Impact of Quality Management Systems on Corporate Efficiency in Public Health Providers

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KEYWORDS

Quality Management Systems (QMSs), corporate efficiency (CE), Financial Performance, Public Health Providers.

ABSTRACT

The quality management system (QMS) develops an ethnicity of constant development and legal obedience, which advanced minor errors, process efficacy and develop manufactured goods quality, these benefits are increase corporate effectiveness. Inferior expanses, improved client approval, and residential corporate efficiency (CE) are inferences of QMS. The study investigates the impact of QMSs on the CE of Indian public health providers. Research dataset was gathered from a survey of 380 Indian public healthcare providers, involving respondents (178) from various categories. Data evaluates Statistical Package for Social Sciences (SPSS) software utilizing factor analysis, one-way analyses of variance (ANOVA), and correlation analysis. This investigation exposed the QMSs of these Indian public health care providers necessitate a separate sector devoted to excellence and fundamental quality opinion. The results reveal that subjective and objective performance (SOP) is the most significant factor influencing performance in healthcare, with the highest P-value of 0.004. This indicates a strong impact on organizational performance. Moreover, it was explored how these QMS elevated the company's perceived performance levels while having a minor optimistic outcome on financial presentation. QMSs in Indian public health providers recover CE and foster a quality and responsibility ethnicity by inserting an importance on identical processes, continuous enlargement and patient care.

1. Introduction

In recent years, worldwide healthcare organizations have prioritized the implementation of QMS [1]. The focus on quality measures is increasing due to various factors such as interior commercial necessities, government regulations, international norms, and increasing consumer expectations [2]. Inclusive QMS use by healthcare providers is attractive and more prevalent as earnings boost responsibility, guaranteeing patient safety, and enhancing overall healthcare delivery [3]. The highly competitive healthcare sector emphasizes the importance of quality as a determining factor in patient preferences and organizational performance. Patients are more likely to select healthcare providers recognized for providing higher-quality care as they expand more knowledgeable and discriminating [14]. Consequently, there is increasing demand for healthcare companies to attain operational excellence and efficiency while maximizing resource use [5]. Hippocratic beliefs gave rise to contemporary standards that are characterized by meeting patient expectations and adhering to professional conventions. It has originated in the moral standards of medical treatment throughout history [6]. For instance, the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) defines healthcare quality in terms of adherence to established standards and the ability to improve

patient outcomes by minimizing adverse events [15].

Literature review

Zlsmairat et al. [8] examined how Kaizen affect and top management commitment (TMC), quality management practices (QMP) and QMP performance were changed in Jordanian public hospitals after COVID-19. Determining whether the standard of medical infrastructure and equipment mediates patient satisfaction with essential health services was the aim of Amankwah et al. [9]. In response to the growing worldwide concerns about energy efficiency, Dion and Evans [16] intended to provide corporate governance and energy-efficient management frameworks for green hospitals and healthcare facilities [10]. Okolo et al. [11] explored the association among Health Information Technology (HIT) and managing healthcare efficacy, analyzing trends, emerging technologies, and potential implications in clinical and operational aspects [7]. In line with the International Standardization for Organizations (ISO) ISO 9001 criteria. Zimon et al. [12] examined the effects of establishing a QMS on the working capital management efficiency (WCME) of businesses [4]. Goodair and Reeves [13] presented a healthcare outsourcing in high-income countries that challenges the argument for continued privatization by revealing that private ownership often leads to increased profits but lower patient outcomes.

2. Methodology

The study explores the connection between QMS and CE in Indian public healthcare providers, focusing on how adherence to QMS principles impacts the overall customer experience. The research aims to understand how enhancing QMS practices can enhance CE metrics, leading to better service delivery and patient satisfaction. Figure 1 demonstrates the research outline.

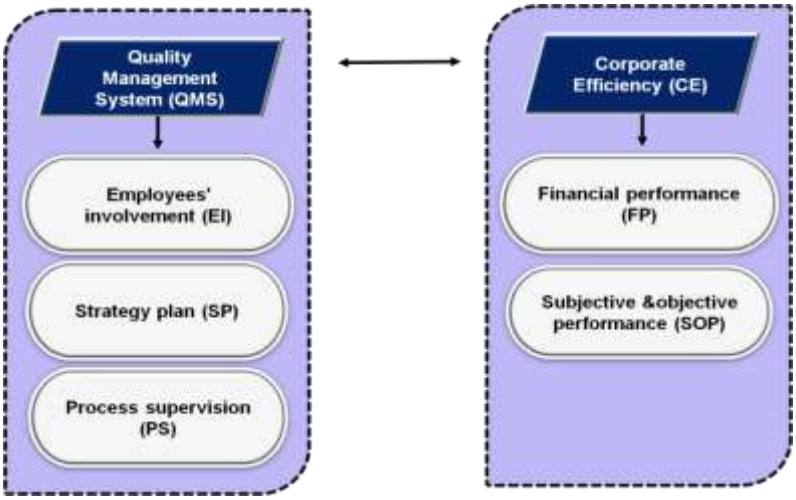

Figure 1 Outline of the study

Figure 1 depicts Employees' Involvement (EI) directly enhances healthcare quality by increasing staff engagement and motivation. Strategy Plan (SP) ensures that resources and efforts are strategically aligned with healthcare objectives, improving overall efficiency. Process Supervision (PS) maintains high standards and consistency in patient services, ensuring reliable outcomes. Financial Performance (FP) and Subjective and Objective Performance (SOP) together evaluate and enhance both economic viability and patient satisfaction, driving continuous improvement in healthcare delivery.

Research question

RQ1: The QMSs implemented by healthcare providers are based on the fundamental components.

RQ2: Health care providers' CE and the QMSs, they have implemented are positively correlated.

Dataset

The dataset includes information on various clusters of public health care providers in India, with corresponding percentages of the total population and survey respondents. Medical colleges represent 20.78% of the total providers and 27.91% of respondents. Research institutes account for 12.11% of providers and 24.42% of respondents, and so forth for specialty hospitals, private hospitals, and community health centers in Table 1.

Table 1 The respondents and the Indian public healthcare providers

Categories	**Total No. of Indians (%)**	**Total No. of respondents (%)**
Medical Colleges	79 (20.78)	48 (27.91)
Research Institutes	46 (12.11)	42 (24.42)
Specialty Hospitals	88 (23.16)	22 (12.79)
Private Hospitals	86 (22.63)	28 (16.28)
Community Health Centers	81(21.32)	32 (18.60)
Total	**380**	**172**

Table 2 classifies QMS and CE's fundamental components and variables. It contains variables such as FP and SOP for CE, and EI, SP, and PS for QMS. These components are crucial for evaluating the effectiveness and caliber of an organization in terms of things like standard operating procedures, strategic planning, and employee participation.

Table 2 Core elements and variables of QMS and CE

Core elements	**Variables**
QMS	
EI	EI_1: Participation of employees in quality global initiatives.
	EI_2: Employee involvement in quality-related options.
SP	SP_1: Development of strategies for quality improvement
	SP_2: The degree of participation of every department in strategic quality planning.
PS	PS_1: The accessibility of quality assurance
	PS_2: How much inspection is used to guarantee high-quality services
CE	
FP	FP_1: Evaluation of financial outcomes influenced by quality initiatives.
	FP_2: FP assessment based on CE.
SOP	SOP_1: Subjective assessments of performance concerning quality goals.
	SOP_2: Metrics that are objective and compare performance to quality controls.

Statistical analysis

The study used factor analysis to identify significant characteristics that influence QMS adoption, one-way ANOVA to assess the impact of QMS across different public health provider groups, and correlation analysis to examine the links between QMS and corporate effectiveness metrics. These approaches assess the efficacy of QMS in improving performance and quality management among Indian public health professionals.

3. Results and discussion

The statistical data was analyzed using SPSS software. This study employs factor analysis to identify variables' relationships, correlation analysis to analyze their direction and intensity, and one-way ANOVA to compare means of groups to identify significant differences.

Factor Analysis

A statistical method used to find the underlying connections between data is called factor analysis. It is often used on large datasets that can contain related variables. Its major goal is to simplify the data by identifying fewer hidden variables, or factors, that explain the patterns in the visible variables. The goal in creating these factors was to provide as much diversity as possible in the original variables like Medical College Students, Healthcare Professionals, Research Scientists, Specialist Surgeons, Private Clinic Doctors, and Public Health Nurses. Out of the 30 variables, 12 exhibited significant loadings on the 3 factors. This indicates a substantial association between these variables and the identified factors.

Table 3 presents a factor analysis of QMS and CE variables in the healthcare sector. Factor loadings indicate the contribution of each variable to identified factors. EI_1 and EI_2 are strongly loaded on Factor 1, indicating common variance and significant contribution to QMS factors. SP_2 has a high loading on Factor 2, indicating a strong contribution to QMS, while Factor 3, reflecting PS, shows strong loadings of 0.698 and 0.897.

Table 3 The factors of impact In QMS and CE in the healthcare sector

Variables	**Factors**			
	1	**2**	**3**	
QMS				
EI_1	0.776			
EI_2	0.781			
SP_1		0.752		
SP_2		0.841		
PS_1			0.698	
PS_2			0.897	
CE				
FP_1	0.987			
FP_2	0.894			
SOP_1		0.827		
SOP_2		0.984		

Table 4 reveals the variance in factors affecting QMS and CE, with QMS factors ranging from 5.325% to 45.125% and CE factors ranging from 38.85% to 69.27%. The factor analysis uses a 0.7 loading threshold, with values exceeding this indicating strong relationship between variables and their factors, with FP1 and SOP2 show the strongest associations.

Table 4 Factors underlying QMS and CE and their percentage of variance explained

QMS		
Factors	**Variables**	**Variation (%)**
1	EI_1	45.125
	EI_2	8.564
2	SP_1	6.258
	SP_2	7.458
3	PS_1	5.325
	PS_2	6.248
CE		
1	FP_1	39.251
	FP_2	69.27
2	SOP_1	45.187
	SOP_2	38.85
Total		**271.536**

Correlations analysis

The direction and intensity of correlations between variables are examined using correlation analysis. Finding patterns and relationships among data sets is helpful since it's essential for comprehending connections to wisely analyze in research contexts. Table 5 shows correlations between factors in the QMS and CE. a for ($p < 0.01$) and b for ($p < 0.05$) presents significant relationships, revealing relationships crucial for organizational effectiveness and operational coherence. The variables most significantly influencing the QMS on CE are FP (with a strong positive correlation of 0.70) and PS (with a negative correlation of -0.65).

Table 5 Correlations for the QMS and CE underlying factors

Variable	**EI**	**SP**	**PS**	**FP**	**SOP**
EI	1.00	0.45^b	0.30	0.50^b	-0.35
SP	-0.45	1.00	0.60^a	0.55	-0.40
PS	0.30^a	-0.60^b	1.00	-0.65^a	0.50

FP	0.50[a]	-0.55	-0.65	1.00	0.70[a]
SOP	0.35	0.40	0.50	0.70[b]	1.00

Analysis of One-way ANOVA

To assess if there are any notable difference between the resources of two or additional clusters, one-way ANOVA is a statistical test that is employed. Researchers can use this to deduce that means of distinct groups are probably from distinct populations by breaking down total variance into components like within-group and between-group variances, the smallest p-value is 0.004 for SOP, which means SOP is the most statistically significant variable among the ones listed. Table 6 presents ANOVA results assessing the impact of organizational performance factors in healthcare.

Table 6 ANOVA test for MSE and CE factors in healthcare

Variables	DF	SS	MS	P-value	F-Value
EI	2	1200	600	0.015	4.50
SP	2	800	400	0.045	3.00
PS	2	600	300	0.105	2.25
FP	2	1500	750	0.007	5.625
SOP	2	1800	900	0.004	6.75
Error	15	3000	200		
Total	25	7500			

Note: [SS demonstrates sum of squares, DF depict degrees of freedom, and MS stand for mean square]

ANOVA tests for statistically significant differences in means across groups, helping identify which factors significantly influence performance in healthcare settings

4. Conclusion and future scope

The study underlines how important it is for public healthcare providers to have staff participation, strategic planning, quality data management, and process oversight to improve financial and performance metrics. Through factor analysis, it shows a substantial positive association between CE and QMS in Indian public healthcare, underscoring the important role that QMS components cooperate in overall service quality. ANOVA results also show significant differences in performance aspects, especially in financial returns and subjective evaluations. According to these results, enhancing QMS practices can greatly boost patient happiness and service delivery, which will have a better influence on CE in public health providers and successfully handle important healthcare concerns. The study indicates that SOP is the most significant factor, with a P-value of 0.004.

Limitations and feature scope: The implementation of QMS can be resource-intensive, and staff opposition can arise from the need for more paperwork. Future research might examine how to improve the effectiveness and flexibility of QMS in public health providers by integrating cutting-edge technology like artificial intelligence and machine learning.

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