduce measurement errors.

Goodness of fit indexes (GFI) were used determine the model fit when measuring the fitness of the entire model. The GFI indicates the relative quantity of variance and covariance described in common. The adjusted goodness of fit index (AGFI) differs from GFI. AGFI adjusts to the number of degrees of freedom (df) in the model. AGFI and GFI values measured between 0,80 and 0,89, indicating a moderate fit, whereas values measured above 0,90 indicated a good fit [72].

The comparative fit index (CFI) indicates the fitness of the tested model and assumed model with one another [73]. The normal fit index (NFI) and incremental fit index (IFI) evaluate the degree

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of the freedom of the evaluated model relative to the initial model [74]. An IFI value close to 1 indicates a very good fit [75]. The typical range for TLI lies between 0 and 1, but is not limited to that range. A TLI value close to 1 indicates a very good fit.

The following findings were obtained as a result of the fitness analysis of the initial and last model as a result of principal component analysis is displayed in (Table 2).

Table 2. The Results of the Confirmatory Factor Analysis.

		Std.Regression Weights	S.E.	C.R.	*p*	Cronbach' sAlpha	Composite reliabity	A.V.E
Leadership						.873	.875	.585
	L2	.679						
	L3	.778	.057	22.685	***			
	L4	.838	.056	24.137	***			
	L5	.834	.051	24.047	***			
	L6	.682	.051	20.184	***			
Decision Making						.807	.810	.586
	DM3	.804	.052	23.040	***			
	DM4	.782	.052	22.568	***			
	DM5	.709						
Continuous Improvement						.873	.878	.644
	CI1	.698						
	CI2	.845	.044	25.115	***			
	CI3	.832	.043	24.785	***			
	CI4	.827	.045	24.665	***			
Customer Focus						.876	.877	.587
	CF2	.752						
	CF3	.784	.044	25.473	***			
	CF4	.76	.043	24.633	***			
	CF6	.808	.045	26.281	***			
	CF7	.727	.044	23.474	***			
Employee Involvement						.917	.918	.738
	EI2	.865	.035	31.746	***			
	EI3	.881	.034	32.508	***			
	EI4	.901	.033	33.466	***			
	EI5	.786						
Process Management						.847	.871	.580
	PM1	.781	.060	17.285	***			
	PM2	.818	.063	17.681	***			
	PM3	.801	.060	17.507	***			
	PM4	.837	.062	17.865	***			
	PM5	.532						
Relations with Suppliers						.923	.925	.756
	RS2	.809	.029	35.181	***			
	RS3	.904	.024	43.952	***			
	RS4	.894						

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	RS5	.869	.024	40.475	***			
Financial Performance						.893	.895	.810
	FP1	.856						
	FP2	.943	.040	26.947	***			
Operational-Quality Performance						.879	.879	.593
	OQP3	.757	.036	26.481	***			
	OQP4	.745	.036	25.932	***			
	OQP5	.762	.035	26.695	***			
	OQP6	.779	.036	27.434	***			
	OQP8	.806						

S.E.: Standard error of regression weight; C.R.: Critical ratio for regression weight; A.V.E: Average variance extracted ***: p<0, 001.

To assess the reliability, Cronbach's alpha coefficient and composite reliability scores were calculated (Table 2). According to critical levels indicated by Fornell and Larcker [76] and Nunnaly [77], scales showed acceptable levels of reliability because the Cronbach's alpha coefficient and composite reliability scores were greater than ,70. Factor loadings shown in (Table 2) are large and all significant (p < 0,01) providing evidence for convergent validity. Shared variance between pairs of latent factors in the structural measurement model were compared with AVE scores that were calculated for each component of pairs to evaluate the discriminant validity [76]. Average variance extracted was found to be greater, signaling the discriminant validity.

Inter-correlations among variables are represented in (Table 3) with means and standard deviations (SD). The highest mean is 3,94, which reflects customer focus; the lowest mean is 3,20, which reflects employee involvement. The standard deviations of all variables are higher than ,70. Pearson correlations are indicated in Table 3. Notably, Cronbach's alpha values are higher than Pearson correlation coefficients for all variables. This is important for construct validity, which evaluates how each item is measured on the scale. Thus, the instrument has convergent and discriminates validities, satisfying construct validity [49]. On the other hand, we also consider that the instrument has content validity too. This is because they were incorporated based on quality management principles of ISO 9001:2008 quality management system, and the scale items were gathered from a literature review.

Table 3. Descriptive statistics and intercorrelations of all variables.

Variables	Mean	SD	1	2	3	4	5	6	7	8
1. Leadership	3.68	.784								
2. Decision Making	3.77	.739	.761**							
3. Continuous Improvement	3.82	.802	.583**	.558**						
4. Customer Focus	3.94	.721	.545**	.482**	.616**					
5. Employee Involvement	3.20	.969	.619**	.570**	.584**	.530**				
6. Process Management	3.71	.781	.563**	.627**	.672**	.496**	.526**			
7. Relations with Suppliers	3.46	.902	.527**	.523**	.509**	.550**	.644**	.548**		
8. Financial Performance	3.64	.952	.434**	.394**	.431**	.512**	.401**	.405**	.411**	
9.Operational-Quality Performance	3.75	.719	.571**	.536**	.549**	.651**	.530**	.493**	.576**	.531**

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

We tried to find the best fitting model based on structural equation modeling. Relationships among the variables are represented in (Figure 2). Among the seven TQM practices, management leadership, decision making, continuous improvement, customer focus, and supplier relations were significantly related to operational performance. On the other hand, only customer focus and process management were significantly related to financial performance.

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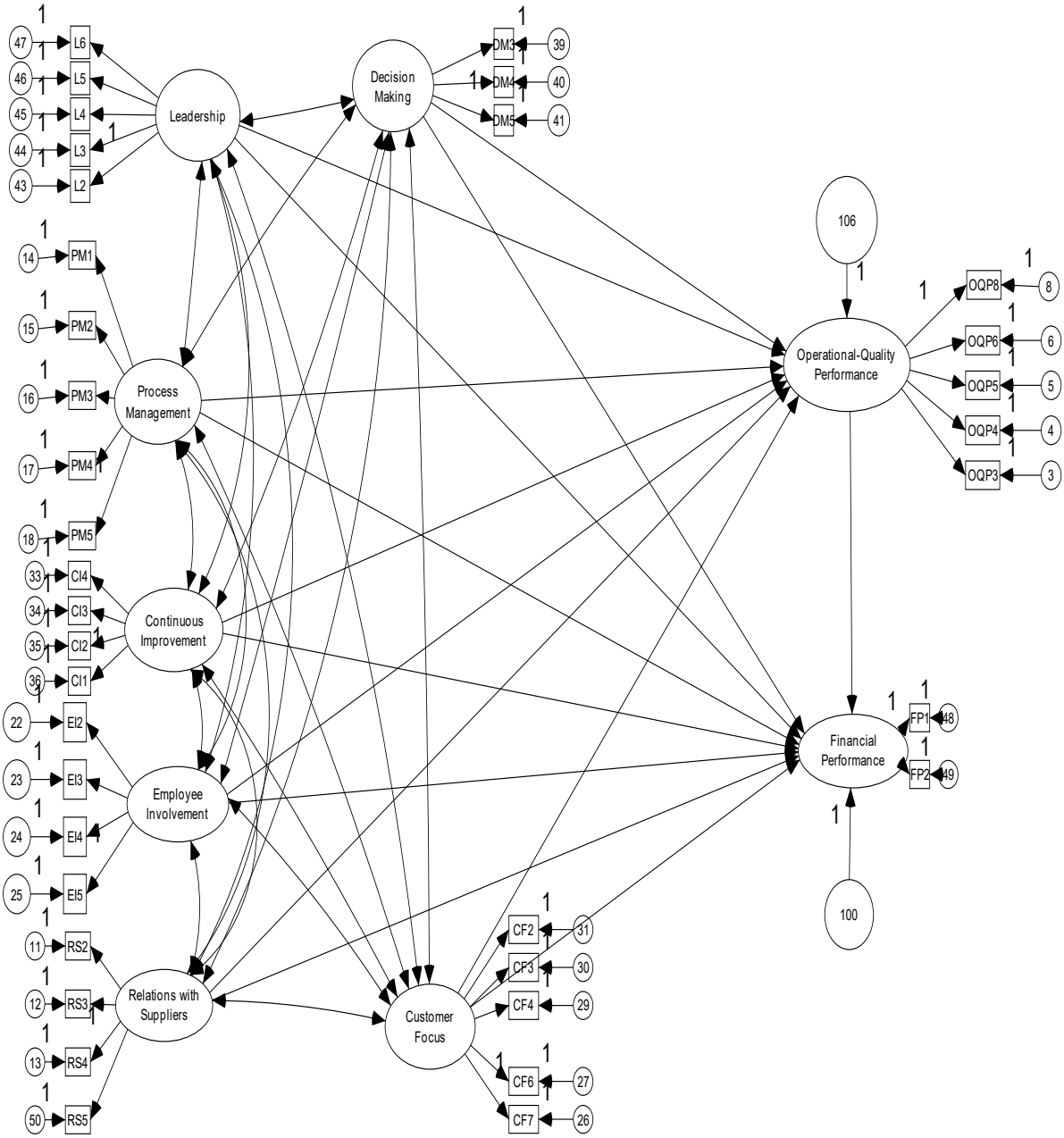

Figure 2. Structural model.

4. Discussion

Total quality management practices and dimensions of performance are significantly and positively related with one another. Correlation coefficients are significant at the 0.01 level. The lowest significant coefficient (.394) is between financial performance and decision making. The highest significant and positive coefficient (.761) is between leadership and decision making. Based on financial performance, customer focus has the highest correlation coefficient (.512) among the TQM practices. Also, the correlation coefficient (.651) between customer focus and operational performance is higher than the others. Other empirical findings support a significant and positive relationship between performance and customer focus [45,63,64,67,78–80].

Regression weights show that variance of operational performance (H_1) is explained significantly by customer focus (35,7%); supplier relations (20,1%); leadership (13,4%); decision making (9,5%); and continuous improvement (7.7%). Process management and employee involvement do not explain variance of operational performance. On the other hand, variance of

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financial performance (H_2) is explained significantly only by customer focus (21,3%) and process management (8%). In this position, other TQM practices do not explain the variance of financial performance. The influence of operational performance (H_3) on the variance of financial performance is 26,6%. Thus, acceptance of H_3 is supported. Overall, TQM practices explained the 53,4% variance of operational performance and 34,3% variance of financial performance.

Table 4. Results of Hypothesis Testing.

Hypothesized link			Estimate	Standardized Estimate	SE	CR	*p*
Leadership	→	Operational-Quality Performance	,151	,134	,058	2,601	,009***
Decision Making	→	Operational-Quality Performance	,111	,095	,063	1,755	,079*
Continuous Improvement	→	Operational-Quality Performance	,076	,077	,045	1,711	,087*
Customer Focus	→	Operational-Quality Performance	,387	,357	,044	8,792	,000***
Employee Involvement	→	Operational-Quality Performance	,021	,026	,033	,639	,523
Process Management	→	Operational-Quality Performance	,006	,006	,044	,136	,892
Relations with Suppliers	→	Operational-Quality Performance	,163	,201	,031	5,214	,000***
Leadership	→	Financial Performance	,108	,078	,079	1,357	,175
Decision Making	→	Financial Performance	-,008	-,005	,087	-,090	,929
Continuous Improvement	→	Financial Performance	,035	,029	,061	,580	,562
Customer Focus	→	Financial Performance	,285	,213	,063	4,513	,000***
Employee Involvement	→	Financial Performance	,025	,025	,045	,556	,578
Process Management	→	Financial Performance	,102	,080	,061	1,669	,095*
Relations with Suppliers	→	Financial Performance	,028	,028	,043	,657	,511
Operational-Quality Performance	→	Financial Performance	,330	,266	,058	5,728	,000***

*p<0.10 **p<0.01 ***p<0.001.

Customer focus affects both operational performance and financial performance of hospitals more than other TQM practices. If hospitals successfully satisfy their customers, their performance [4,53,57,81–86]. Patients' appraisals of quality are important, and hospitals should monitor patients' perceptions and expectations regularly. In addition to heterogeneity, inseparability and intangibility features of services, patients' participation to the process requires customer focus to result in better performance. Satisfied patients recommend hospital services, and their positive word of mouth impacts hospital performance. On the other hand, patient complaints force hospitals to address their service standards.

Relations with suppliers are important to explain better operational performance [45,46,87]. Hospitals should thus have closer relationships with their suppliers to fulfill quality requirements. Effective communication between suppliers and hospitals helps both parties understand what they want from each other in relation to producing services to deliver to patients. Furthermore, hospitals' requirements for service quality lead to improved processes among suppliers. If any kind of problem occurs between suppliers and hospitals, it affects operational performance.

Results of this study also suggest that continuous improvement is significantly and positively related with operational performance. There are examples in the literature that confirms positive relationship between continuous improvement and performance [7,8]. In our results, employee involvement has no significant influence on performance. In the literature, however, there are positive relations between employee involvement and performance of hospitals [7,38,85,88]. Reason of our finding can be related to involvement of employees to medical organizational processes may require to be more educated and experienced. If organizations have lack of education and training, positive relationship may not be occurred [7].

5. Conclusions

Competition creates pressure on healthcare organizations to gain cost-effective and higher quality care. Also actors in the external environmet of hospitals like government, other agencies and customers put pressure on hospitals for quality. TQM is one of the perspective organizations can use to improve their service quality. Kennedy and Fiss [89] explained TQM adoption based on the institutional theory and they indicated that early and late adopters have different motivators to implement TQM. While efficiency motivete early adopters, legitimacy motivate late adopters to implement TQM.

Recently, total quality management implementation seems to have had a substantial impact on businesses' effectiveness [90]. In this study, we focus on the relationship between TQM practices and identifying their effects on the various dimensions of performance in the hospitals. We gained important findings that will help hospitals to have better performance. Operational performance is determined as an antecedent of financial performance. For better service quality and positive financial results, various activities and procedures should be implemented. Higher productivity rates, fewer mistakes, shorter delivery and waiting time, fewer complaints raise tendecy of customers to pay more and to give priority among alternative hospitals. This study confirmed that customer focus and process management influence financial performance of hospitals positively. On the other hand, Macinati [91] stated lack of significant relationship between financial performance and quality management in the Italian health care industry. Reason is explained as difficulty of simultaneously conducting quality and efficieny.

Customer focus is the strongest practice to improve both operational performance and financial performance. Mosadeghrad [7] stated similar finding regarding positive relationship between customer management and performance for Iranian hospitals. If hospitals meet customers' necessities and expectations and organize activities related to customer relationship management, the contribution of customer focus on operational and financial performance will be realized. This result supports customer focus as a facilitator of gaining competitive advantage. Beyond this, hospitals should try to develop customer loyalty. Satisfied patients and loyalty will help hospitals not only gain competitive advantage, but also help hospitals become more sustainable.

In addition to customer focus, supplier relations and management leadership are more likely to be useful than efforts to improve process management, employee involvement, and continuous improvement.

Findings of this study contribute to present a perspective to implement TQM practices in developing country. As stated by Mosadeghrad [7] different countries may need different TQM models to implement. Secondly, both quality management and healthcare literature may take advantage of these findings. Thirdly, valid and reliable questionnaire was developed. Fourthly, hospitals in the country may use findings as guideline to constitute quality management structure and define priorities to manage quality practically. Therefore, hospitals must begin their paths with being customer focus that will enhances their operational and financial performance. Lastly, this study was conducted in the service industry. In a broad perspective, providing service quality is not only necessary for long term profitability of service industry but also manufacturing industry may use these findings as an initial stage of offering service quality. Manufacturing industry may differentiate their position based on their service quality.

Based on this study, we can suggest that hospitals should support their patients to lead them in evaluating processes of service quality. Beyond patient satisfaction surveys, hospitals can establish patient suggestion boxes to allow customers to become more involved in service. Developing and using an effective customer database can help hospitals understand customer needs. It helps them to realize how their services can differ from their competitors. Not only satisfaction of patients but also families of patients should be taken into consideration to improve service quality.

Like all studies, this study has some limitations. Our sample includes both private and public hospitals. We are unable, however, to compare results from the two types of institutions, because the representation of private hospitals in the sample was much lower than public hospitals. Future studies should investigate the differences between private and public hospitals. Collecting data from different countries may also shed more light on the role of TQM practices on facets of performance. Influence of culture on adoption of TQM may represent different patterns. As a future study suggestion, cultural issues can be added to research model. We were also unable to test the differences between the time before TQM was implemented and after TQM was implemented. This is another limitation of our study. Longitudinal studies are suggested to measure TQM practices across a period of time.

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Appendix A. Measurement scales, survey items, and their sources

A.1. Leadership of management

L.1. Managers of all departments of the hospitals accept their responsibilities for quality.*
L.2. Hospital management provides individual leadership to improve service quality.
L.3. In the hospital, all managers encourage employees to serve on time.
L.4. Top management encourages employees to attend to service processes.
L.5. Hospital management creates a vision focused on quality improvement.
L.6. Hospital management attends to quality improvement project individually.

A.2. Decision Making

DM1. Knowledge about quality is a tool to manage quality.*
DM2. Knowledge about quality is handled to assess managers and supervisors.*
DM3. Before creating service and serving the customer, innovations are revised attentively.

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DM4. Coordination is provided between departments that are effective in creating quality service.

DM5. New service and quality is emphasized based on the cost and objectives of the department.

A.3. Continuous Improvement

CI1. In the hospital, professional and technical training is given to employees. CI2. In the hospital, quality training is given to employees.

CI3. In the hospital, quality managers and quality supervisors have been trained.

CI4. In the hospital Total Quality Management training is given (philosophy of quality responsibility).

A.4. Customer focus

CF1. The needs of the patient are provided to disseminate and be understandable in the hospital.*

CF2. We know the current and future needs of patients.

CF3. We often communicate closely with our patients.

CF4. Our patients express their pleasures verbally.

CF5. Managers and supervisors encourage patient satisfaction development activities. **

CF6. The most important thing is to provide patient satisfaction and meet expectations.

CF7. Managers always emphasize the importance of patient satisfaction.

A.5. Employee Involvement

EI1. We try to evaluate the ideas of team members before decision making to solve problems.*

EI2. We implement a team problem-solving system.

EI3. Many problems have been solved by small team sessions for the last three years.

EI4. Problem solving teams contribute to developing service process.

EI5. Employees are encouraged to solve their problems on their own.

A.6. Process Management

PM1. Processes in the hospital are managed with statistical quality.

PM2. Comprehensive statistical methods are used to decrease incompatibility among processes.

PM3. Charts are handled based on whether service processes are under control.

PM4. Process is followed by statistical process.

PM5. Processes are often audited, revised, and controlled.

PM6. Distribution of service programs or service is balanced.*

PM7. Job or process definitions are given directly to employees. *

A.7. Relations with suppliers

RS1. We help suppliers enhance their performance for just-in-time manufacturing and delivery capability.*

RS2. We give importance to quality instead of price when choosing a supplier.

RS3. We consider quality dependency when choosing a supplier.

RS4. We consider process ability when choosing a supplier.

RS5. We consider commitment to “continuous improvement” when choosing a supplier.

A.8. Operational and quality performance

OQP1. Service quality is increasing.*

OQP2. Productivity rates are increasing.*

OQP3. Rate of faulty transactions are decreasing.

OQP4. Delivery time of buying materials is becoming shorter.
OQP5. Presentation time of treatment services is becoming shorter.
OQP6. Patient complaints are decreasing.
OQP7. The degree of patient satisfaction is increasing.*
OQP8. Rate of faulty services in clinics is decreasing.
OQP9. Quality in clinics meets or exceeds patient demands.*

A.9. Financial performance

FP1. Hospital revenues are increasing.
FP2. The market share of the hospital is increasing.
* omitted items because of low factor loading.
**corrected inter-item correlation coefficient (0,418) is lower than (0,500).

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