

The Impact of Total Quality Management Practices on Organizational Performance: The Mediating Role of Innovation Capability in Small and Medium-Sized Enterprises

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Abstract

Background: Total Quality Management (TQM) has increasingly been recognized as a strategic management approach capable of improving organizational effectiveness beyond traditional quality outcomes. However, the mechanisms through which TQM practices contribute to organizational performance, particularly in small and medium-sized enterprises (SMEs), remain understood. This study examined the effect of TQM practices on organizational performance and investigated the mediating role of innovation capability in this relationship.

Methods: A quantitative, cross-sectional explanatory design was employed among 312 managers, supervisors, and experienced employees from SMEs. Data were collected using structured questionnaires measuring TQM practices, innovation capability, and organizational performance. Hypothesized relationships were examined using partial least squares structural equation modeling (PLS-SEM).

Results: TQM practices were positively associated with innovation capability ($\beta = .61, t = 14.83, p < .001$) and organizational performance ($\beta = .24, t = 5.21, p < .001$). Innovation capability also demonstrated a significant positive effect on organizational performance ($\beta = .58, t = 12.67, p < .001$). TQM practices explained 37.2% of the variance in innovation capability ($R^2 = .372$), while TQM practices and innovation capability jointly explained 58.4% of the variance in organizational performance ($R^2 = .584$). The indirect effect of TQM practices on organizational performance through innovation capability was significant ($\beta = .354, t = 9.41, p < .001$, 95% CI [.278, .428]), indicating partial mediation. The structural model demonstrated acceptable predictive relevance and fit (SRMR = .052).

Conclusions: The findings suggest that TQM practices enhance organizational performance both directly and indirectly by strengthening innovation capability.

Keywords: Total Quality Management; Innovation Capability; Organizational Performance; Small and Medium-Sized Enterprises; Quality Management Practices

Introduction

In increasingly competitive and rapidly changing business environments, small and medium-sized enterprises (SMEs) face persistent pressure to improve their performance while simultaneously responding to

changing customer expectations, technological developments, resource constraints, and competitive threats (Soomro, et al., 2025). Unlike large organizations, SMEs often operate with more limited financial, technological, and human resources, making the efficient use of available capabilities particularly important for sustaining competitiveness. Under these conditions, organizational performance cannot be improved solely through cost reduction or short-term operational efficiency (Monadi, 2025; Wang, et al., 2025). Rather, SMEs increasingly need management approaches that enable them to improve their processes continuously, respond effectively to customer requirements, develop new solutions, and translate organizational knowledge into innovation (Nguyen, et al., 2023). Consequently, identifying managerial practices that simultaneously strengthen operational effectiveness and innovation capability has become an important issue in contemporary management research.

Total Quality Management (TQM) represents one of the most influential management approaches developed to enhance organizational effectiveness through systematic attention to quality, customer needs, continuous improvement, employee participation, and leadership commitment (Shi, 2025). Although TQM was initially associated primarily with quality control and defect reduction, contemporary perspectives conceptualize it as an organization-wide management philosophy that integrates quality principles into strategic decision-making, organizational processes, employee behavior, and relationships with customers and other stakeholders (Aichouni, et al., 2023; Monadi, 2025). TQM emphasizes the continuous improvement of products and processes, evidence-based decision-making, customer orientation, employee involvement, leadership commitment, and the integration of quality principles across organizational functions (Mosadeghrad, 2014). By establishing a culture in which employees are encouraged to identify problems, share knowledge, and seek improvements, TQM may contribute to organizational outcomes that extend beyond quality itself.

The potential contribution of TQM to organizational performance has received considerable attention in management research (A'aqoulah, A et al., 2025). Organizations adopting comprehensive quality management practices may achieve improvements in operational efficiency, customer satisfaction, productivity, employee commitment, and financial outcomes (Afzal, et al., 2022). Quality-oriented organizations can reduce process variability and waste, improve consistency, strengthen customer relationships, and develop more reliable organizational processes. For SMEs, these benefits may be particularly important because inefficient processes or quality failures can have disproportionately large consequences when financial and operational resources are limited (Ji, et al., 2024). Nevertheless, the relationship between TQM and organizational performance may not be entirely direct. The mechanisms through which quality management practices are transformed into superior organizational outcomes require further investigation.

One potentially important mechanism is innovation capability (Ongesa Nyamboga, 2026). Innovation capability refers to an organization's ability to identify opportunities, generate and implement new ideas, develop or adopt new products and processes, and transform knowledge and resources into innovative outcomes (Erdiaw-Kwasie, et al., 2023). In contemporary markets, organizations increasingly compete not simply on the basis of existing products and processes but on their ability to innovate continuously. For SMEs, innovation capability may be particularly important because their relatively flexible structures and shorter communication channels can potentially facilitate rapid responses to environmental changes (Xia, et al., 2024). However, innovation does not emerge automatically from organizational flexibility. It requires managerial systems and organizational practices that encourage learning, experimentation, knowledge sharing, employee participation, and continuous improvement.

TQM may provide precisely such an organizational foundation. Several central principles of TQM have conceptual similarities with the organizational conditions required for innovation (Vassos, et al., 2024). Continuous improvement encourages employees to identify inefficiencies and develop alternative solutions. Employee involvement creates opportunities for frontline workers to contribute ideas based on their direct knowledge of organizational processes and customer needs (Texeira-Quiros, et al., 2022). Leadership commitment can establish an organizational climate in which experimentation and improvement are supported rather than discouraged. Customer orientation can provide information about unmet needs and changing market expectations, while process management and data-based decision-making can help organizations evaluate and refine innovative ideas (Monadi, 2025; Yahiaoui, et al., 2022). Thus, TQM may influence organizational performance not only through direct improvements in quality and efficiency but also by developing the organizational capability to innovate.

From this perspective, innovation capability may represent a critical mediating mechanism linking TQM practices to organizational performance (Wu & Gu, 2022). The logic of this relationship is that TQM establishes organizational routines and a quality-oriented culture that facilitate the development of innovation-related capabilities. These capabilities, in turn, enable organizations to translate quality-oriented practices into new products, improved processes, novel solutions, and more effective responses to market changes (Nguyen & Dao, 2023). Consequently, organizations with strong TQM practices may perform better partly because they are better positioned to generate, adopt, and implement innovations. Examining innovation capability as a mediator therefore provides a more comprehensive explanation of how TQM contributes to organizational performance.

This perspective is particularly relevant in SMEs. Although SMEs can benefit substantially from TQM, the implementation of formal quality management systems can be challenging because of limited financial resources, insufficient specialized expertise, informal organizational structures, and competing managerial priorities. At the same time, SMEs may possess characteristics that facilitate innovation, including organizational flexibility, relatively short decision-making processes, close relationships between employees and managers, and proximity to customers (Blais & Cloutier, 2023). The interaction between these characteristics and quality management practices may determine whether TQM becomes a mechanism for genuine organizational improvement or remains primarily an administrative quality-control system (Leso, et al., 2023). Investigating innovation capability as a mediating variable can therefore help explain why TQM may produce stronger performance outcomes in some SMEs than in others.

The relationship between TQM, innovation capability, and organizational performance can also be understood through the Resource-Based View (RBV) of the firm (Eniola, et al., 2019). From an RBV perspective, sustainable competitive advantage depends on valuable, rare, difficult-to-imitate, and organizationally embedded resources and capabilities (The, et al., 2023). TQM practices may contribute to the development of organizational resources such as knowledge-sharing routines, employee involvement, process discipline, customer knowledge, and continuous learning. These resources can strengthen innovation capability, which represents a more dynamic organizational competence for transforming internal and external knowledge into new products, services, processes, or managerial solutions (Huynh, et al., 2024). Innovation capability can subsequently contribute to superior organizational performance by enabling SMEs to respond to market opportunities more effectively than competitors.

The proposed framework can also be informed by the dynamic capabilities' perspective, which emphasizes an organization's ability to sense changes, seize opportunities, and transform its resources and processes in response to environmental conditions (Cyfert, et al., 2021). TQM practices may create routines that support these capabilities by encouraging continuous monitoring, organizational learning, problem solving, and incremental improvement. Innovation capability can then function as an important mechanism through which SMEs transform these routines into adaptive and performance-enhancing outcomes (Furnival, et al., 2019). Accordingly, the proposed model moves beyond the traditional assumption that TQM is primarily a quality-improvement mechanism and instead conceptualizes TQM as a potential strategic capability-building approach.

Despite the substantial literature on TQM and organizational performance, several issues remain worthy of further investigation. First, much of the existing research has focused on the direct relationship between TQM and performance, potentially overlooking the organizational capabilities through which quality management practices generate performance benefits. Second, although innovation has increasingly been recognized as an important consequence of quality-oriented management, the mediating role of innovation capability requires further empirical examination, particularly within SMEs. Third, SMEs operate under resource and environmental conditions that differ substantially from those of large organizations, making it inappropriate to assume that findings from large firms can automatically be generalized to smaller enterprises. A more integrated examination of TQM, innovation capability, and organizational performance may therefore provide a clearer understanding of the strategic value of quality management in SMEs.

Accordingly, the present study aims to examine the impact of Total Quality Management practices on organizational performance and to determine whether innovation capability mediates this relationship among SMEs. The proposed model assumes that TQM practices contribute directly to organizational performance while also strengthening innovation capability, which subsequently enhances organizational performance. By testing both the direct and indirect pathways, the study seeks to clarify whether innovation capability constitutes an important mechanism through which TQM generates organizational benefits.

Methods

Research Design and Participants

A quantitative, cross-sectional, explanatory research design was employed to examine the relationships among Total Quality Management (TQM) practices, innovation capability, and organizational performance in small and medium-sized enterprises (SMEs). A minimum sample size was determined through an a priori statistical power analysis. Assuming a medium effect size ($f^2 = 0.15$), a significance level of $\alpha = .05$, statistical power of .80, and a maximum of two predictors for the most complex endogenous construct, the analysis indicated that at least 68 observations would be required. Because SEM estimates can be sensitive to sample size and because the study included latent constructs with multiple indicators, a substantially larger sample was targeted to improve estimation stability, statistical power, and the generalizability of the findings. Accordingly, approximately 350 valid responses were targeted, and the final sample consisted of 312 respondents from SMEs. Participants were recruited using a convenience sampling approach through direct contact with SMEs and professional networks. Participation was voluntary, and respondents were informed about the purpose of the

study, the confidential treatment of their responses, and their right to withdraw at any stage without consequences.

Measures

All constructs were measured using previously developed and widely used scales adapted to the SME context. Items were assessed using a five-point Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Where necessary, the wording of individual items was slightly modified to ensure that they were appropriate for the organizational and SME context without changing their conceptual meaning.

Total Quality Management Practices: TQM practices were operationalized as an organization-wide management philosophy emphasizing customer orientation, continuous improvement, employee involvement, process management, data-driven decision-making, and leadership commitment. The measurement instrument included multiple items assessing the extent to which quality principles were embedded in organizational practices. Representative dimensions included management leadership, customer focus, continuous improvement, employee involvement, process management, and fact-based decision-making. Higher scores indicated a stronger implementation of TQM practices within the organization.

Innovation Capability: Innovation capability was assessed using items measuring the organization's ability to identify new opportunities, generate and implement new ideas, introduce new products or services, improve organizational processes, and respond creatively to changing market conditions. The scale captured the organization's ability to transform knowledge and available resources into innovative solutions. Higher scores indicated stronger organizational innovation capability.

Organizational Performance: Organizational performance was assessed using a multidimensional subjective performance scale. Items captured perceived performance in areas such as productivity, operational efficiency, customer satisfaction, market performance, profitability, growth, and overall organizational effectiveness. A subjective measure was used because objective financial and operational indicators are often difficult to obtain consistently from SMEs. Respondents were asked to evaluate their organization's performance relative to its objectives and, where applicable, competitors. Higher scores represented better organizational performance.

Instrument Adaptation and Content Validity

Because the study examined constructs within the specific context of SMEs, the measurement instruments were reviewed before data collection to ensure conceptual and contextual appropriateness. The items were examined by a panel of experts with backgrounds in quality management, organizational behavior, innovation management, and SME management. Experts evaluated the relevance, clarity, and appropriateness of the items. Content validity was assessed using the Content Validity Ratio (CVR) and Content Validity Index (CVI), where appropriate. Items that did not demonstrate adequate content validity were revised or removed before the final questionnaire was administered. A preliminary pilot study was subsequently conducted with a small group of SME managers/employees who were not included in the final sample. The pilot assessment was used to evaluate item clarity, questionnaire completion time, and potential ambiguities in wording.

Reliability and Construct Validity

The psychometric quality of the measurement model was assessed before testing the structural relationships. Internal consistency reliability was evaluated using Cronbach's alpha and composite reliability (CR). Values of .70 or higher were considered indicative of acceptable reliability. Convergent validity was evaluated using standardized factor loadings and the average variance extracted (AVE). Standardized loadings of approximately .70 or higher were considered desirable, although slightly lower loadings were retained when theoretically justified and when the overall measurement model demonstrated satisfactory validity. AVE values of .50 or higher were interpreted as evidence that a construct explained more than half of the variance in its indicators. Discriminant validity was examined using the heterotrait–monotrait ratio (HTMT). HTMT values below .85 were considered evidence of adequate discriminant validity, with values below .90 also considered acceptable under less conservative criteria. The Fornell–Larcker criterion was additionally examined as a supplementary assessment of discriminant validity. Potential multicollinearity among predictor constructs was evaluated using variance inflation factor (VIF) values. VIF values below 5.00, and preferably below 3.00, were considered indicative of an absence of problematic multicollinearity.

Data Collection Procedure

Data were collected using a structured self-administered questionnaire distributed electronically and/or in printed form to eligible SME employees and managers. Before completing the questionnaire, participants received an explanation of the study objectives and were informed that their participation was voluntary and that responses would be analyzed anonymously. To reduce the possibility of common-method bias, the questionnaire was designed using clear and concise wording, and respondents were assured that there were no right or wrong

answers. Items measuring the predictor, mediator, and outcome constructs were presented in a manner intended to reduce response pattern effects. In addition, statistical assessment of common-method bias was conducted during data analysis.

Data Screening

Before conducting the main analyses, the dataset was screened for incomplete responses, missing values, outliers, and abnormal response patterns. Questionnaires with substantial missing data or evidence of careless responding were excluded from the final analysis. The distributional properties of the variables were assessed using skewness and kurtosis statistics. Values within approximately ± 2 were considered indicative of acceptable univariate distributional characteristics. Multivariate outliers were examined where appropriate, and Mahalanobis distance was considered for identifying potentially influential observations. Missing data were evaluated to determine their frequency and pattern. When the proportion of missing data was negligible, appropriate imputation procedures were used; cases with excessive missing information were removed from the analysis. These procedures were conducted before estimation of the measurement and structural models.

Data Analysis

The data were analyzed using IBM SPSS Statistics 27 and SmartPLS4. Descriptive statistics, including means, standard deviations, frequencies, and percentages, were initially calculated to summarize participant characteristics and the study variables. The measurement model was then evaluated using confirmatory factor analysis within the PLS-SEM framework. Factor loadings, Cronbach's alpha, composite reliability, AVE, HTMT, and VIF were examined to establish the reliability and validity of the constructs. After establishing an acceptable measurement model, the structural model was assessed to test the proposed hypotheses. Path coefficients (β), t -values, and p -values were estimated using a nonparametric bootstrapping procedure with 5,000 resamples. Statistical significance was evaluated at the .05 level, with $p < .05$ indicating a statistically significant relationship. The explanatory power of the endogenous constructs was evaluated using the coefficient of determination (R^2). The effect size (f^2) was used to determine the substantive contribution of each exogenous construct to the endogenous variables. Predictive relevance was evaluated using the Stone–Geisser Q^2 statistic, with positive Q^2 values indicating predictive relevance. Overall model fit was evaluated using the standardized root mean square residual (SRMR). An SRMR value below .08 was considered indicative of acceptable model fit. Where appropriate, additional PLS-SEM fit indices were reported to provide a comprehensive assessment of model quality.

Results

Demographic Characteristics of the Participants

The final sample consisted of 312 respondents working in small and medium-sized enterprises (SMEs). Of these, 198 (63.5%) were male and 114 (36.5%) were female. The mean age of participants was 36.84 ± 7.92 years, and the mean organizational tenure was 7.26 ± 4.81 years. Regarding educational attainment, 42 participants (13.5%) held a diploma or equivalent qualification, 168 (53.8%) held a bachelor's degree, and 102 (32.7%) held a master's degree or higher. With respect to organizational position, 96 respondents (30.8%) were owners or senior managers, 104 (33.3%) were middle-level managers, and 112 (35.9%) were supervisors or experienced employees. Regarding organizational characteristics, 184 SMEs (59.0%) operated in service industries, whereas 128 (41.0%) operated in manufacturing or production-related sectors. In terms of organizational size, 176 firms (56.4%) employed fewer than 50 employees, while 136 (43.6%) employed between 50 and 249 employees. The mean organizational age was 11.37 ± 6.84 years.

Table 1. Demographic and Organizational Characteristics of the Participants

Variable	Category	Frequency	Percentage
Gender	Male	198	63.5
	Female	114	36.5
Age	≤ 30 years	71	22.8
	31–40 years	145	46.5
	41–50 years	72	23.1
	> 50 years	24	7.7
Education	Diploma or equivalent	42	13.5
	Bachelor's degree	168	53.8
	Master's degree or higher	102	32.7
Organizational position	Owner/Senior manager	96	30.8
	Middle manager	104	33.3

Variable	Category	Frequency	Percentage
Industry	Supervisor/experienced employee	112	35.9
	Service	184	59.0
	Manufacturing/production	128	41.0
Firm size	<50 employees	176	56.4
	50–249 employees	136	43.6

Descriptive Statistics and Correlations

Descriptive statistics and Pearson correlation coefficients are presented in Table 2. The findings demonstrated positive and statistically significant correlations among all three major constructs. TQM practices were positively associated with innovation capability ($r = .61, p < .001$) and organizational performance ($r = .55, p < .001$). Innovation capability also showed a strong positive correlation with organizational performance ($r = .67, p < .001$). These results provided preliminary support for the proposed conceptual model and suggested that organizations characterized by stronger quality management practices tended to report higher levels of innovation capability and organizational performance.

Table 2. Means, Standard Deviations, and Correlations Among Study Variables

Variable	M	SD	1	2	3
1. TQM Practices	3.74	0.58	1		
2. Innovation Capability	3.69	0.61	.61**	1	
3. Organizational Performance	3.76	0.57	.55**	.67**	1

Note. $p < .01$.

Assessment of the Measurement Model

Before testing the structural relationships, the reliability and validity of the measurement model were assessed. As shown in Table 3, all constructs demonstrated satisfactory internal consistency. Cronbach's alpha coefficients ranged from .89 to .94, while composite reliability values ranged from .92 to .95, exceeding the recommended threshold of .70. Convergent validity was supported because all AVE values exceeded .50, ranging from .65 to .72. The standardized indicator loadings were also satisfactory, with all retained items loading above .70 on their respective constructs. Discriminant validity was assessed using the HTMT criterion. The HTMT ratios ranged from .63 to .76 and remained below the conservative threshold of .85, indicating that the constructs were empirically distinct from one another. Furthermore, all VIF values were below 3.00, suggesting that multicollinearity was not a concern. The HTMT values were .63 for TQM practices–innovation capability, .71 for TQM practices–organizational performance, and .76 for innovation capability–organizational performance. These results confirmed satisfactory discriminant validity.

Table 3. Reliability, Convergent Validity, and Multicollinearity

Construct	Cronbach's α	CR	AVE	VIF
TQM Practices	.94	.95	.72	1.59
Innovation Capability	.91	.94	.68	1.91
Organizational Performance	.89	.92	.65	2.14

Assessment of the Structural Model

After establishing the adequacy of the measurement model, the structural model was evaluated using the bootstrapping procedure with 5,000 resamples. The results of the hypothesis testing are presented in Table 4. The first hypothesis proposed that TQM practices would positively predict innovation capability. The results supported this hypothesis, demonstrating a strong and statistically significant positive relationship between TQM practices and innovation capability ($\beta = .61, t = 14.83, p < .001$). Thus, SMEs reporting stronger implementation of TQM practices also demonstrated greater innovation capability. The second hypothesis proposed a positive relationship between TQM practices and organizational performance. This hypothesis was also supported. TQM practices had a statistically significant positive effect on organizational performance ($\beta = .24, t = 5.21, p < .001$). The third hypothesis proposed that innovation capability would positively predict organizational performance. The findings strongly supported this hypothesis, with innovation capability showing a significant positive effect on organizational performance ($\beta = .58, t = 12.67, p < .001$).

Table 4. Results of Direct Effects and Hypothesis Testing

Hypothesis	Structural Path	β	t	p	Decision
H1	TQM Practices → Innovation Capability	.61	14.83	<.001	Supported
H2	TQM Practices → Organizational Performance	.24	5.21	<.001	Supported

Hypothesis	Structural Path	β	t	p	Decision
H3	Innovation Capability $\rightarrow$ Organizational Performance	.58	12.67	<.001	Supported

Explained Variance and Effect Sizes

The coefficient of determination (R^2) was used to evaluate the explanatory power of the structural model. TQM practices explained 37.2% of the variance in innovation capability ($R^2 = .372$), indicating a moderate level of explanatory power. Furthermore, TQM practices and innovation capability jointly explained 58.4% of the variance in organizational performance ($R^2 = .584$). This result indicates that the proposed model accounted for a substantial proportion of differences in organizational performance among the participating SMEs. The effect-size analysis demonstrated that TQM practices had a large effect on innovation capability ($f^2 = .59$). Innovation capability had a large effect on organizational performance ($f^2 = .47$), whereas the direct effect of TQM practices on organizational performance was comparatively smaller but still meaningful ($f^2 = .08$).

Table 5. Coefficient of Determination and Effect Sizes

Endogenous Construct	R^2	Predictor	f^2
Innovation Capability	.372	TQM Practices	.59
Organizational Performance	.584	TQM Practices	.08
		Innovation Capability	.47

Mediation Analysis

The mediating role of innovation capability in the relationship between TQM practices and organizational performance was examined using bootstrapping with 5,000 resamples. As presented in Table 6, the indirect effect of TQM practices on organizational performance through innovation capability was positive and statistically significant ($\beta = .354$, $t = 9.41$, $p < .001$). The 95% bias-corrected bootstrap confidence interval ranged from .278 to .428 and did not include zero, providing evidence of a significant indirect effect. Because the direct effect of TQM practices on organizational performance remained statistically significant after innovation capability was incorporated into the model ($\beta = .24$, $p < .001$), the mediation was classified as partial mediation. These findings indicate that TQM practices influence organizational performance both directly and indirectly through their contribution to innovation capability. The indirect effect accounted for a substantial proportion of the total effect of TQM practices on organizational performance. The pattern of findings therefore provides empirical support for the proposition that innovation capability represents an important mechanism through which quality management practices contribute to superior organizational performance.

Table 6. Indirect Effect of TQM Practices on Organizational Performance

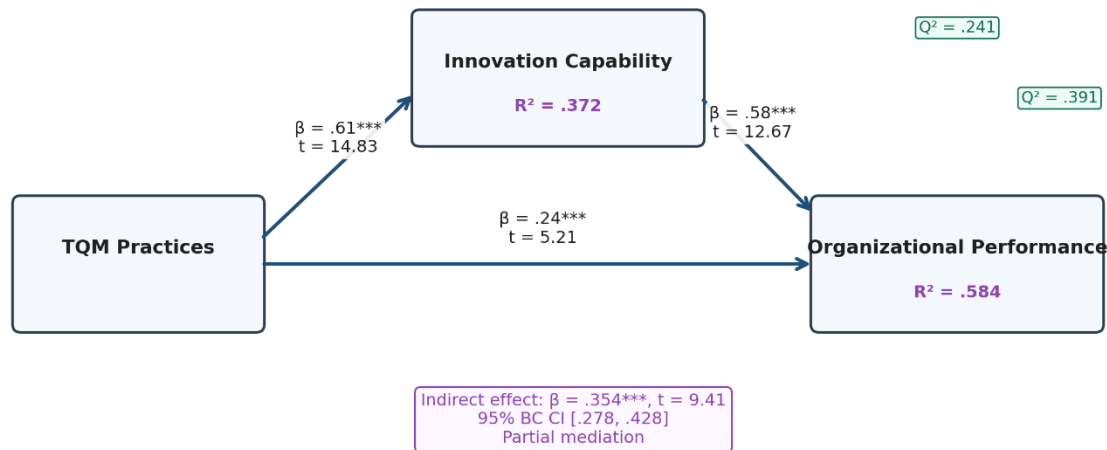
Hypothesis	Indirect Path	β	t	p	95% CI	Decision
H4	TQM Practices $\rightarrow$ Innovation Capability $\rightarrow$ Organizational Performance	.354	9.41	<.001	[.278, .428]	Supported

Predictive Relevance and Model Fit

The predictive quality of the structural model was assessed using Q^2 values obtained through the blindfolding procedure. The Q^2 value for innovation capability was .241, while the Q^2 value for organizational performance was .391. Both values were greater than zero, indicating that the model possessed satisfactory predictive relevance for the endogenous constructs. The overall model fit was also examined using the standardized root mean square residual (SRMR). The SRMR value was .052, which was below the recommended threshold of .08 and indicated an acceptable fit between the empirical data and the proposed model. The overall results therefore indicated that the proposed structural model demonstrated satisfactory explanatory power, predictive relevance, and model fit.

Table 7. Structural Model Quality and Predictive Relevance

Endogenous Construct	R^2	Q^2
Innovation Capability	.372	.241
Organizational Performance	.584	.391
Model fit: SRMR = .052		



Note. *** $p < .001$; Bootstrapping = 5,000 resamples; Model fit: SRMR = .052

Figure 1. Structural Model Results and Hypothesis Testing. This figure illustrates the standardized path coefficients (β) for the structural model. Solid arrows represent significant positive relationships. Values in parentheses indicate the coefficient of determination (R^2) for endogenous constructs. Abbreviations: TQM = Total Quality Management Practices; IC = Innovation Capability; OP = Organizational Performance.

Discussion

The present study examined the impact of Total Quality Management (TQM) practices on organizational performance in small and medium-sized enterprises (SMEs), with particular emphasis on the mediating role of innovation capability. The findings provide evidence that TQM practices are positively associated with organizational performance and that innovation capability represents an important mechanism through which quality-oriented management practices may translate into superior organizational outcomes. More specifically, the results indicated significant positive relationships between TQM and innovation capability, between innovation capability and organizational performance, and between TQM and organizational performance. Furthermore, the significant indirect effect of TQM on organizational performance through innovation capability suggests that innovation capability partially mediates this relationship. These findings provide support for the proposed conceptual model and highlight the importance of integrating quality management with innovation-oriented organizational capabilities.

One of the most important findings was the significant positive effect of TQM practices on organizational performance. This result suggests that SMEs that systematically implement quality-oriented practices are more likely to achieve superior operational, financial, and market-related outcomes. TQM is not simply a collection of quality-control procedures; rather, it represents an organization-wide management philosophy emphasizing customer orientation, continuous improvement, employee participation, process management, leadership commitment, and evidence-based decision-making (Aichouni, et al., 2023; Monadi, 2025). When these principles are embedded within organizational routines, SMEs may be better positioned to reduce operational inefficiencies, improve product and service quality, increase customer satisfaction, and respond more effectively to competitive pressures. The positive relationship observed in the present study therefore supports the argument that quality management can function as a strategic organizational capability rather than merely an operational tool (Mosadeghrad, 2014).

This finding is particularly relevant in the context of SMEs. Unlike large corporations, SMEs frequently operate with limited financial, technological, and human resources. Consequently, inefficient processes, quality failures, customer dissatisfaction, and resource waste may have disproportionately negative consequences for their performance (A'aqoulah, A et al., 2025). TQM practices can provide SMEs with a systematic framework for allocating scarce resources more effectively. Continuous improvement, for example, encourages organizations to identify process deficiencies and implement incremental improvements rather than relying exclusively on expensive large-scale organizational changes. Similarly, employee involvement can enable SMEs to capitalize on employees' experiential knowledge and identify quality problems that may not be visible to senior managers (Ji, et al., 2024). Thus, the implementation of TQM may improve organizational performance by strengthening internal processes while simultaneously enhancing the organization's ability to respond to customer expectations.

The second major finding concerned the positive relationship between TQM practices and innovation capability. This relationship is theoretically important because quality management and innovation have sometimes been treated as separate organizational domains. The findings suggest, however, that quality-oriented management practices may create organizational conditions that facilitate innovation. Continuous improvement encourages employees to question existing processes and search for better ways of performing organizational activities. Leadership commitment can provide the strategic direction and organizational support required for experimentation (Erdiaw-Kwasie, et al., 2023). Employee involvement can increase the diversity of ideas available to the organization, while customer orientation can provide information about emerging market needs. Collectively, these practices can create an organizational environment in which innovation becomes more systematic and less dependent on isolated individual initiatives (Texeira-Quiros, et al., 2022).

The positive association between TQM and innovation capability can also be interpreted through the perspective of organizational learning. Effective quality management requires organizations to collect information, evaluate processes, identify deviations, implement corrective actions, and learn from previous experiences. These activities can strengthen the organization's capacity to acquire, interpret, and apply knowledge. Over time, such learning processes may increase the organization's ability to develop new products, improve existing services, redesign processes, and introduce novel managerial practices (Monadi, 2025; Yahiaoui, et al., 2022). Thus, TQM may contribute to innovation not by directly prescribing specific innovations but by developing the organizational infrastructure and learning culture that make innovation more feasible.

The third finding demonstrated a significant positive effect of innovation capability on organizational performance. This result emphasizes that the ability to innovate is an important source of competitive advantage for SMEs. In rapidly changing markets, organizations cannot rely solely on existing products, technologies, or operating procedures. Innovation capability allows firms to respond to changing customer expectations, technological developments, competitive threats, and emerging market opportunities (Wu & Gu, 2022). SMEs with stronger innovation capabilities may therefore be more capable of introducing improved products and services, developing new processes, entering new markets, and differentiating themselves from competitors.

Importantly, innovation capability may be particularly valuable for SMEs because their relatively smaller organizational structures can facilitate flexibility and rapid decision-making. When supported by appropriate managerial practices, SMEs may be able to convert new ideas into organizational outcomes more quickly than larger and more bureaucratic organizations. However, this potential depends heavily on whether innovation is supported by organizational routines and management systems (Nguyen & Dao, 2023). The present findings suggest that TQM can provide part of this foundation.

The most theoretically significant result was the significant indirect effect of TQM on organizational performance through innovation capability. The partial mediation identified in the study indicates that TQM improves organizational performance through at least two pathways. First, TQM may have a direct effect by improving quality, efficiency, customer satisfaction, and process reliability. Second, TQM may indirectly enhance performance by strengthening the firm's capacity to innovate (Leso, et al., 2023). Because the direct effect remained significant after innovation capability was incorporated into the model, innovation capability does not fully explain the relationship between TQM and organizational performance. Instead, it represents one important mechanism within a broader set of mechanisms through which TQM contributes to organizational success (Eniola, et al., 2019).

This finding offers an important conceptual contribution. It suggests that the value of TQM should not be evaluated exclusively in terms of immediate quality improvements or cost reductions. Rather, TQM may have longer-term strategic consequences by developing organizational capabilities that allow firms to adapt and innovate. In this sense, TQM can be understood as a capability-building approach. Quality management practices establish routines for learning, participation, problem solving, and continuous improvement, while innovation capability allows these organizational resources to be transformed into new products, services, processes, or business practices. Organizational performance may consequently emerge from the interaction between quality-oriented routines and innovation-oriented capabilities.

The findings also have practical implications for SME managers. First, managers should avoid implementing TQM as a narrow quality-control program. Instead, TQM should be integrated into the broader strategic management system of the organization. Leadership should communicate clear quality objectives, encourage employee participation, establish mechanisms for continuous improvement, and use customer feedback systematically. Second, managers should deliberately connect quality initiatives with innovation activities. Employees who identify recurring quality problems should be encouraged not only to correct them but also to propose new processes, technologies, products, or services that prevent similar problems from occurring in the future. Third, SMEs should develop organizational environments in which experimentation and learning are encouraged. This is particularly important because innovation capability does not necessarily emerge automatically from the adoption of formal quality-management practices.

Despite these contributions, several limitations should be acknowledged. If the study employed a cross-sectional design, causal relationships should be interpreted cautiously because the temporal sequence among

TQM, innovation capability, and organizational performance cannot be established conclusively. Longitudinal studies could provide stronger evidence regarding whether improvements in TQM practices lead to subsequent increases in innovation capability and performance. Second, reliance on self-reported organizational data may introduce common-method bias and subjective response effects. Future research could combine managerial survey responses with objective indicators such as sales growth, profitability, productivity, number of new products, process-improvement outcomes, or customer-retention rates. Third, the study focused on SMEs, which enhances contextual relevance but may limit generalizability to large organizations or other institutional settings. Future studies could compare SMEs and large firms to determine whether organizational size moderates the relationships identified in the present model.

Future research could also extend the model by incorporating additional organizational capabilities. Digital transformation, organizational agility, knowledge management, employee creativity, and dynamic capabilities may represent potentially important mechanisms linking TQM practices with organizational performance. In particular, future research could examine whether digital technologies strengthen the effect of TQM on innovation capability or whether organizational agility moderates the relationship between innovation capability and performance. Multi-group analyses across industries, organizational sizes, and levels of technological intensity could further clarify the conditions under which TQM produces the greatest benefits.

Conclusion

Overall, the findings indicate that TQM practices can contribute meaningfully to SME performance, while innovation capability serves as an important pathway through which quality-oriented management is translated into organizational outcomes. The results therefore support a broader strategic view of TQM in which quality management is not merely concerned with reducing defects or improving operational consistency but also with developing the organizational capabilities necessary for innovation and sustained competitiveness. For SMEs operating under conditions of resource constraints and increasing competitive pressure, integrating TQM with innovation-oriented strategies may provide a particularly valuable pathway toward stronger and more sustainable organizational performance.

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