

The Role of Integrated Quality Management and Innovation on Improving Company Performance

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Abstract

This study examines the impact of Total Quality Management (TQM) on the performance of micro, small, and medium-sized Batik SMEs in Klaten, with innovation as an intervening variable. Using a quantitative approach and Partial Least Squares Structural Equation Modelling (PLS-SEM), data were collected through a survey of 121 Batik SME owners. The results show that TQM significantly influences both innovation and the performance of Batik SMEs. Additionally, innovation fully mediates the relationship between TQM and SME performance. Implementing TQM practices helps drive innovation, which, in turn, enhances SME performance. This research contributes to the literature by addressing the gap in empirical studies on the connection between TQM, innovation, and SME performance in the Batik sector, especially in developing countries like Indonesia, where TQM practices are still emerging and focused primarily on product and process innovation.

Keywords: Total Quality Management, Innovation, Company Performance

INTRODUCTION

Small and medium-sized enterprises (SME's) play a crucial role in the economy of every country, including Indonesia. With 50 million people relying on this sector, SMEs are the backbone of Indonesia's economy, accounting for 95% of business entities and 99.8% of employment, contributing 60% to GDP. SMEs are key drivers of economic growth globally (Acs & Preston, 1997; Ahmedova, 2015; Alyoubi, 2015; Dahnil et al., 2014). They foster entrepreneurship, create job opportunities, and help reduce poverty,

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unemployment, and inequality. Additionally, SMEs encourage innovation and the introduction of new business models, which significantly impact the country's economic growth and employment (Wiklund et al., 2011).

To gain a competitive advantage, improve customer loyalty, and increase profitability, companies often implement Total Quality Management (TQM), which has been shown to improve operational and financial performance (Dubey & Gunasekaran, 2015; Bernal & Alesón, 2010). TQM helps eliminate defects, reduce waste, and improve processes, leading to higher productivity and profitability (Mucharreira et al., 2019). In highly competitive environments, adopting TQM practices and aligning them with strategic goals is crucial for achieving organizational objectives (Al-Dhaafri et al., 2016). However, according to the resource-based view, TQM alone may not be sufficient to enhance SME performance. Innovation, whether in product, process, or business practices, plays a key role in improving sales, productivity, and efficiency (Tidd & Bessant, 2018). Process innovation involves new production methods, while product innovation introduces new ideas to market (Jiménez et al., 2008; Prajogo, 2016). In a competitive business environment, both quality management and innovation are key to sustaining a competitive advantage and business success (Antunes et al., 2021; Costa & Lorente, 2008). This study investigates the impact of TQM on SME performance through innovation as a mediating variable.

LITERATURE REVIEW

Total Quality Management

According to (Al-Dhaafri et al., 2016), Total Quality Management is a comprehensive management philosophy that focuses on continuous improvement across all functions and operations of an organization to produce and deliver goods and services that meet customer needs and expectations. TQM is a strategy designed to improve the quality of output and overall performance in order to satisfy customer demand. It involves a management system that uses values, tools, and techniques to drive continuous improvement, aiming to enhance product quality and maximize resource use for greater customer satisfaction (Qasrawi et al., 2017).

Innovation

Innovation is a key factor that enhances output, streamlines processes, fosters competition, and strengthens a company's reputation, ultimately improving customer perception (AlShehail et al., 2022; Maistry et al., 2017). Businesses innovate in response



to external factors like competition, deregulation, and customer demand, as well as internal decisions to improve performance, expand services, and enhance service quality (Damanpour et al., 2009). For SMEs, innovation often involves new products, processes, or marketing strategies that improve profitability and competitiveness (O'Regan et al., 2006). In this study, "innovative practices" refer to the successful application of new solutions, such as new products, services, or management techniques, to improve productivity and quality (Damanpour, 1992; Johannessen et al., 2001).

Innovation drives improved performance, which is defined as changes made to organizational procedures to achieve better outcomes (Curristine, 2005). Performance is measured by the achievement of goals like sales, profitability, and market share (Hult, 2004). High performance levels indicate company success, and measuring performance helps businesses improve successful areas while addressing weaknesses (Mahmudova & Kovacs, 2018).

Performance SME's

Performance is a critical factor that determines whether an organization can survive and achieve its goals (Ndofor & Priem, 2011; Saunila et al., 2014). Richard et al. (2009) suggests that the results of an organization's activities over time reveal how well it meets its objectives. However, as organizational performance is complex and multi-faceted, it is challenging to operationalize (Simons et al., 2000). By measuring performance, businesses can focus on areas that need improvement (Škrinjar et al., 2008; Wahyuni & Sara, 2020).

The literature identifies two main performance indicators: financial and non-financial. Financial performance measures, such as sales growth, market value, and profitability, are quantitative and derived from financial statements (Santos & Brito, 2012). Non-financial performance measures are subjective, assessing the organization's ability to meet strategic goals based on factors like customer satisfaction, innovation, and employee commitment (Santos & Brito, 2012). These measures, though not quantifiable, provide insight into overall organizational performance (Lumpkin & Lichtenstein, 2005). This research adopts subjective performance measures due to the limited availability of financial data for most SMEs in Indonesia. All businesses, regardless of size, need to assess their performance, even when beginning to engage in exporting or importing (Dubihlela & Dhurup, 2015). Performance evaluation helps companies benchmark their position, communicate with stakeholders, and organize priorities and investments. Financial and operational aspects, such as accounting procedures and efficiency in



managing resources, are key to defining business performance (Venkatraman & Ramanujam, 1986). Ultimately, businesses aim to improve performance by emphasizing efficiency, cost-cutting, regulatory compliance, and customer satisfaction.

The effect of TQM on small and medium enterprise performance

Total Quality Management (TQM) impacts all aspects of business performance by driving continuous quality improvement across an organization's processes and divisions (Tortorella et al., 2020). TQM aims to meet customer needs and expectations through ongoing improvements in products, services, and processes, involving management, employees, suppliers, and customers in a collective effort (Dean & Bowen, 1994; Costa & Lorente, 2008). It introduces new management techniques and is viewed as an evolution of the traditional quality management approach, focusing on enhancing productivity, reliability, and quality (Steingard & Fitzgibbons, 1993). According to Vuppalapati et al. (1995), TQM is a management philosophy focused on continuous process and product improvement to satisfy customers (Antony & Bhattacharyya, 2010).

Key components of TQM for service quality development include employee involvement, continuous improvement, ongoing training, teamwork, management commitment, customer focus, and a culture of quality (Ho Voon et al., 2014). Studies show a positive correlation between TQM implementation and financial performance. Research by (Miguel et al., 2016) found that TQM improves by reducing production costs through process improvements, focusing on customer needs, employee training, and quality management processes. Therefore, the following hypothesis is proposed: H-1: TQM has a positive effect on SME performance.

Effect of TQM on innovation

Organizations should focus on enhancing innovation to leverage their ambidextrous capabilities, which will ultimately strengthen their innovation capacity (Gieske et al., 2016). Quality management strategies are closely linked to innovation enhancement, with TQM dimensions like process management and people management playing a key role in building innovation capabilities. People management, in particular, fosters a culture of quality within the organization, which supports the development of innovative ideas (Mahmud et al., 2019). TQM practices help human resources identify customer needs, generate new knowledge, and improve processes and work systems (Prajogo & Sohal, 2003; Sahoo, 2019).



Moreover, innovation can enhance core management, customer interactions, and inter-organizational operations. Several studies show that TQM practices positively influence innovation. By adopting TQM, organizations gain valuable resources, such as TQM as a corporate asset, product design capability, and process improvement capability resources that are critical for overcoming challenges and fostering innovation (Silva et al., 2014). Innovation involves applying new ideas and transforming them into products, processes, and procedures, often through a network environment that encourages creativity (Antunes et al., 2021). TQM's focus on managing talented employees and fostering a culture of innovation creates a direct link between quality management and innovation (Prajogo & Sohal, 2003). Studies show a positive relationship between TQM and innovation (Antunes et al., 2021; Mahmud et al., 2019; Prajogo & Sohal, 2003; Sadikoglu & Zehir, 2010). Both innovation and quality management strategies aim to deliver superior customer value, with innovation focused on creating new value and quality management ensuring its consistent delivery. Therefore, the following hypothesis is proposed:

H-2: TQM has a positive effect on innovation.

The effect of innovation on the performance of small and medium enterprises

Innovation plays a crucial role in improving SME performance by enhancing market positioning, competitive advantage, and overall performance (McDermott & Prajogo, 2012; Prajogo, 2016). While often seen as a strategy, innovation has become a necessity in today's competitive market, driven by factors like rapid technological change and resource scarcity (Antunes et al., 2021; Mucharreira et al., 2019). Research has shown that innovation practices are significantly linked to SME performance, leading to benefits such as increased profit margins, market leadership, higher productivity, and cost reduction (Kamble et al., 2020). Additionally, process innovations help eliminate quality errors, reduce waste, and minimize customer complaints.

Studies confirm that innovation positively impacts SME performance, driving value creation and sustainable competitive advantage (Antunes et al., 2021; Prajogo, 2016). Innovation enhances internal business processes, product/service innovation capacity, and customer satisfaction (Aas & Pedersen, 2011). It also improves financial performance by boosting productivity and profitability while fostering better customer and employee relationships, ultimately strengthening overall SME performance (Lyons et al., 2007). Based on the above discussion, this study hypothesises that:

H-3: Innovation has a positive effect on SME performance



Mediating innovation, effect TQM on small medium enterprise performance

TQM is a strategy that improves organizational learning and strengthens competitive advantage (Augusto et al., 2014; Azam et al., 2023; Donate et al., 2019; Sotirelis & Grigoroudis, 2021). In competitive markets with rapid changes and short product life cycles, innovation becomes crucial for gaining a competitive edge by creating new products, enhancing existing ones, or reducing production costs (Adam & Alarifi, 2021).

Innovation is vital for companies seeking to remain competitive and excel in the market. While implementing innovation strategies can be challenging due to limitations in identifying needs, companies that prioritize innovation find it easier to apply TQM effectively (Anifowose et al., 2022). Studies show that innovation significantly impacts SME performance (Arshad et al., 2023; Gupta & Batra, 2016). Furthermore, research indicates that innovation mediates the relationship between TQM and SME performance, reinforcing the positive correlation between innovation capability and improved SME outcomes (Bazrkar et al., 2022; O'Cass & Sok, 2014; Chisanga et al., 2016). Thus, the third hypothesis can be formulated as follows:

H-4: Innovation mediates effect TQM on SME's performance

Research framework

Based on the hypothesis, the researcher has developed the research framework and diagram as follows:

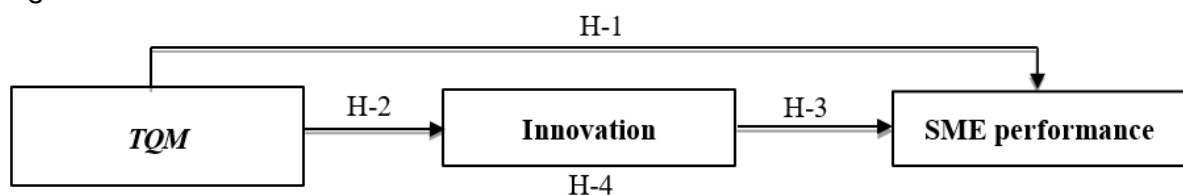


Figure 1. adapted from Abbas & Kumari (2023); Ali AlShehail et al. (2022)

RESEARCH AND METHODOLOGY

The study sample consists of 121 Batik SMEs in Klaten, with owners or managers as respondents. These SMEs, known for their eco-friendly products, include Wastraloka, which exports recycled crafts with support from the Indonesian Export Financing Agency (LPEI). Purposive sampling was applied, targeting Batik SMEs in the Batik SME Cooperative in Klaten, Indonesian.

Primary data were gathered through questionnaires. The sample size of 37 respondents was determined using power analysis to ensure 80% statistical power and a 5% significance level (Cohen, 1988). The questionnaire employed a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree). Demographic data such as gender, age, education, SME age, number of employees, and turnover were collected before the hypothesis-testing questions. The results can be seen in Table 1:

Table 1. Frequency distribution of demographic variables

Respondent Profile		Frequency	Percentage (%)
Gender	Men	87	71,9
	Women	34	28,1
Age	20 - 35 years	40	33,1
	36 - 50 years	59	48,8
	>50 years	22	18,2
Education	HIGH SCHOOL	44	36,4
	Diploma	11	9,1
	S-1	60	49,6
	S-2	6	5,0
SME age	< 3 years	61	50,4
	3 - 6 years	32	26,4
	7 - 10 years	19	15,7
	>10 years	9	7,4
Number of employees	1 - 4 people	60	49,6
	5 - 19 people	37	30,6
	20 - 50 people	15	12,4
	> 50 people	9	7,4
Turnover	< Rp250,000,000	58	47,9
	Rp.250,000,000 - Rp.500,000,000	34	28,1
	IDR 500,000,000 - 1,000,000,000	25	20,7
	> 1.000.000.000	4	3,3

Based on Table 1, the results show that most respondents were male (71.9%) and aged between 36-50 years (48.8%). The majority held a Bachelor's degree (49.6%) and operated businesses that were less than three years old (50.4%). In terms of workforce size, 49.6% employed 1-4 workers, while 30.6% had 5-19 employees. Regarding



business turnover, 47.9% reported earnings under Rp. 250,000,000. These respondents were primarily from Batik SMEs in Klaten, with eco-friendly products and diverse business experiences.

Operational definition and measurement of constructs

The variables in this study include SME performance as the dependent variable, TQM as the independent variable, and innovation as the mediating variable. TQM is measured using 28 indicators developed by Prajogo & Sohal (2003), such as "Our company's board of directors/top management provides adequate resources to improve quality" and "Our company's production managers are aware of the results of customer satisfaction evaluation surveys." Innovation is measured using a 10-item scale adapted from (Gunday et al., 2011), with items like "Our company uses new and innovative technologies in product design and service provision" and "Our company adopts the latest technological innovations in its internal processes."

FINDINGS AND DISCUSSIONS

Descriptive statistics and correlation between variables

Based on the research results regarding the mean, standard deviation, and correlation, the following findings were obtained:

Table 2. Summary of mean, standard deviation and correlation

Variables	Mean	SD	1	2	3
1. TQM	4,12	0,51	1		
2. Innovation	4,12	0,52	.776**	1	
3. SME performance	3,63	0,59	.466**	.546**	1

Notes. **Correlation significant at 0.01 level, *Correlation significant at 0.05 level; M = Mean; SD = standard deviation.

Correlation measures the strength and direction of the relationship between two variables, ranging from -1 to 1. A correlation of 1 indicates a perfect positive relationship, -1 indicates a perfect negative relationship, and 0 indicates no relationship (Sarstedt & Mooi, 2019). Table 2 displays the correlation values and their significance. The TQM variable has a positive and significant correlation with innovation ($r = 0.776$; $p < 0.01$) and with SME performance ($r = 0.466$; $p < 0.01$). Additionally, the innovation variable shows



a positive and significant correlation with SME performance ($r = 0.546$; $p < 0.01$). These results suggest that TQM practices are positively associated with both innovation and SME performance.

Measurement model analysis results

In Structural Equation Modeling (SEM), the two-stage approach refers to a methodological strategy used for construct validity, involving two distinct stages of analysis (Hair et al., 2022). The first stage, known as the outer model analysis or confirmatory factor analysis (CFA), assesses the relationship between observed variables and latent constructs (Hair et al., 2022). The outer model analysis tests both convergent validity and discriminant validity to ensure that the indicators accurately measure the intended constructs. In the second stage, the inner model analysis examines the relationships between the latent constructs themselves. This two-stage approach is particularly useful for handling complex research designs, especially when data collection occurs in multiple phases. The researcher presents the results of the validity and reliability tests in Tables 3 and 4.

Table 3. Results of the measurement model, reliability and validity

Construct	Item	I_i	α	ρ_A	AVE
TQM	MC	0.754	0.966	0.968	0.527
	FC	0.765			
	BM	0.842			
	EE	0.768			
	ET	0.820			
	QC	0.884			
	MR	0.895			
Management's commitment	MC_1	0.910			
	MC_2	0.851			
	MC_3	0.863			
	MC_4	0.893			
Focus on Customer	FC_1	0.934			
	FC_2	0.858			
	FC_3	0.896			

	FC_4	0.913			
Benchmarking	BM_1	0.896			
	BM_2	0.875			
	BM_3	0.859			
	BM_4	0.934			
Employee Empowerment	EE_1	0.933			
	EE_2	0.909			
	EE_3	0.939			
	EE_4	0.855			
Employees Training	ET_1	0.839			
	ET_2	0.911			
	ET_3	0.922			
	ET_4	0.810			
Quality Conception	QC_1	0.910			
	QC_2	0.915			
	QC_3	0.895			
	QC_4	0.860			
Measurement of Results	MR_1	0.846			
	MR_2	0.859			
	MR_3	0.884			
	MR_4	0.848			
Innovation	Prodi	0.939	0.919	0.924	0.645
	Proci	0.952			
Product Innovation	Prodi_1	0.736			
	Prodi_2	0.826			
	Prodi_3	0.816			
	Prodi_4	0.881			
Process Innovation	Proci_1	0.854			
	Proci_2	0.871			
	Proci_3	0.923			
	Proci_4	0.877			
SME performance	ECO	0.924	0.926	0.932	0.579
	SOC	0.824			

	ENV	0.857			
Economic Performance	ECO_1	0.807			
	ECO_2	0.793			
	ECO_3	0.915			
	ECO_4	0.831			
Social Performance	SOC_1	0.923			
	SOC_2	0.824			
	SOC_3	0.897			
	SOC_4	0.877			
Environmental Performance	ENV_1	0.902			
	ENV_2	0.967			
	ENV_3	0.904			

Note: I_i = factor loadings; ρ_A (rho_a) = reliability coefficient; α = Cronbach's alpha;
 AVE = Average Variance Extracted

Table 4. Discriminant validity

FLC	1	2	3
1. TQM	0.726		
2. Innovation	0.478	0.803	
3. SME performance	0.485	0.559	0.761
HTMT	1	2	3
1. TQM			
2. Innovation	0.620		
3. SME performance	0.504	0.596	

Notes: **Fornell-Larcker Criterion:** Bolded diagonal elements are the *square root of AVE*. The off-diagonal elements are the correlations between constructs. To have discriminant validity, the diagonal values must be greater than the off-diagonal values. **HTMT Criterion:** The off-diagonal elements are the correlations between the constructs. Discriminant validity, which measures construct distinctiveness, is achieved if the elements are lower than the threshold value of 0.90.

Discriminant validity ensures that latent variables are distinct constructs (Hair et al., 2022). A construct meets discriminant validity if the square root of its AVE is greater



than the correlations with other constructs (Fornell & Larcker, 1981). As shown in Table 4, discriminant validity is confirmed for all variables, as the square root of the AVE exceeds the correlation values. Additionally, based on the HTMT ratio criterion, discriminant validity is achieved when the correlation does not exceed 0.90 (Henseler & Sarstedt, 2013), and in this study, no correlation exceeds this threshold, confirming discriminant validity.

Structural model analysis results

Path coefficients, p-values, t-values, and confidence intervals are key statistical measures used to assess the significance and strength of relationships between variables in SEM and regression analysis. The results of the structural model analysis in this study are presented in Table 5. The analysis indicates that the TQM variable does not have a significant direct effect on SME performance, with a path coefficient (β) of 0.123 and a p-value > 0.05 , thus supporting Hypothesis 1. This suggests the presence of an indirect effect. Additionally, TQM has a significant positive direct effect on the innovation variable, with a path coefficient (β) of 0.778, t-value > 1.96 , and p-value < 0.05 , supporting Hypothesis 2. This finding aligns with previous research by Abu Salim et al. (2019), which showed similar results in manufacturing and service industries. Furthermore, innovation has a significant positive effect on SME performance ($\beta = 0.461$, t-value = 3.549, p-value = 0.000), supporting Hypothesis 3. This aligns with previous studies, such as Aas & Pedersen (2011), which found a positive impact of innovation on financial performance, and Lyons et al. (2007), who argued that innovation enhances customer value, contributing to SME performance. Additionally, Deng et al. (2022) demonstrated that innovation positively impacts environmental performance.

Table 5. Hypothesis testing results

Hypothesis	B	T Statistics	P values	BC 95% CI		Results
				Lower	Upper	
TQM → SME performance	0.481	4.761	0.000	-	-	Sig
<i>Indirect effect when mediating variables are included</i>						
1. TQM → Innovation	0.778	13.166	0.000	-	-	Sig
2. TQM → SME Performance	0.123	0.792	0.428	-	-	N/A



3. Innovation → SME Performance	0.461	3.549	0.000	-	-	Sig
4. TQM → Innovation → SME Performance	0.358	3.195	0.001	0.173	0.629	Sig
Adjusted R ² Innovation = 0.600						
Adjusted R ² SME performance = 0.298						

Notes: Significance of estimates; *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$; Sig = Significant; N/A = Not significant; BC = Bias Corrected' CI = Confidence Intervals; β = Path Coefficients

Hypothesis 4 in this study posits that innovation mediates the effect of TQM on SME performance. To test the significance of the mediating effect, the study employs the approach of Baron & Kenny (1986) and Preacher & Hayes (2008). Table 5 presents the results of mediation testing using Baron and Kenny's framework.

Based on these results, the criteria for a variable to act as a mediator, according to Baron & Kenny (1986), are met:

1. In the first stage, the independent variable (TQM) significantly influences the dependent variable (SME performance) with a path coefficient (β) of 0.481 and a p-value < 0.001 .
2. In the second stage, the independent variable (TQM) significantly influences the mediating variable (innovation) with a path coefficient (β) of 0.778 and a p-value < 0.001 .
3. The mediating variable (innovation) significantly influences the dependent variable (SME performance) with a path coefficient (β) of 0.461 and a p-value < 0.001 .
4. The influence of the independent variable (TQM) on the dependent variable (SME performance) decreases after including the mediating variable (innovation). The direct effect of TQM on SME performance reduces from $\beta = 0.481$ ($p < 0.001$) to $\beta = 0.123$ ($p < 0.001$), indicating that innovation fully mediates the relationship between TQM and SME performance.

Additionally, to provide further evidence, bootstrapping testing was conducted. According to Preacher & Hayes (2008), the mediating effect is considered significant



when the confidence intervals for the indirect effect do not contain zero. Table 5 shows that the estimated mediation effect is 0.358 with a significance level of $p < 0.001$. The 95% confidence interval (CI) ranges from 0.173 to 0.629, confirming that the indirect effect is significant. Thus, both Baron & Kenny (1986) and bootstrapping tests support Hypothesis 4, indicating that innovation fully mediates the effect of TQM on SME performance.

GENERAL DISCUSSION

The purpose of this study is to analyze the effect of Total Quality Management (TQM) on SME performance, with innovation acting as a mediator. The research was conducted among Batik SMEs in Klaten. Based on the results of data analysis, it was found that Hypothesis 1 was not confirmed, meaning that TQM was not found to have a direct positive effect on SME performance. This finding also highlights the relationship between TQM and innovation in SMEs, an area that has not been widely explored in existing research. Few studies have examined the link between TQM and innovation. Mushtaq & Peng (2020) emphasize that the absence of innovation signals the failure of TQM practices.

In contrast, the results support Hypothesis 2, confirming that TQM has a positive influence on innovation outcomes. Abu Salim et al. (2019) found similar relationships between TQM and innovation in manufacturing and service sectors. Thus, this study contributes to bridging the gap in research regarding the effects of TQM on innovation and SME performance. The findings suggest that the effective implementation of TQM can foster successful innovation in SMEs, which depends on organizational, product, and process innovation.

Moreover, Hypothesis 3 is confirmed, showing that innovation has a positive impact on SME performance. The analysis also supports Hypothesis 4, indicating that innovation fully mediates the positive effect of TQM on SME performance. In other words, TQM influences SME performance indirectly through innovation.

The main objective of this study is to underscore the importance of "innovation" in TQM practices and its impact on SME performance, particularly in terms of business success and survival. The recent crisis has had a significant impact on the SME sector, exposing businesses to financial risks and operational challenges (Che Omar et al., 2020). Research has shown that SMEs respond differently to crisis challenges (Sobaih et al., 2021). These findings highlight the crucial role of innovation in enhancing TQM practices and, in turn, improving SME performance. This is in line with (Makanyeza &



Dzvuke, 2015), who argues that firm performance is ultimately driven by innovation, with SME performance being significantly mediated by it.

TQM variables are shown to significantly impact business performance through innovation practices. Research by Tortorella et al. (2020) Tortorella et al. (2020) also demonstrates a strong correlation between TQM and SME performance, highlighting that TQM influences all areas of business performance and encourages quality improvements across departments by integrating innovation. TQM enhances production activities through customer focus, human resources training, and effective quality management practices (Tortorella et al., 2020). This leads to increased customer satisfaction, higher sales, and ultimately improved SME performance. The ability to innovate enables SMEs to identify new market niches, attract more customers, and expand market share, all of which contribute to better performance.

In support of these findings, research by Prajogo (2016) indicates that innovation positively impacts business performance. Hypothesis 2, which suggests that innovation mediates the effect of TQM on SME performance, is confirmed. Innovation plays a vital role in shaping SME performance, particularly in dynamic environments such as Indonesia's industries. Therefore, this study reaffirms that innovation has a crucial mediating role in the relationship between TQM and SME performance.

This study aims to examine the effect of TQM on SME performance, with innovation as a mediator, specifically focusing on Batik SMEs in Klaten. A total of 121 respondents participated in the study, meeting the pre-established criteria. Based on the data analysis, the following conclusions were drawn:

1. TQM does not have a direct positive and significant influence on SME performance.
2. TQM has a positive and significant influence on SME innovation.
3. Innovation has a positive and significant influence on SME performance.
4. Innovation fully mediates the effect of TQM on SME performance. This means effect of TQM on SME performance occurs indirectly through mediation of innovation.

IMPLICATIONS

Based on the discussion and conclusions drawn from this study, several implications emerge. The findings suggest a framework for SMEs to integrate TQM, innovation, and performance. Specifically, the research highlights a positive correlation between TQM, innovation, and SME performance. When viewed from different perspectives such as financial versus non-financial performance, TQM as both an organic



and mechanistic process, and innovation from both administrative and technological angles. The relationship between these constructs becomes clearer.

Although the interactions and effects among these elements are indirect, their collective impact has been tested and confirmed. TQM practices can help foster a culture that supports innovation by emphasizing continuous improvement and employee engagement. Similarly, innovation can enhance SME performance by introducing new products, processes, and strategies.

To maximize the positive impact of TQM, innovation, and performance on SME success, it is crucial for businesses to align these elements with their goals and initiatives. Establishing feedback loops and mechanisms for learning and continuous improvement will allow SMEs to refine and adapt their TQM and innovation practices over time. By integrating TQM, innovation, and performance, SMEs can cultivate a culture of excellence, adaptability, and sustainable growth factors that drive competitive advantage and long-term success.

LIMITATIONS AND SUGGESTIONS

Limitations

Firstly, the empirical data for this study was collected from Batik SMEs in Klaten, which limits the scope of the findings. The use of a survey design, along with the reliance on questionnaires and the focus on registered SMEs, further constrains the generalizability of the results. Therefore, caution should be exercised when extrapolating these findings to broader contexts. Secondly, this study employed a cross-sectional research design, which limits the ability to establish causal relationships between variables. Finally, a significant limitation is the treatment of TQM as a composite variable, rather than examining the distinct effects of the individual TQM dimensions.

Advice for future research

While this study provides valuable insights, several areas warrant further exploration. First, future research should consider expanding the sample to include SMEs from other regions or industries to improve the generalizability of the findings. Since TQM is both people and process centred, the results of this study could potentially be applied to a broader range of industries and regions. Future studies could examine these relationships across different sectors or in other developing countries, providing a comparative analysis of the findings.



Secondly, given that this study used a cross-sectional design, future research could adopt a longitudinal approach to better understand the causal relationships between TQM, innovation, and SME performance over time. This would allow for a more robust analysis of how these variables interact and evolve.

Lastly, while the use of composite variables in this study is not inherently problematic, future research should consider investigating the individual dimensions of TQM in more detail. Each TQM dimension such as leadership, strategy, process management, and customer focus may have distinct effects on innovation and performance. Exploring these dimensions separately would provide a deeper understanding of how each contributes to SME success.

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