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Quality-Driven Education: Analyzing the Effects of ISO 9001 Quality Management Principles on University Performance

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ABSTRACT

This research examines the impact of seven quality management principles (QMPs)—customer focus, leadership, engagement of people, process approach, continuous improvement, evidence-based decision-making, and relationship management—on university performance (UP) in Pakistani universities. Data were collected from academic and administrative staff at ISO 9001-certified institutions via purposive sampling and analyzed using SPSS-25 and SmartPLS-4. The findings show that leadership, process approach, continuous improvement, and evidence-based decision-making have strong positive effects on UP, while customer focus, engagement of people, and relationship management show insignificant impact. Limitations include the lack of a comprehensive sampling frame, reliance on purposive sampling, and the focus on only seven certified universities. Future research should involve additional stakeholders, such as students, alumni, and industry partners, and employ random sampling to enhance generalizability. Additionally, further exploration of ISO 9001's implementation could yield deeper insights into its role in improving academic and administrative processes. Despite its limitations, this study contributes to scholarly discourse by integrating QMPs within the resource-based view (RBV) framework, providing valuable insights for enhancing academic quality, stakeholder satisfaction, and UP. Policymakers, administrators, and quality managers can use these findings to optimize resource allocation and improve organizational outcomes. This study is one of the first to apply RBV theory to examine the impact of ISO QMPs on UP in Pakistan, offering practical strategies for academic quality improvement.

Keywords: ISO 9001, Quality management system, Quality management principles, Higher education institutions, University performance.

INTRODUCTION

Amid rapid globalization and escalating competition, the quality of higher education (HE) has become a global concern. This issue is particularly acute for institutions in developing countries such as Pakistan (Psomas and Antony, 2017). Over the past two decades, Pakistan has experienced a significant expansion of its universities, yet this growth has not been matched by a proportional emphasis on maintaining academic standards. Consequently, concerns have arisen regarding institutional performance and educational quality. Several factors, including inadequate funding, resource limitations, and deficiencies in quality assurance (QA) practices, exacerbate these challenges, leading to subpar educational services and structural inefficiencies (Ikram et al., 2023; Iqbal et al., 2022; Iqbal, Ashfaq, et al., 2023; Iqbal, Hanif, et al., 2024; Murtaza and Hui, 2021).

In global rankings such as the QS World University Rankings, Pakistani universities consistently lag behind their counterparts in developed countries (Iqbal, Razalli, et al., 2023; Iqbal, Taib, et al., 2023a, 2023b, 2024). This underperformance reflects broader issues of weak academic quality and highlights the urgent need to enhance

university performance (UP). Studies have pointed to significant gaps in academic programs and services when benchmarked against international standards (Iqbal et al., 2022; Iqbal, Ashfaq, et al., 2023). Moreover, the effectiveness of internal QA mechanisms, particularly Quality Enhancement Cells (QECs), has been questioned, with criticisms focusing on bureaucratic inefficiencies and burdensome documentation requirements (Elassy, 2015; Iqbal, Moosa, et al., 2024; Iqbal, Taib, et al., 2023a; Seyfried and Pohlenz, 2018). Addressing these challenges requires a comprehensive understanding of the factors that influence UP, particularly in the context of international quality management systems such as ISO 9001.

ISO 9001, a globally recognized quality management standard, has demonstrated its effectiveness in improving organizational performance across various sectors by emphasizing process optimization, risk-based thinking, and stakeholder engagement (Gallego and Ramírez, 2023). While its application has been widespread in manufacturing and service industries, its adoption within the HE sector, especially in developing nations like Pakistan, remains limited. Currently, only 25 educational institutions in Pakistan are ISO 9001-certified (ISO Survey, 2022), reflecting uncertainty among university leaders regarding the relevance and applicability of ISO 9001 in the academic context.

Given the complexity of managing diverse stakeholders in HE—such as students, faculty, and industry partners—successful implementation of the Quality Management Principles (QMPs) embedded in ISO 9001 is crucial for fostering continuous improvement and enhancing UP. These QMPs—customer focus, leadership, engagement of people, process approach, improvement, evidence-based decision-making, and relationship management—provide a structured framework to align university operations with global standards (Lazibat et al., 2022). However, the impact of these principles on UP in the educational sector remains underexplored, particularly in developing countries where universities struggle to boost their global competitiveness and ranking (Abubakar et al., 2018; Cotelnic, 2022).

This study seeks to address this gap by empirically investigating the influence of ISO's seven QMPs on UP within ISO 9001-certified universities in Pakistan. By focusing on these principles, this research aims to provide valuable insights into how quality management can be harnessed to improve institutional competitiveness and global standing. It also contributes to the growing body of literature on the application of QMPs in HE, particularly in developing nations.

The remainder of this paper is structured as follows: a review of relevant literature to identify gaps in understanding the impact of QMPs on various performance aspects of ISO-certified universities, followed by a detailed explanation of the methodology, data analysis, results, discussion, and conclusion. Finally, implications for policymakers and university administrators are considered, and recommendations for future research are provided.

LITERATURE REVIEW

Background of Study

ISO's Role in Shaping Global Standards

The ISO, established in 1947, operates as a non-governmental body with its headquarters in Geneva, Switzerland. It supervises a global consortium of national standards organizations, each representing one member per country (ISO, 2019). The primary role of the ISO is to develop and publish international standards voluntarily, ensuring quality, safety, and efficiency in various industries such as manufacturing, technology, agriculture, healthcare, and environmental management. ISO standards offer advantages to organizations, including product compatibility, safety assurance, and the exchange of ideas and solutions (ISO, 2019).

To date, the ISO has released over 25,000 standards, with ISO 9001 emerging as the most globally adopted standard (ISO, 2024). Introduced in 1987, ISO 9001 is recognized for its extensive application and international acclaim, making it a key requirement for successful internationalization (Lazibat et al., 2022). ISO 9001 sets forth essential prerequisites for implementing a quality management system (QMS), facilitating certification upon compliance. Its latest iteration (ISO 9001:2015) introduces three new imperatives: comprehending the organization's context, identifying stakeholders, and mitigating risks (Arab, 2022; ISO 9001, 2015). ISO 9001, widely adopted across organizations, offers numerous benefits including enhancing performance, meeting customer expectations, demonstrating commitment to quality management, fostering trust, expediting issue resolution, improving processes, reducing waste, facilitating informed decision-making, yielding cost savings, and ensuring ongoing optimization through regular audits, thus promoting sustained competitiveness and long-term success (ISO 9001, 2015).

Quality Management Principles (QMPs)

The ISO has established seven QMPs as the foundational pillars of ISO 9000, ISO 9001, and related standards (Arab, 2022; ISO, 2015). These principles serve as guiding frameworks for operational methodologies,

encompassing "customer focus, leadership, engagement of people, process approach, improvement, evidence-based decision-making, and relationship management" (ISO, 2015). They can be classified into two categories: hard principles, such as process approach and evidence-based decision-making, which pertain to an organization's technological infrastructure, facilitating strategic implementation and efficient process management, thereby enhancing productivity (Calvo-Mora et al., 2014; Lazibat et al., 2022); and soft principles, including people engagement, customer focus, and leadership, which emphasize social dynamics and foster employee motivation and involvement (Lazibat et al., 2022; Zeng et al., 2017). Relationship management exhibits characteristics of both hard and soft principles (Lazibat et al., 2022). Despite widespread use in manufacturing and services, ISO 9001 principles remain largely unexplored in HE, notably in developing countries like Pakistan. This study examines how these principles impact UP, offering insights for addressing educational challenges.

University Performance

Performance, a multifaceted concept, holds significant importance across various levels, from individuals to organizations. However, achieving a consensus in its measurement remains challenging (Cotelnic, 2022). At the organizational level, performance refers to the extent to which objectives are achieved and missions fulfilled. Within HE, measuring performance becomes complex due to diverse stakeholders, objectives, and activities. Previous research has examined various performance aspects in HE, including financial, operational, teaching, research, service, innovation, and organizational (Asiedu et al., 2020; Cotelnic, 2022; Iqbal, Razalli, et al., 2023; Iqbal, Taib, et al., 2023a, 2023b, 2024; Wang et al., 2021). Each aspect represents a distinct dimension contributing to overall success. Given the diverse focus of prior studies on performance aspects, universities, notably those in developing countries like Pakistan, must embrace a holistic approach to measure performance and enhance global competitiveness. Presently, Pakistani universities are inadequately represented in international rankings, with only two ranking within the top 500 in the 2024 "QS World University Rankings" (QS, 2024). This study operationalizes UP by integrating multiple aspects including academic, research, extension, resources, internationalization, and assessment. This approach aligns with a comprehensive system proposed in previous studies (Abubakar et al., 2018; Hernandez-Diaz et al., 2020) to attain a global perspective and meet the standards of international ranking bodies.

Hypotheses Development

Customer Focus and UP

The customer focus principle, integral to the ISO 9001 standard, underscores the importance of surpassing customer expectations to enhance satisfaction, loyalty, and organizational reputation (ISO, 2015). In HE, this involves addressing the diverse needs of stakeholders, including students, faculty, staff, alumni, and donors. While stakeholders are traditionally classified as internal or external, recent research suggests that students exert significant influence (Kanwar and Sanjeeva, 2022). Prioritizing customer satisfaction and adjusting educational offerings based on feedback are essential for institutions to maintain relevance in the digital age (Jingura et al., 2019). Despite mixed findings from previous studies across various industries regarding the impact of customer focus, research specific to the HE sector remains scarce (Abbas and Kumari, 2023; Al-Gasawneh et al., 2021; Mehmood et al., 2014). Given the inconclusive nature of existing evidence, further research is needed to elucidate the relationship between customer focus and UP. Therefore, the following hypothesis is put forward:

H1: The principle of customer focus is significantly related to UP in ISO 9001-certified universities.

Leadership and UP

Leadership is integral to organizational success, aligning purpose, providing direction, and fostering engagement to achieve quality objectives (ISO, 2015). Though leadership lacks a singular definition, it involves influencing shared goals and advocating proactive measures to enhance organizational climate, styles, and structure (Kuei and Lu, 2013; Luburić, 2015). In ISO-certified institutions, effective leadership is crucial for setting clear objectives, allocating resources, and promoting a culture of continuous improvement, as required by ISO 9001's mandate for top management commitment to the QMS (Dibia et al., 2012). This enhances efficiency, process coordination, communication, and the development of organizational and personnel capabilities, fostering stakeholder satisfaction and competitiveness (Ambad et al., 2021; Carvalho et al., 2022; Iqbal, Taib, et al., 2023a). Literature consistently links leadership with organizational performance, showing positive correlations in various sectors (Abbas and Kumari, 2023; Ferdousi et al., 2019; Mehmood et al., 2014). However, empirical validation in higher education (HE) is limited, despite some positive findings in contexts like Oman (Martin and Thawabieh, 2018). Given these mixed results, further research is necessary. In response, the following hypothesis is posited:

H2: The principle of leadership is significantly related to UP in ISO 9001-certified universities.

Engagement of People and UP

The principle of people engagement highlights the importance of competent, empowered individuals in value creation and delivery across all organizational levels (ISO, 2015). Success hinges on the active involvement and dedication of all stakeholders, with management responsible for professionalism, accountability, and employee well-being (Luburić, 2015). Effective collaboration among stakeholders shapes organizational success and market positioning (Dibia et al., 2012). Encouraging engagement involves a team-based approach supported by administrative frameworks, events, and clear communication of values (Moturi and Mbithi, 2015). This principle offers benefits such as clearer quality goals, increased motivation, involvement in improvement efforts, personal growth, and alignment with organizational culture (ISO, 2015). Previous research, including studies in Pakistan and Bangladesh, shows significant impacts on organizational performance (Ferdousi et al., 2019; Mehmood et al., 2014). However, more research is needed in HE to understand the broader impact of employee engagement. Hence, the following hypothesis is proposed:

H3: The principle of engagement of people is significantly related to UP in ISO 9001-certified universities.

Process Approach and UP

The process approach ensures consistent outcomes by managing interconnected processes within a unified system (ISO, 2015). It has evolved from a product-centric to a process-oriented perspective (Castello et al., 2020) and is reinforced by ISO 9001, which mandates defining key operational processes to enhance standardization (Schmuck, 2021). This approach supports systematic process management for desired outcomes, such as focusing efforts, identifying improvements, ensuring uniformity, optimizing performance, and fostering stakeholder confidence (ISO, 2015). In HE, applying the process approach involves managing institutional processes to enhance quality and performance. This includes optimizing processes across teaching, learning, research, and administration (Jingura et al., 2019). For resource-constrained universities in developing countries, a process-oriented mindset can improve efficiency, provided that academic and administrative processes are clearly defined. Integrating this approach into the organizational culture may enhance educational quality and institutional performance. Further research is needed to fully understand its impact, leading to the following hypothesis:

H4: The principle of process approach is significantly related to UP in ISO 9001-certified universities.

Improvement and UP

The principle of improvement, as highlighted by ISO (2015), emphasizes the need for ongoing enhancement within organizations. This involves addressing nonconformities through audits, data analysis, and regular QMS evaluations (Moturi and Mbithi, 2015). For organizations adopting ISO 9001, continuous improvement means refining processes, products, services, and overall performance to meet or exceed stakeholder expectations and organizational goals. This approach enhances process performance, organizational capacities, and customer satisfaction by emphasizing root-cause analysis, prevention, and corrective actions, which improve risk management and foster innovation (ISO, 2015). In HE, ongoing advancement through innovation and learning is vital for maintaining competitiveness. This principle supports excellence, accountability, and continual learning, thereby improving UP. While a study in Pakistan's textile sector shows a significant relationship between continuous improvement and organizational performance (Mehmood et al., 2014), more research in HE is needed to confirm this link. Therefore, the following hypothesis is proposed:

H5: The principle of improvement is significantly related to UP in ISO 9001-certified universities.

Evidence-Based Decision-Making and UP

ISO (2015) advocates evidence-based decision-making, emphasizing the use of systematic research to inform choices and improve outcomes. Understanding cause-effect relationships and unintended consequences is crucial due to decision-making complexity. Integrating factual information and data analysis enhances impartiality and confidence among decision-makers (Luburić, 2015). Organizations that prioritize evidence-based decision-making experience various benefits, including improved decision processes, increased operational effectiveness, and greater flexibility in decision revision (ISO, 2015). In HE, evidence-based decision-making involves systematically evaluating institutional performance using relevant indicators and relying on empirical results (Jingura et al., 2019). This approach prioritizes data and analysis over anecdotal evidence or intuition in universities, which is crucial for identifying improvement areas, allocating resources effectively, and assessing intervention impacts on performance outcomes. Integrating evidence-based decision-making into university operations facilitates more informed and effective actions, ultimately contributing to enhanced performance. Given the limited research on its association with organizational performance, the following hypothesis is formulated:

H6: The principle of evidence-based decision-making is significantly related to UP in ISO 9001-certified universities.

Relationship Management and UP

The seventh principle of QMS, relationship management, emphasizes the importance of maintaining connections with stakeholders, including suppliers, for sustained success (ISO, 2015). This principle involves understanding needs, building trust, and ensuring open communication with customers, suppliers, partners, employees, and the community. ISO 9001 mandates organizations to identify stakeholders, assess their satisfaction, and enhance processes to improve stakeholder contentment. This boosts organizational and stakeholder performance, aligns goals, strengthens value creation, manages quality-related risks, and coordinates supply chains (ISO, 2015). In HE, effective relationship management is crucial for engaging stakeholders, including industry and research organizations, and fostering collaboration and innovation (Jingura et al., 2019). Universities focus on relationships with students, faculty, alumni, government agencies, and industry partners, leading to benefits such as tailored programs, enhanced satisfaction, and improved public image. Given its importance and limited empirical evidence, the following hypothesis is introduced:

H7: The principle of relationship management is significantly related to UP in ISO 9001-certified universities.

Research Framework

This study employs the Resource-Based View (RBV) theory, which posits that a firm's competitive advantage and performance are primarily driven by its resources and capabilities (Barney, 1991). It explores how these resources and capabilities influence competitive advantage in higher education, focusing on ISO 9001 certification as a valuable asset for universities. Implementing the QMPs within ISO 9001 can enhance operational efficiency, educational quality, and overall, UP. The framework depicted in Figure 1 includes seven independent variables representing the QMPs and one dependent variable, UP. By viewing the QMPs as internal resources, this study underscores their significance for Pakistani universities facing resource constraints and performance challenges. These principles promote continuous improvement and competitive positioning in national and global rankings. The RBV's emphasis on resource development and sustainability is particularly relevant for examining the impact of QMPs on university performance in developing countries. Empirical evidence supports the connection between ISO 9001's QMPs and enhanced performance, positioning RBV as a suitable framework for investigating the strategic role of quality management practices in achieving university success.

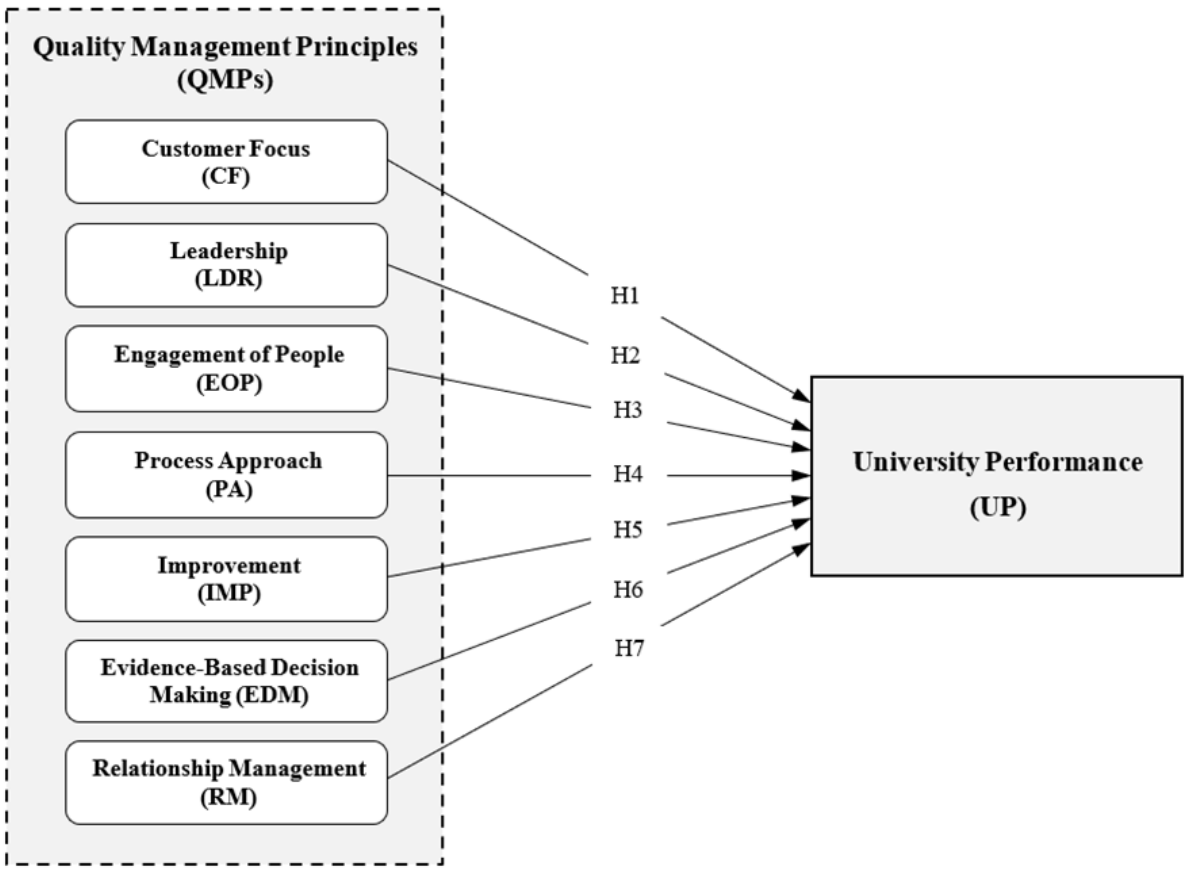

Figure 1. Conceptual framework.

METHODOLOGY

Sampling and Procedure

This study focused on ISO 9001-certified universities in Pakistan, with academic and administrative staff serving as the primary respondents. Due to the unavailability of a comprehensive sampling frame, the ISO Survey (2022) was used as a reference, which identified 25 such universities across the country. However, as detailed distribution data was not provided, the author manually identified seven universities by reviewing their official websites. In light of the missing sampling frame, a purposive sampling technique was adopted to target individuals with relevant expertise and knowledge (Sekaran and Bougie, 2016). This approach is consistent with prior research conducted across diverse contexts, particularly in higher education (Al-Sulami et al., 2023; Charoenratana and Kharel, 2024; Iqbal, 2024; Iqbal, Hanif, et al., 2024; Novitasari and Agustia, 2021), where purposive sampling has been employed to select respondents with specialized knowledge and experience pertinent to the study objectives.

The universities were the units of analysis, while staff members served as the units of observation. A total of 200 online questionnaires were distributed via email, with participants asked to provide informed consent prior to completing the questionnaire, ensuring both anonymity and confidentiality. Of the 135 responses received, 14 straight-line responses were excluded, leaving 121 valid responses for the final analysis, resulting in a 60.5% response rate. To assess the adequacy of the sample size, G*Power 3.1.9.7 software was used, which recommended a minimum of 103 responses to achieve sufficient statistical power (0.80) at a significance level of 0.05, with a moderate effect size of 0.15 (Memon et al., 2020). As a result, the final sample size of 121 surpassed this threshold, ensuring robust statistical analysis and reliable findings.

Measures

The questionnaire for this study utilized a 5-point Likert scale and consisted of 51 questions divided into two sections. The first section included seven demographic questions, while the second comprised 44 items. To assess the ISO 9001 QMPs, 29 items were adopted from a recent study conducted in the higher education context (Iqbal, 2024), originally adapted from research in the Mexican manufacturing sector (Sanchez-Lizarraga et al., 2020). UP was measured using 15 items based on established research and international rankings, encompassing teaching, research, class sizes, research impact, patents, graduate employability, course variety, community service, international faculty ratio, academic support, infrastructure, revenue sources, and university brand (Abubakar et al., 2018; Hernandez-Diaz et al., 2020). A pre-test with seven experts—three senior academics, three QA directors, and one experienced quality practitioner—was conducted to refine the questionnaire.

RESULTS AND DİSCUSSİON

Before selecting the appropriate software for data analysis, the collected data were tested for normality using the Kolmogorov-Smirnov (K-S) test and descriptive statistics with SPSS-25. The results indicated non-normality at a significance level of ϱ=0.05. Consequently, Partial Least Squares Structural Equation Modeling (PLS-SEM) was employed. PLS-SEM was appropriate due to the study's use of seven QMPs within the RV framework to assess UP, as it handles multiple independent variables well. This method also provides reliable estimates for non-normal data and small sample sizes (Hair et al., 2019) and is useful for exploring and refining theoretical frameworks. The Variance Inflation Factor (VIF) for each indicator was below 3.3 (Kock, 2015), indicating no issues with multicollinearity or common-method bias.

Participants' Profile

The demographic composition of the respondents (n=121) is as follows: 87 (71.9%) were from public universities and 34 (28.1%) from private universities. Regionally, 52 (43%) were from Islamabad, 34 (28.1%) from Karachi, and 18 (14.9%) each from Jamshoro and Lahore. Gender distribution included 63 males (52.1%) and 58 females (47.9%). Age-wise, 61 (50.4%) were 41-50 years old, and 56 (46.3%) were 31-40 years old. Most respondents held a Ph.D. (64, 52.9%) or an MSc (46, 38%). Professional roles included assistant professors (39, 32.2%) and lecturers (31, 25.6%). Departmental representation was Engineering (43, 35.5%), Social Sciences (22, 18.2%), and others (see Table 1).

Table 1. Participants' profile.

Items	N	%
Sector		
Public Sector	87	71.9
Private Sector	34	28.1
City		
Islamabad	52	43.0
Karachi	34	28.1
Jamshoro	18	14.9
Lahore	17	14.0
Gender		
Male	63	52.1
Female	58	47.9
Designation		
Professor	7	5.8
Associate Professor	29	24.0
Assistant Professor	39	32.2
Lecturer	31	25.6
Director	7	5.8
Deputy Director	4	3.3
Assistant Director	4	3.3
Age		
30 or less	3	2.5
31 – 40	56	46.3
41 – 50	61	50.4
51 – 60	1	0.8
Qualification		
BS/Master	3	2.5
MS/M.Phil	46	38.0
PhD.	64	52.9
Post. Doc.	8	6.6
Department		
Social Sciences	22	18.2
Management Sciences	20	16.5
Computer Sciences	21	17.4
Engineering	43	35.5
QEC	15	12.4

Source(s): Created by Authors.

Descriptive Statistics

Descriptive statistics, including mean (M) and standard deviation (SD), are summarized in Table 2. The variables are customer focus (M = 3.67, SD = 0.56), leadership (M = 3.85, SD = 0.63), engagement of people (M = 3.48, SD = 0.78), process approach (M = 3.39, SD = 0.76), improvement (M = 3.78, SD = 0.73), evidence-based decision making (M = 3.42, SD = 0.89), relationship management (M = 3.41, SD = 0.68), and university performance (M = 3.25, SD = 0.52). Leadership had the highest mean score, followed by improvement and customer focus. Standard deviations ranged from 0.52 to 0.89, reflecting a tight clustering around the mean.

Table 2. Descriptive statistics.

	N	Minimum	Maximum	Mean	Std. Deviation
CF	121	2.17	4.83	3.6736	0.55586
LDR	121	2.25	5.00	3.8471	0.62780
EOP	121	2.00	5.00	3.4835	0.78444
PA	121	1.60	4.80	3.3983	0.76485
IMP	121	2.33	5.00	3.7851	0.73139
EDM	121	1.25	5.00	3.4153	0.89008
RM	121	1.67	5.00	3.4160	0.68486
UP	121	1.47	4.33	3.2540	0.52594

Source(s): Created by Authors.

Measurement Model

The measurement model (see Figure 2) was evaluated for factor loadings, reliability, convergent validity, and discriminant validity. Five items (UP3, UP4, UP6, UP10, and UP11) were excluded due to factor loadings below 0.500; the remaining items had values above 0.600. The model met validity criteria, with all parameter values exceeding recommended thresholds: Cronbach's alpha (α) > 0.700, Composite Reliability (CR) > 0.700, and Average Variance Extracted (AVE) > 0.500 (Hair et al., 2016, 2017). Details are in Table 3.

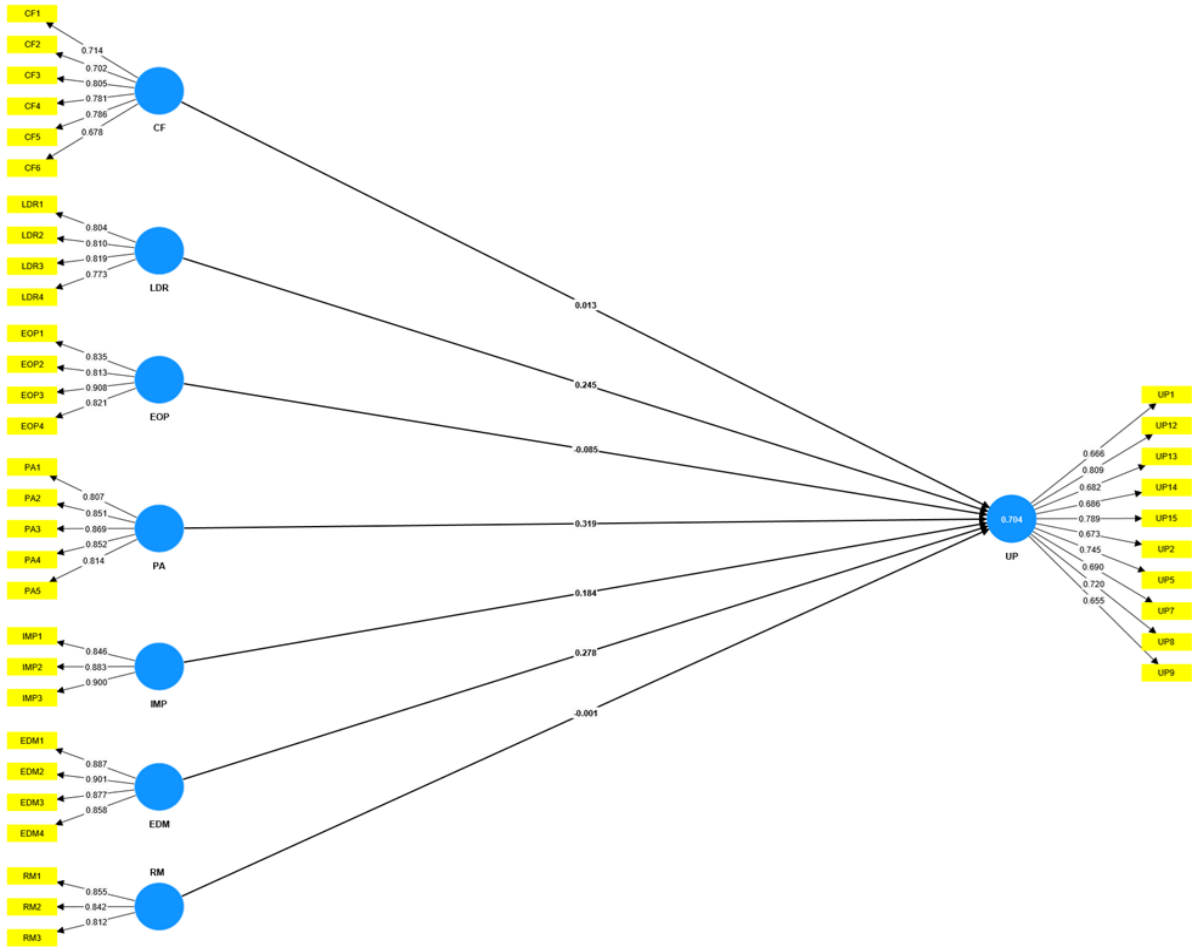

Figure 2. Measurement model.

Table 3. Reliability and convergent validity.

Constructs	Item	Loading	Alpha	rho_A	CR	AVE
Customer Focus (CF)	CF1	0.714	0.842	0.864	0.882	0.557
	CF2	0.702				
	CF3	0.805				
	CF4	0.781				
	CF5	0.786				
	CF6	0.678				
Leadership (LDR)	LDR1	0.804	0.815	0.817	0.878	0.643
	LDR2	0.810				

	LDR3	0.819				
	LDR4	0.773				
Engagement of People (EOP)	EOP1	0.835	0.868	0.890	0.909	0.714
	EOP2	0.813				
	EOP3	0.908				
	EOP4	0.821				
Process Approach (PA)	PA1	0.807	0.895	0.899	0.922	0.704
	PA2	0.851				
	PA3	0.869				
	PA4	0.852				
	PA5	0.814				
Improvement (IMP)	IMP1	0.846	0.851	0.873	0.909	0.768
	IMP2	0.883				
	IMP3	0.900				
Evidence-based decision making (EDM)	EDM1	0.887	0.903	0.906	0.932	0.775
	EDM2	0.901				
	EDM3	0.877				
	EDM4	0.858				
Relationship management (RM)	RM1	0.855	0.786	0.791	0.875	0.700
	RM2	0.842				
	RM3	0.812				
University performance (UP)	UP1	0.666	0.892	0.897	0.912	0.509
	UP2	0.673				
	UP5	0.745				
	UP7	0.690				
	UP8	0.720				
	UP9	0.655				
	UP12	0.809				
	UP13	0.682				
	UP14	0.686				
	UP15	0.789				

Note: AVE, average variance extracted; CR, composite reliability.
Source(s): Created by Authors.

Furthermore, the discriminant validity of all constructs was assessed using the Heterotrait-Monotrait (HTMT) method. The findings (see Table 4) demonstrated that the HTMT ratio for each variable stayed below the suggested threshold of 0.85 (Henseler et al., 2015), thereby affirming the discriminant validity of all variables.

Table 4. Discriminant validity - HTMT ratio.

	CF	**LDR**	**EOP**	**PA**	**IMP**	**EDM**	**RM**	**UP**
CF								
LDR	0.770							
EOP	0.693	0.780						
PA	0.813	0.855	0.850					
IMP	0.611	0.700	0.581	0.647				
EDM	0.744	0.748	0.725	0.814	0.751			
RM	0.629	0.725	0.674	0.656	0.488	0.741		
UP	0.696	0.837	0.672	0.836	0.743	0.818	0.618	

Note. CF: customer focus, LDR: leadership, EOP: engagement of people, PA: process approach, IMP: improvement, EDM: evidence-based decision making, RM: relationship management, UP: university performance. **Source(s):** Created by Authors

Structural Model

The structural model was evaluated for explanatory power, predictive relevance, and hypothesis testing. The coefficient of determination (R^2) for UP was 0.704, indicating substantial explanatory power (Chin, 1998; Hair et al., 2017). The effect size (f^2) assessed the impact of omitting an exogenous construct on endogenous constructs. Results showed moderate effects for LDR, PA, IMP, and EDM on UP (0.072, 0.090, 0.057, and 0.081,

respectively), and weak effects for CF, EOP, and RM (0.000 to 0.009), aligning with Cohen's (1988) thresholds: substantial (0.35), moderate (0.15), and weak (0.02).

Second, the model's predictive quality was assessed using the blindfolding procedure to calculate Q^2 (Geisser, 1974; Stone, 1974) and PLSpredict (Shmueli et al., 2016). The Q^2 value for the endogenous variable, UP, was 0.333, indicating strong predictive capability. Furthermore, the RMSE (0.612) and MAE (0.479) values for UP were close to zero (Moriasi et al., 2007), affirming the model's predictive relevance within Pakistani universities.

Finally, path coefficients were tested for statistical significance to evaluate the hypothesized paths. Seven hypotheses (H1-H7) were tested regarding the proposed relationships between constructs within the model. Significant effects were found for four QMPs on UP: leadership (H2: $\beta = 0.228$, $t = 2.928$, $p = 0.002$), process approach (H4: $\beta = 0.319$, $t = 2.715$, $p = 0.003$), improvement (H5: $\beta = 0.188$, $t = 2.165$, $p = 0.015$), and evidence-based decision making (H6: $\beta = 0.278$, $t = 2.648$, $p = 0.004$), supporting H2, H4, H5, and H6. Conversely, customer focus (H1: $\beta = 0.011$, $t = 0.109$, $p = 0.456$), engagement of people (H3: $\beta = -0.090$, $t = 0.941$, $p = 0.173$), and relationship management (H7: $\beta = 0.000$, $t = 0.004$, $p = 0.499$) showed no significant impact on UP, thus H1, H3, and H7 were not supported (see Table 5).

Table 5. Hypotheses testing results.

	Relationship	β	SD	t-value	p-value	Decision
H1	CF -> UP	0.011	0.098	0.109	0.456	Not Supported
H2	LDR -> UP	0.248	0.096	2.590	0.005	Supported
H3	EOP -> UP	-0.090	0.095	0.941	0.173	Not Supported
H4	PA -> UP	0.319	0.118	2.715	0.003	Supported
H5	IMP -> UP	0.188	0.087	2.165	0.015	Supported
H6	EDM -> UP	0.278	0.105	2.648	0.004	Supported
H7	RM -> UP	0.000	0.081	0.004	0.499	Not Supported

Note: CF: customer focus, LDR: leadership, EOP: engagement of people, PA: process approach, IMP: improvement, EDM: evidence-based decision making, RM: relationship management, UP: university performance.
Source(s): Created by Authors.

Discussion

Prior literature shows a positive connection between ISO 9001 and organizational performance. A study at a Malaysian university found a strong link between ISO 9000 understanding and organizational performance (Taib et al., 2018). Enhancing performance thus requires improving the comprehension and implementation of ISO 9000 standards and QMPs. This study investigates the influence of seven QMPs from ISO 9001 on UP, using the RBV theory to explore QA practices in Pakistani universities. According to RBV theory, a firm's competitiveness and performance depend on its resource base (Barney, 1991). The study aims to validate RBV theory in HE by identifying these QMPs as crucial resources for UP in Pakistani HE

The study tested seven hypotheses (H1-H7) to assess the impact of these QMPs on UP within the Pakistani university context. While four hypotheses were supported, three were not. Notably, Hypothesis 2 received significant support for the effect of leadership on UP. This finding aligns with previous research showing a positive link between leadership and knowledge management (Abbas and Kumari, 2023), top management support and quality performance/competitive advantage (Ferdousi et al., 2019), and leadership and operational performance (Martin and Thawabieh, 2018). Similarly, hypothesis 4, examining the impact of the process approach on UP, yielded significant results, aligning with ISO 9001 standards suggesting that the process approach fosters improvement opportunities, ensures consistent outcomes, and optimizes performance (ISO, 2015).

Moreover, hypothesis 5 found support for the relationship between improvement and UP, consistent with previous research indicating that continuous improvement significantly predicts organizational performance (Mehmood et al., 2014), with ISO 9001 emphasizing the role of improvements in enhancing process performance and customer satisfaction (ISO, 2015). Additionally, hypothesis 6 demonstrated a significant relationship between evidence-based decision-making and UP, supported by prior research suggesting that integrating facts and data analysis enhances decision-makers' objectivity and confidence (Luburić, 2015), leading to improved operational effectiveness and efficiency (ISO, 2015).

In contrast, hypothesis 1 examining the impact of customer focus on UP revealed an insignificant association, consistent with prior research in the textile sector in Pakistan (Mehmood et al., 2014). This may be attributed to limited resources, competing priorities, cultural factors, and traditional hierarchical structures within universities hindering effective stakeholder engagement. Similarly, hypothesis 3 found no empirical evidence supporting the influence of people's engagement on UP. This contradicts prior research, particularly in Pakistan's textile sector, which has shown a significant correlation between employee involvement and organizational performance (Mehmood et al., 2014), as well as quality performance and competitive advantage (Ferdousi et al., 2019). However, it's important to note that these studies were confined to the textile and garment sectors, and their applicability to

the HE context may be limited. This insignificant relationship might be due to bureaucratic processes, lack of empowerment, and resource constraints inhibiting meaningful involvement among faculty, staff, and students.

Lastly, hypothesis 7 indicated an insignificant relationship between relationship management and UP, possibly stemming from ineffective management of key stakeholders, such as alumni and industry partners, exacerbated by political interference and bureaucratic hurdles. In summary, while this study highlights the significant impact of leadership, the process approach, improvement, and evidence-based decision-making on UP within Pakistani universities, it also underscores the challenges and limitations associated with customer focus, people's engagement, and relationship management in the context of HE.

CONCLUSION AND IMPLICATIONS

Conclusion

This study aims to examine how seven established QMPs affect UP among seven universities in Pakistan certified to the ISO 9001 standard. By employing the RBV theory, significant relationships are identified between four QMPs—leadership, process approach, improvement, and evidence-based decision-making—and UP. However, the study reveals insignificant associations between customer focus, engagement of people, and relationship management with UP. These findings underscore the importance of strategic prioritization and tailored interventions to effectively leverage QMPs in enhancing organizational effectiveness and stakeholder satisfaction within the university context. In summary, this study contributes to both theoretical understanding and practical applications by integrating QMPs with existing QA mechanisms in the global HE context.

Theoretical Implications

The study advances theoretical understanding within the RBV framework by analyzing prevailing QA practices in the global HE landscape. It specifically investigates the impact of ISO's seven QMPs on UP in both public and private universities. Building on RBV theory, this research extends current knowledge by conceptualizing QMPs as valuable, scarce, distinctive, and irreplicable resources within the global HE context. This contribution unfolds in two main avenues. First, it confirms the applicability of RBV theory in HE, suggesting that the seven QMPs possess significant universal value. Second, by identifying which QMPs significantly affect UP, the study elucidates the mechanisms through which QMS practices impact organizational outcomes in the global HE sector. It explores how ISO 9001's seven QMPs enhance theoretical frameworks for QA in the HE sector worldwide. By strategically utilizing these insights, universities can improve academic quality, enhance stakeholder satisfaction, and ultimately elevate their image, reputation, and international rankings on a global scale.

Practical Implications

The findings offer actionable insights for university administrators, quality managers, and policymakers in the global HE context. The study elucidates significant correlations between specific QMPs and UP, emphasizing the strategic significance of leadership, process approach, continuous improvement, and evidence-based decision-making within the Pakistani university landscape. The practical implications of the study can be delineated into three parts. Firstly, stakeholders can prioritize efforts and allocate resources towards implementing and enhancing key QMPs, such as leadership, process approach, improvement, and evidence-based decision-making. Secondly, aligning practices with these pivotal QMPs can augment overall effectiveness, thereby fostering improvements in educational outcomes, stakeholder satisfaction, and organizational reputation. Lastly, universities can customize QMS implementation strategies to concentrate on pertinent and advantageous principles within their specific context, thereby optimizing resource allocation and maximizing impact.

Limitations and Future Recommendations

Although this study provides valuable insights, it has limitations, particularly the absence of a sampling frame, which made it challenging to identify ISO-certified universities in Pakistan. Consequently, participant selection was purposive rather than random and limited to teaching and non-teaching staff from seven universities with ISO 9001 certification. Future research should include additional stakeholders such as students, alumni, and industry partners, and employ random sampling techniques whenever feasible. Additionally, researchers may explore new connections to gain deeper insights into the effectiveness of ISO 9001 implementation in enhancing academic and administrative processes, ultimately improving academic quality and UP.

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