current perspective on business operations

E-ISSN:3125-1323

ARTICLE

Transforming Knowledge into Innovation: The Critical Role of TQM in Certified Family-Owned SMEs

Ilham Nuryana Fatchan[1], Meydy Fauziridwan[2,*]

[1] Faculty of Economics and Business, Universitas Muhammadiyah Purwokerto, Purwokerto, Indonesia 1; ilhamnuryanafatchan@gmail.com
[2] Faculty of Economics and Business, Universitas Muhammadiyah Purwokerto, Purwokerto, Indonesia 2; meydyfauziridwan@gmail.com

* Correspondence Author: meydyfauziridwan@gmail.com

Abstract

This study examines the influence of Knowledge Management (KM) on innovation, encompassing both product innovation and process innovation, through the mediating role of Total Quality Management (TQM). Data were collected from 130 certified family-owned SMEs and analyzed using Structural Equation Modeling (SEM) to evaluate the proposed conceptual framework. The findings indicate that KM has a significant positive effect on TQM, while TQM positively influences both product and process innovation. However, the direct relationship between KM and innovation was found to be insignificant. In contrast, KM exerts a significant indirect effect on both product and process innovation through TQM, demonstrating that TQM fully mediates the relationship between KM and innovation. These results suggest that knowledge management practices alone are insufficient to generate innovative outcomes unless they are supported by a structured quality management system that facilitates the effective transformation of knowledge into innovation. Although the study provides valuable insights into the interaction among KM, TQM, and innovation, its generalizability is limited because the sample consists solely of family-owned SMEs. Future research is therefore encouraged to examine this framework across broader industrial and service-sector contexts. From a practical perspective, the findings highlight the importance of integrating KM initiatives with TQM practices to enhance organizational innovation capabilities. This study also contributes to the literature by demonstrating that the impact of KM on innovation is not direct but is fully transmitted through Total Quality Management, challenging the conventional assumption that KM independently drives innovation performance.

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

Academic Editor: Daniel Wang

Received: March 8, 2026 | Revised: March 19, 2026 | Accepted: March 23,2026 | Published: April 6, 2026

Citation: Fatchan, I. N., & Fauziridwan, M. (2026). *Transforming knowledge into innovation: The critical role of TQM in certified family-owned SMEs. Current Perspective on Business Operations, 2*(2), 180–193.

1. Introduction

In an increasingly dynamic and uncertain business landscape, innovation has become a fundamental source of organizational competitiveness and sustainable growth. Organizations continuously seek effective approaches to strengthen their innovation capabilities in order to adapt to rapid market developments and evolving customer expectations. Among the various managerial practices that support innovation, Knowledge Management (KM) has gained considerable attention as a strategic mechanism for enhancing organizational learning and innovation performance (Migdadi, 2022; Feng et al., 2022; Zack et al., 2009; Ju et al., 2006; Yeh & Ta, 2005). KM refers to an organization's capacity to generate, acquire, develop, store, and disseminate knowledge across different functions and departments (Al Shraah et al., 2021). As such, it is widely recognized as a critical foundation for continuous improvement and organizational development (Partlow, 1996; Sila & Ebrahimpour, 2003).

Although the strategic value of KM is widely acknowledged, its direct contribution to innovation remains inconclusive. Several studies have demonstrated a positive relationship between KM and innovation performance (Carneiro, 2000; Honarpour et al., 2017; Yusr et al., 2017). However, other empirical investigations have reported inconsistent findings, suggesting that the effect of KM on innovation may depend on additional organizational conditions and contextual factors (López et al., 2023; Feng et al., 2022; Jnaneswar, 2019; Honarpour et al., 2012). These contradictory findings indicate the need to further explore the mechanisms through which KM contributes to innovation outcomes.

One organizational factor that may explain this relationship is Total Quality Management (TQM). TQM has become an important strategic approach for organizations seeking to improve quality performance and achieve competitive advantage (Lakhal, 2009). Through its emphasis on continuous improvement, customer focus, and systematic problem-solving, TQM has been linked to enhanced innovation capabilities (Hung et al., 2010; Honarpour et al., 2012). Nevertheless, previous studies have produced mixed evidence regarding the direct influence of TQM on innovation performance (Byukusenge & Munene, 2017). For instance, Tatteh et al. (2025) found that innovation mediates the relationship between TQM practices and SME performance in Ghana, highlighting the indirect contribution of TQM to innovation outcomes. Despite these findings, the mediating role of TQM in the relationship between KM and innovation remains insufficiently investigated (Jnaneswar, 2019; Hung et al., 2010).

This issue becomes particularly relevant in family-owned small and medium-sized enterprises (SMEs) operating in emerging economies such as Tunisia. These firms frequently encounter challenges associated with limited resources, informal management structures, and rapidly changing market conditions. Consequently, understanding how KM, TQM, and innovation interact within such organizations is both theoretically and practically important. Wang and Lin (2013) argue that KM alone may not adequately address the complex and changing needs of customers in uncertain environments, suggesting that complementary organizational practices such as TQM may strengthen its effectiveness. Supporting this view, recent studies have begun to explore the combined influence of KM and TQM on innovation. El Amrani (2023), for example, examined Moroccan automotive firms and proposed that TQM facilitates the translation of KM processes into innovation outcomes. Similarly, Yusr et al. (2021) found that TQM practices and customer knowledge management jointly contribute to product innovation through enhanced marketing capabilities, indicating the presence of an indirect mechanism linking KM and innovation through TQM.

Despite growing interest in this area, empirical evidence concerning the mediating role of TQM remains limited (Jnaneswar, 2019; Honarpour et al., 2012; Hung et al., 2010). Honarpour et al. (2012) suggest that KM and TQM are mutually reinforcing practices

whose interaction can positively influence organizational outcomes, particularly innovation. Likewise, Hung et al. (2010) reported that KM positively affects both TQM and innovation performance, while also demonstrating that TQM serves as an intermediary mechanism through which KM enhances innovation performance.

Although previous studies have examined KM, TQM, and innovation independently or in pairs, research integrating these constructs into a single framework remains scarce. Existing studies (e.g., Hung et al., 2010; Honarpour et al., 2017) have primarily focused on large organizations or diverse industrial settings in developed countries. Consequently, limited empirical evidence exists regarding whether KM promotes innovation and under what circumstances this relationship occurs, particularly among certified family-owned SMEs in emerging economies. To address this gap, the present study investigates the mediating role of TQM in the relationship between KM and two dimensions of innovation, namely Product Innovation and Process Innovation, within certified Tunisian family SMEs. By doing so, the study aims to provide both theoretical and managerial insights into how quality management systems can facilitate the transformation of organizational knowledge into innovation outcomes in family-owned businesses operating under emerging market conditions.

Accordingly, this study seeks to answer the following research questions:

RQ1. What is the relationship between Knowledge Management, Total Quality Management, Product Innovation, and Process Innovation?

RQ2. How does Total Quality Management mediate the relationship between Knowledge Management and both Product Innovation and Process Innovation?

This study offers two primary contributions. First, it extends the existing literature by providing additional empirical evidence regarding the relationships among Knowledge Management, Total Quality Management, Product Innovation, and Process Innovation. Second, it advances understanding of the mechanism through which Total Quality Management mediates the effect of Knowledge Management on Product Innovation and Process Innovation, thereby contributing to a more comprehensive explanation of knowledge-driven innovation in family-owned SMEs.

2. Materials and Methods

Knowledge Management (KM), Total Quality Management (TQM), and innovation have become important topics in organizational and innovation research. Previous studies generally indicate that both KM and TQM contribute to enhancing innovation outcomes (Jnaneswar, 2019; Honarpour et al., 2017; Yusr et al., 2017; Hung et al., 2010). However, the interaction between KM and TQM remains inconclusive. Obeidat et al. (2016) highlighted the complexity of this relationship, while existing literature presents two contrasting perspectives. One perspective argues that KM facilitates the successful implementation of TQM by creating an environment that supports continuous improvement and organizational learning (Soares & Rios-Zaruma, 2021). In contrast, another perspective suggests that TQM may limit innovation and create obstacles to effective knowledge management practices (Yusr et al., 2021).

KM is widely regarded as a fundamental organizational capability that supports the implementation of TQM. Previous studies have reported that KM positively influences TQM practices by enhancing managerial commitment, employee involvement, customer orientation, and continuous improvement initiatives (Hung et al., 2010; Ju et al., 2006). Waddell and Stewart (2008) and Barber et al. (2006) further identified KM as an important antecedent of quality management implementation. Similarly, Leonard and McAdam (2001) argued that KM and quality management interact continuously throughout organizational operations. Empirical evidence from Marchiori and Mendes (2020), Obeidat et al. (2018), Zatar (2017), and Shehabat and Berrish (2021) also confirms a

significant positive relationship between KM and TQM. Based on these findings, the first hypothesis is proposed:

H1. Knowledge Management positively influences Total Quality Management.

The relationship between KM and innovation has also been extensively investigated in prior studies (López et al., 2023; Romero-Hidalgo et al., 2021; Sofiyabadi et al., 2020; Chung-Jen et al., 2010; Liao & Wu, 2010; Huang & Li, 2009; Jiang & Li, 2009; Darroch, 2005). Knowledge acquisition, creation, and dissemination contribute to organizational learning and facilitate the development of new knowledge, which ultimately promotes innovation activities (Siachou et al., 2021; Andreeva & Kianto, 2011; Chang & Lee, 2008; Chen & Huang, 2009; Hung et al., 2010). Nonaka's theory of knowledge creation emphasizes that knowledge serves as a prerequisite for innovation and competitive advantage (Lopez-Nicolas & Merono-Cerdan, 2011). By effectively sharing and disseminating knowledge, organizations can stimulate creativity and support innovation processes (Ju et al., 2006). Consequently, firms are encouraged to establish mechanisms that facilitate knowledge sharing among employees (Akram et al., 2011). Recent studies further demonstrate that KM enhances innovation capabilities and enables firms to develop superior products and services (Romero-Hidalgo et al., 2021). Significant positive effects of KM on innovation have also been reported by Alegre et al. (2011), Nawab et al. (2015), Alrubaiee et al. (2015), and López et al. (2023). Accordingly, the following hypotheses are proposed:

H2. Knowledge Management positively influences Product Innovation.

H3. Knowledge Management positively influences Process Innovation.

TQM has also been recognized as an important mechanism for fostering innovation. Several dimensions of TQM, including customer orientation, continuous improvement, employee involvement, empowerment, leadership, and strategic planning, have been associated with enhanced innovation performance (Abu Salim et al., 2019; Hoang et al., 2006; Ershadi et al., 2019; Nguyen & Harrison, 2019; Schaarschmidt et al., 2018; Khan & Naeem, 2018). Continuous improvement enables organizations to develop new products, services, processes, and operational methods (Jimenez-Jimenez et al., 2020). Furthermore, employee empowerment and participation have been shown to enhance creativity and innovation capability (Perdomo-Ortiz et al., 2006; Jimenez-Jimenez et al., 2020; Honarpour et al., 2017; Ar & Baki, 2011). Leadership and strategic planning also contribute significantly to the creation of an organizational climate that supports innovation (Lim et al., 2019; Zuraik & Kelly, 2019; Khan & Naeem, 2018). Previous empirical studies consistently report positive effects of TQM on both Product Innovation and Process Innovation (Al-Ababneh et al., 2022; Antunes et al., 2021; Khalfallah et al., 2021; Gambi et al., 2020; Sahoo, 2019; Escrig-Tena et al., 2018; Khan & Naeem, 2018; Honarpour et al., 2017; Antunes et al., 2017; Maistry et al., 2017; Yusr et al., 2017; Hung et al., 2011; Prajogo & Sohal, 2001). Therefore, the following hypotheses are formulated:

H4. Total Quality Management positively influences Product Innovation.

H5. Total Quality Management positively influences Process Innovation.

Although prior research has examined the relationships among KM, TQM, and innovation, the causal mechanisms linking these variables remain insufficiently understood (Jnaneswar, 2019; Honarpour et al., 2012). Hung et al. (2010) demonstrated that TQM mediates the relationship between KM and innovation performance, while Honarpour et al. (2012) argued that the synergy between KM and TQM enhances innovation outcomes. Carneiro (2000) proposed a conceptual framework linking KM, innovation, and competitiveness, concluding that KM positively contributes to both innovation and organizational competitiveness. Similarly, Darroch (2005) suggested that successful KM serves as a coordinating mechanism that enhances innovation and organizational performance. Jnaneswar (2019) further reported that the combined

implementation of KM and TQM generates stronger innovation outcomes than either practice individually. Therefore, the following hypotheses are proposed:

H6. Knowledge Management indirectly influences Product Innovation through Total Quality Management.

H7. Knowledge Management indirectly influences Process Innovation through Total Quality Management.

This study adopted a quantitative explanatory research design to examine the proposed relationships among KM, TQM, Product Innovation, and Process Innovation within certified family-owned small and medium-sized enterprises (SMEs) in Tunisia. The study population consisted of 1,062 certified family-owned SMEs listed in the Tunisian national industrial database. These firms were selected because they routinely implement quality management practices and represent an appropriate setting for investigating the interaction between knowledge management, quality management, and innovation. A non-probability convenience sampling approach was employed, resulting in 203 firms being contacted. A total of 130 valid responses were obtained, yielding a response rate of approximately 64%. The participating firms operated in various sectors, including agri-food industries, construction materials, mechanical and metallurgical industries, chemical industries, and textile and clothing industries. Respondents primarily included quality directors and senior managers who possessed extensive knowledge regarding organizational quality systems, knowledge management activities, and innovation practices (Ellouze & Mnasri, 2019; Mnasri & Ellouze, 2015).

Data were collected through a structured questionnaire adapted from previously validated measurement instruments. Knowledge Management was measured using 13 items adapted from Lin and Lee (2005). Total Quality Management was assessed through 13 items representing Process Quality, Strategic Quality Planning, and Information and Analysis, based on the scales developed by Choi and Eboch (1998) and Khalfallah and Lakhal (2021). Innovation was operationalized through Product Innovation and Process Innovation using ten items adapted from Silva et al. (2014) and Hung et al. (2011). All items were measured using a five-point Likert scale ranging from strongly disagree to strongly agree.

Descriptive statistical analysis was initially conducted to summarize respondent and firm characteristics. Subsequently, Confirmatory Factor Analysis (CFA) was employed to evaluate the reliability and validity of the measurement model through Cronbach's Alpha, Composite Reliability (CR), and Average Variance Extracted (AVE). Finally, Structural Equation Modeling (SEM) using AMOS software was applied to test the proposed hypotheses and examine both direct and indirect relationships among the study variables. The mediating role of Total Quality Management was assessed using the bootstrapping procedure recommended by Preacher and Hayes (2004a).

3. Results

The proposed conceptual model was evaluated using Structural Equation Modeling (SEM) to examine the causal relationships among Knowledge Management (KM), Total Quality Management (TQM), Product Innovation (PRODI), and Process Innovation (PROCI). Data analysis was conducted using SPSS and AMOS software. Confirmatory Factor Analysis (CFA) was employed to assess the psychometric properties of the measurement scales and ensure the adequacy of the measurement model (Bean & Bowen, 2021).

The descriptive results indicate that 68.3% of the respondents were male, while 31.7% were female. Most participants were younger than 40 years old, with 39.1% aged below 30 years and 37.4% between 30 and 39 years. In terms of education, the majority held a bachelor's degree (68.4%), followed by graduate qualifications (30.6%), whereas only 1.0% possessed postgraduate degrees. Regarding organizational position, senior managers

represented the largest group of respondents (51.8%), followed by directors (37.2%) and founders or successors (11.0%).

Table 1. Characteristics of Respondents (N = 130)

Variables	%	Cumulative (%)
Gender		
Male	68.3	68.3
Female	31.7	100.0
Age		
< 30	39.1	39.1
30–39	37.4	76.5
40–49	20.6	97.1
50–59	2.9	100.0
Level of Education		
Graduate	30.6	30.6
Bachelor's Degree	68.4	99.0
Postgraduate	1.0	100.0
Position		
Senior Manager	51.8	51.8
Director	37.2	89.0
Founder/Successor	11.0	100.0

The participating family-owned SMEs operated in various industrial sectors. Food and beverage industries constituted the largest proportion of firms (32.30%), followed by textile and clothing industries (19.24%) and ceramic, construction, and glass industries (19.23%). Mechanical and metallurgical industries accounted for 17.70% of the sample, while chemical industries represented 11.53%.

Table 2. Distribution of Family-Owned SMEs by Sector of Activity

Sector of Activity	No.	%
Food and Beverage Industries	42	32.30
Industries of Ceramic Construction and Glass Materials	25	19.23
Mechanical and Metallurgical Industries	23	17.70
Chemical Industries	15	11.53
Textile and Clothing Industries	25	19.24
Total	**130**	**100.00**

Regarding certification status, ISO 9001 was the most widely adopted certification, representing 74.61% of the surveyed firms. A smaller proportion of firms held ISO 16949, ISO 14000, and ISO 18001 certifications, either individually or in combination.

Table 3. Distribution of Family-Owned SMEs According to Their Certifications

ISO Certification	No.	%
ISO 9001	97	74.61
ISO 16949	20	15.39
ISO 16949 and ISO 14000	2	1.55
ISO 9001 and ISO 14000	10	7.69
ISO 9001, ISO 14000 and ISO 18001	1	0.76
Total	**130**	**100.00**

These descriptive findings provide an overview of the characteristics of the sampled firms and offer valuable context for interpreting KM, TQM, Product Innovation, and Process Innovation practices within Tunisian family-owned SMEs.

The measurement model was subsequently assessed through reliability, convergent validity, and discriminant validity analyses following the recommendations of Hair et al. (2012). Reliability was evaluated using Cronbach's Alpha and Composite Reliability (CR), while convergent validity was examined through factor loadings and Average Variance Extracted (AVE). According to Henseler et al. (2014), CR values between 0.60 and 0.70 indicate acceptable reliability. Furthermore, factor loadings above 0.60 (Bandalos, 2018) and AVE values exceeding 0.50 (Hair et al., 2012) confirm adequate convergent validity. Indicators with factor loadings below 0.50 were removed from further analysis.

The results presented in Table 4 demonstrate that all constructs achieved satisfactory levels of internal consistency and convergent validity. Cronbach's Alpha values ranged from 0.856 to 0.907, while Composite Reliability values ranged from 0.878 to 0.948. In addition, all AVE values exceeded the recommended threshold of 0.50, confirming that the retained indicators adequately represented their respective latent constructs.

Table 4. Measurement Model of Knowledge Management, Total Quality Management, Product Innovation, and Process Innovation

Construct	Dimensions/Items	Factor Loading	Cronbach's Alpha	CR	AVE	Rho_A
KM	AC1	0.764	0.904	0.934	0.667	0.893
	AC2	0.796				
	AC3	0.698				
	AP1	0.718				
	AP2	0.513				
	AP3	0.703				
	AP4	0.705				
	SH1	0.720				
	SH2	0.683				
	SH3	0.703				
	SH4	0.806				
	SH5	0.757				
PRODI	PRODI2	0.808	0.878	0.898	0.655	0.874
	PRODI3	0.855				
	PRODI4	0.843				
TQM	PQ2	0.817	0.907	0.948	0.675	0.898
	PQ4	0.821				
	SQP1	0.819				
	SQP2	0.815				
	SQP3	0.782				
	IA1	0.742				
	IA2	0.776				
	IA3	0.745				
PROCI	PROCI1	0.665	0.856	0.878	0.641	0.857
	PROCI4	0.781				
	PROCI5	0.848				

Note(s): AVE = Average Variance Extracted; CR = Composite Reliability. Deleted items: AC4, PRODI1, PRODI5, PQ1, PQ3, SQP4, SQP5, IA4, PROCI2, and PROCI3 due to factor loadings below 0.50.

Content validity was established because all measurement scales were adapted from previously validated studies. Following the recommendations of O'Leary-Kelly and Vokurka (1998), the assessment of the measurement model involved three stages: evaluation of unidimensionality, reliability testing, and examination of convergent and discriminant validity. The discriminant validity results indicate that the correlations among latent constructs were lower than the square roots of their corresponding AVE values, satisfying the criteria proposed by Hair et al. (2012) and Ringle et al. (2012). Therefore, discriminant validity was confirmed.

Table 5. Discriminant Validity (Fornell–Larcker Criterion)

Construct	KM	TQM	PRODI	PROCI
KM	**0.868**			
TQM	0.755	**0.798**		
PRODI	0.754	0.689	**0.781**	
PROCI	0.754	0.614	0.718	**0.735**

The structural model analysis revealed that Knowledge Management had a significant positive effect on Total Quality Management, thereby supporting H1. However, KM did not exert a significant direct effect on either Product Innovation or Process Innovation, leading to the rejection of H2 and H3. In contrast, Total Quality Management demonstrated significant positive effects on both Product Innovation and Process Innovation, providing support for H4 and H5.

Table 6. Direct Effects

Hypotheses	Coef β	Std. Deviation	z-values	p-values	Conclusion
H1. KM → TQM	0.430	0.186	2.660	0.000**	Supported
H2. KM → PRODI	0.132	0.118	0.621	0.245ns	Not Supported
H3. KM → PROCI	0.181	0.127	0.752	0.257ns	Not Supported
H4. TQM → PRODI	0.283	0.151	2.427	0.002**	Supported
H5. TQM → PROCI	0.271	0.149	2.383	0.004**	Supported

Note(s): $p < 0.01$; ns = not significant

To further examine the mediating role of TQM, mediation analysis was conducted following the procedure proposed by Preacher and Hayes (2004a). The results indicate that KM exerts a significant indirect effect on Product Innovation through TQM. Since the direct effect of KM on Product Innovation was not statistically significant, TQM functions as a full mediator in this relationship. Similarly, KM demonstrated a significant indirect influence on Process Innovation through TQM, whereas its direct effect on Process Innovation remained insignificant. These findings confirm that TQM fully mediates the relationship between KM and both innovation dimensions.

Table 7. Results of the Mediation Analysis

Path	Coef β	Std. Deviation	z-values	p-values	Conclusion
KM → TQM → PRODI	0.451	0.117	2.662	0.008**	Confirmed
KM → TQM → PROCI	0.423	0.103	2.142	0.006**	Confirmed

Note(s): $p < 0.01$

Overall, the findings suggest that Knowledge Management alone is insufficient to directly stimulate Product Innovation and Process Innovation. Instead, its influence is transmitted through Total Quality Management practices, highlighting the critical role of quality management systems in transforming organizational knowledge into innovation

outcomes. The results further emphasize that firms capable of integrating knowledge management processes with quality-oriented practices are more likely to achieve superior innovation performance.

4. Discussion

The findings of this study provide empirical evidence regarding the relationships among Knowledge Management (KM), Total Quality Management (TQM), Product Innovation, and Process Innovation. The results demonstrate that KM exerts a significant positive influence on TQM, supporting previous studies that emphasize the critical role of knowledge management in facilitating quality management practices (Soares & Rios-Zaruma, 2021; Shehabat & Berrish, 2021; Waddell & Stewart, 2008; Barber et al., 2006; Ju et al., 2006; Leonard & McAdam, 2001). These findings suggest that organizations capable of effectively acquiring, sharing, and utilizing knowledge are more likely to establish a supportive environment for the successful implementation of quality management initiatives.

The results further reveal that TQM positively influences both Product Innovation and Process Innovation. This finding is consistent with previous studies that highlight the contribution of quality management practices to organizational innovation (Al-Ababneh et al., 2022; Antunes et al., 2021; Abu Salim et al., 2019; Escrig-Tena et al., 2018; Honarpour et al., 2017; Antunes et al., 2017; Perdomo-Ortiz et al., 2006; Prajogo & Sohal, 2003, 2004b). The findings indicate that organizations implementing effective quality management systems are better positioned to generate innovative products and improve operational processes. However, the results also show that KM does not have a significant direct effect on either Product Innovation or Process Innovation. This outcome supports the arguments of Jnaneswar (2019) and Hung et al. (2010), who suggest that knowledge management alone is insufficient to produce innovation outcomes unless it is integrated into formal quality-oriented systems and practices.

The positive impact of TQM on innovation can be explained through several quality management dimensions. Customer orientation enables organizations to better understand customer expectations and market requirements, thereby supporting the development of innovative products (Hoang et al., 2006; Ershadi et al., 2019). Likewise, continuous improvement practices encourage organizations to refine existing processes and develop new operational methods, contributing to Process Innovation (Jimenez-Jimenez et al., 2020; Lizarelli et al., 2019; Khan & Naeem, 2018). These findings highlight the importance of quality management mechanisms in transforming organizational knowledge into tangible innovation outcomes.

Furthermore, the mediation analysis confirms that TQM significantly mediates the relationship between KM and both Product Innovation and Process Innovation. The indirect effects identified in this study support earlier findings reported by Honarpour et al. (2017) and Hung et al. (2010), which emphasize the complementary relationship between KM and TQM in enhancing innovation performance. In other words, knowledge resources contribute to innovation only when they are effectively embedded within quality management practices that facilitate their application and continuous improvement.

Within the context of Tunisian family-owned SMEs, these findings are particularly relevant. Such firms often possess strong informal knowledge-sharing practices derived from close family relationships and organizational culture. However, they frequently lack formal mechanisms to systematically convert that knowledge into innovative products and processes. The implementation of TQM provides a structured framework that enables organizations to transform knowledge resources into practical innovation outcomes, thereby improving organizational competitiveness and long-term sustainability.

The findings also offer important managerial implications. Managers should not view KM and TQM as separate organizational initiatives but rather as complementary

systems that work together to enhance innovation performance. Investments in knowledge acquisition, knowledge sharing, and organizational learning should be accompanied by the implementation of quality management practices that facilitate the effective utilization of knowledge. For policymakers, the results highlight the importance of supporting SMEs not only in developing knowledge capabilities but also in strengthening formal quality management systems that can serve as catalysts for innovation.

Finally, this study contributes to the existing literature by providing empirical evidence on the mediating role of TQM in the relationship between KM and innovation within certified family-owned SMEs operating in a developing economy. By demonstrating how quality management practices transform organizational knowledge into Product Innovation and Process Innovation, this research advances the understanding of the mechanisms through which KM contributes to innovation success and organizational competitiveness.

5. Conclusions

This study examined the mediating role of Total Quality Management (TQM) in the relationship between Knowledge Management (KM) and innovation, represented by Product Innovation and Process Innovation, within certified family-owned SMEs in Tunisia. The findings indicate that KM does not directly influence innovation outcomes. Instead, its effect is transmitted entirely through TQM, suggesting that organizational knowledge can only be transformed into innovative products and processes when supported by structured quality management practices. These results provide empirical evidence that TQM serves as a critical mechanism linking KM to innovation and offer a deeper understanding of how knowledge-based resources contribute to innovation performance in the context of developing economies.

The study also highlights several important managerial implications. Organizations should recognize that the implementation of KM alone is insufficient to stimulate innovation. Rather, KM initiatives should be integrated with TQM practices, including strategic quality planning, continuous improvement, and data-driven decision-making processes. Such integration enables firms to systematically utilize organizational knowledge and convert it into innovative outcomes. For policymakers and development agencies, the findings underscore the importance of encouraging SMEs, particularly family-owned enterprises, to adopt integrated KM–TQM approaches as a means of strengthening innovation capability and enhancing long-term competitiveness.

Despite its contributions, this study has several limitations. First, the analysis focused exclusively on certified family-owned SMEs in Tunisia, which may restrict the generalizability of the findings to other organizational settings. Future studies are therefore encouraged to examine the proposed framework in larger firms and different industrial contexts. Second, comparative research involving SMEs and large organizations could provide further insights into potential differences in the direct and indirect relationships among KM, TQM, Product Innovation, and Process Innovation. Such investigations would contribute to a more comprehensive understanding of how organizational characteristics influence the effectiveness of knowledge and quality management practices in driving innovation.

References

Abu Salim, T., Sundarakani, B., & Lasrado, F. (2019). The Relationship Between TQM Practices And Organizational Innovation Outcomes: Moderating And Mediating The Role Of Slack. *The TQM Journal, 31*(6), 874–907. Https://Doi.Org/10.1108/TQM-03-2019-0085

Akram, K., Siddiqui, S. H., Nawaz, M. A., Ghauri, T. A., & Cheema, A. K. H. (2011). Role Of Knowledge Management To Bring Innovation: An Integrated Approach. *International Bulletin Of Business Administration, 11*, 121–134.

Al Shraah, A., Abu-Rumman, A., Al Madi, F., Alhammad, F. A. F., & Aljboor, A. A. (2021). The Impact Of Quality Management Practices On Knowledge Management Processes: A Study Of A Social Security Corporation In Jordan. *The TQM Journal, 34*(4), 605–626. Https://Doi.Org/10.1108/TQM-01-2021-0017

Al-Ababneh, M. M., Al-Shakhsheer, F. J., Al-Badarneh, M. B., & Masadeh, M. A. (2022). The Role Of Total Quality Management Practices In Improving Service Recovery Performance Through Service Innovation In Jordan's Five-Star Hotels. *African Journal Of Hospitality, Tourism And Leisure, 11*(1), 169–189.

Alegre, J., Sengupta, K., & Lapiedra, R. (2011). Knowledge Management And Innovation Performance In A High-Tech Smes Industry. *International Small Business Journal, 31*(4), 454–470. Https://Doi.Org/10.1177/0266242611417472

Alrubaiee, L., Alzubi, H. M., Hanandeh, R., & Ali, R. A. (2015). Investigating The Relationship Between Knowledge Management Processes And Organizational Performance: The Mediating Effect Of Organizational Innovation. *International Review Of Management And Business Research, 4*(4), 989–1009.

Andreeva, T., & Kianto, A. (2011). Knowledge Processes, Knowledge-Intensity And Innovation: A Moderated Mediation Analysis. *Journal Of Knowledge Management, 15*(6), 1016–1034. Https://Doi.Org/10.1108/13673271111179343

Antunes, M. G., Quirós, J. T., & Justino, M. F. (2017). The Relationship Between Innovation And Total Quality Management And The Innovation Effects On Organizational Performance. *International Journal Of Quality & Reliability Management, 34*(9), 1474–1492. Https://Doi.Org/10.1108/IJQRM-02-2016-0025

Antunes, M. G., Mucharreira, P. R., Justino, M. R. T., & Teixeira-Quirós, J. (2021). Effects Of Total Quality Management Dimensions On Innovation: Evidence From Smes. *Sustainability, 13*(18), Article 10095. Https://Doi.Org/10.3390/Su131810095

Ar, I. M., & Baki, B. (2011). Antecedents And Performance Impacts Of Product Versus Process Innovation: Empirical Evidence From Smes Located In Turkish Science And Technology Parks. *European Journal Of Innovation Management, 14*(2), 172–206. Https://Doi.Org/10.1108/14601061111124885

Bandalos, D. L. (2018). *Measurement Theory And Applications For The Social Sciences*. Guilford Press.

Barber, K. D., Munive-Hernandez, J. E., & Keane, J. P. (2006). Process-Based Knowledge Management System For Continuous Improvement. *International Journal Of Quality & Reliability Management, 23*(8), 1002–1018. Https://Doi.Org/10.1108/02656710610688208

Bean, G. J., & Bowen, N. K. (2021). Item Response Theory And Confirmatory Factor Analysis: Complementary Approaches For Scale Development. *Journal Of Evidence-Based Social Work, 18*(6), 597–618. Https://Doi.Org/10.1080/26408066.2021.1936097

Byukusenge, E., & Munene, J. C. (2017). Knowledge Management And Business Performance: Does Innovation Matter? *Cogent Business & Management, 4*(1), 1368434. Https://Doi.Org/10.1080/23311975.2017.1368434

Carneiro, A. (2000). How Does Knowledge Management Influence Innovation And Competitiveness? *Journal Of Knowledge Management, 4*(2), 87–98. Https://Doi.Org/10.1108/13673270010372242

Chang, S. C., & Lee, M. S. (2008). The Linkage Between Knowledge Accumulation Capability And Organizational Innovation. *Journal Of Knowledge Management, 12*(1), 3–20. Https://Doi.Org/10.1108/13673270810852359

Chen, C. J., & Huang, J. W. (2009). Strategic Human Resource Practices And Innovation Performance: The Mediating Role Of Knowledge Management Capacity. *Journal Of Business Research, 62*(1), 104–114. Https://Doi.Org/10.1016/J.Jbusres.2007.11.016

Choi, T. Y., & Eboch, K. (1998). The TQM Paradox: Relations Among TQM Practices, Plant Performance, And Customer Satisfaction. *Journal Of Operations Management, 17*(1), 59–75. Https://Doi.Org/10.1016/S0272-6963(98)00031-X

Chung-Jen, C., Huang, J. W., & Hsiao, Y. C. (2010). Knowledge Management And Innovativeness: The Role Of Organizational Climate And Structure. *International Journal Of Manpower, 31*(8), 848–870. Https://Doi.Org/10.1108/01437721011088548

Darroch, J. (2005). Knowledge Management, Innovation And Firm Performance. *Journal Of Knowledge Management, 9*(3), 101–115. Https://Doi.Org/10.1108/13673270510602809

Darroch, J., & Mcnaughton, R. (2002). Examining The Link Between Knowledge Management Practices And Types Of Innovation. *Journal Of Intellectual Capital, 3*(3), 210–222. Https://Doi.Org/10.1108/14691930210435570

El Amrani, B. (2023). Innovation And Knowledge Management: Implications For Total Quality Management Practices: An Exploratory Study. *International Journal Of Performance And Organisation, 2*(1), 46–63.

Ellouze, D., & Mnasri, K. (2019). Risk-Taking Behaviour Of Family Firms: Evidence From Tunisia. *International Journal Of Entrepreneurship And Small Business, 39*(1–2), 192–221. Https://Doi.Org/10.1504/IJESB.2019.10025283

Ershadi, M. J., Najafi, N., & Soleimani, P. (2019). Measuring The Impact Of Soft And Hard Total Quality Management Factors On Customer Behaviour Based On The Role Of Innovation And Continuous Improvement. *The TQM Journal, 31*(6), 1093–1115. Https://Doi.Org/10.1108/TQM-04-2019-0103

Escrig-Tena, A. B., Segarra-Ciprés, M., García-Juan, B., & Beltrán-Martín, I. (2018). The Impact Of Hard And Soft Quality Management And Proactive Behavior In Determining Innovation Performance. *International Journal Of Production Economics, 200*, 1–14. Https://Doi.Org/10.1016/J.Ijpe.2018.03.011

Feng, L., Zhao, Z., Wang, J., & Zhang, K. (2022). The Impact Of Knowledge Management Capabilities On Innovation Performance From A Dynamic Capabilities Perspective: Moderating Role Of Environmental Dynamism. *Sustainability, 14*(8), Article 4577. Https://Doi.Org/10.3390/Su14084577

Gambi, L. D. N., Lizarelli, F. L., Ribeiro Junior, A. R., & Boer, H. (2020). The Impact Of Quality Management Practices On Innovation: An Empirical Research Study Of Brazilian Manufacturing Companies. *Benchmarking: An International Journal, 27*(2), 754–779. Https://Doi.Org/10.1108/BIJ-10-2018-0349

GEM Tunisia. (2023). *Global Entrepreneurship Monitor Tunisia National Report 2022–2023*.

Hair, J. F., Sarstedt, M., Ringle, C. M., & Mena, J. A. (2012). An Assessment Of The Use Of Partial Least Squares Structural Equation Modeling In Marketing Research. *Journal Of The Academy Of Marketing Science, 40*(3), 414–433. Https://Doi.Org/10.1007/S11747-011-0261-6

Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A New Criterion For Assessing Discriminant Validity In Variance-Based Structural Equation Modeling. *Journal Of The Academy Of Marketing Science, 43*(1), 115–135. Https://Doi.Org/10.1007/S11747-014-0403-8

Hoang, D. T., Igel, B., & Laosirihongthong, T. (2006). The Impact Of Total Quality Management On Innovation: Findings From A Developing Country. *International Journal Of Quality & Reliability Management, 23*(9), 1092–1117. Https://Doi.Org/10.1108/02656710610704230

Honarpour, A., Ahmad, M. N., & Khalil, M. N. (2012). Knowledge Management, Total Quality Management And Innovation: A New Look. *Journal Of Technology Management & Innovation, 7*(3), 22–31. Https://Doi.Org/10.4067/S0718-27242012000300003

Honarpour, A., Jusoh, A., & Nor, K. M. (2017). Total Quality Management, Knowledge Management, And Innovation: An Empirical Study In R&D Units. *Total Quality Management & Business Excellence, 29*(7–8), 798–816. Https://Doi.Org/10.1080/14783363.2016.1238760

Huang, J. W., & Li, Y. H. (2009). The Mediating Effect Of Knowledge Management On Social Interaction And Innovation Performance. *International Journal Of Manpower, 30*(3), 285–301. Https://Doi.Org/10.1108/01437720910956772

Hung, R. Y. Y., Lien, B. Y. H., Fang, S. C., & Mclean, G. N. (2010). Knowledge As A Facilitator For Enhancing Innovation Performance Through Total Quality Management. *Total Quality Management & Business Excellence, 21*(4), 425–438. Https://Doi.Org/10.1080/14783361003606795

Hung, R. Y. Y., Lien, B. Y. H., Yang, B., Wu, C. M., & Kuo, Y. M. (2011). Impact Of TQM And Organizational Learning On Innovation Performance In The High-Tech Industry. *International Business Review, 20*(2), 213–225. Https://Doi.Org/10.1016/J.Ibusrev.2010.07.001

Jiang, X., & Li, Y. (2009). An Empirical Investigation Of Knowledge Management And Innovative Performance: The Case Of Alliances. *Research Policy, 38*(2), 358–368. Https://Doi.Org/10.1016/J.Respol.2008.11.002

Jiménez-Jiménez, D., Martínez-Costa, M., & Para-González, L. (2020). Implications Of TQM In Firms' Innovation Capability. *International Journal Of Quality & Reliability Management, 37*(2), 279–304. Https://Doi.Org/10.1108/IJQRM-02-2019-0063

Jnaneswar, K. (2019). Combined Impact Of Knowledge Management And Total Quality Management On Innovation Performance: Insights From The Indian IT Industry. *International Journal Of Recent Technology And Engineering, 8*(4), 2277–3878.

Ju, T., Lin, B., Lin, C., & Kuo, H. J. (2006). TQM Critical Factors And KM Value Chain Activities. *Total Quality Management & Business Excellence, 17*(3), 373–393. Https://Doi.Org/10.1080/14783360500451775

Khalfallah, M., & Lakhal, L. (2021). The Relationships Between TQM, TPM, JIT And Agile Manufacturing: An Empirical Study In Industrial Companies. *The TQM Journal, 33*(8), 1735–1752. Https://Doi.Org/10.1108/TQM-12-2020-0306

Khalfallah, M., Ben Salem, A., Zorgati, H., & Lakhal, L. (2021). Innovation Mediating Relationship Between TQM And Performance: Cases Of Industrial Certified Companies. *The TQM Journal, 34*(3), 575–592. Https://Doi.Org/10.1108/TQM-06-2020-0142

Khan, B. A., & Naeem, H. (2018). Measuring The Impact Of Soft And Hard Quality Practices On Service Innovation And Organizational Performance. *Total Quality Management & Business Excellence, 29*(11–12), 1402–1426. Https://Doi.Org/10.1080/14783363.2016.1263543

Lakhal, L. (2009). Impact Of Quality On Competitive Advantage And Organizational Performance. *Journal Of The Operational Research Society, 60*(5), 637–645. Https://Doi.Org/10.1057/Palgrave.Jors.2602601

Leonard, D., & Mcadam, R. (2001). The Relationship Between Total Quality Management And Corporate Strategy: The Strategic Impact Of TQM. *Strategic Change, 10*(8), 439–448. Https://Doi.Org/10.1002/Jsc.559

Liao, S. H., & Wu, C. C. (2010). System Perspective Of Knowledge Management, Organizational Learning, And Organizational Innovation. *Expert Systems With Applications, 37*(2), 1096–1103. Https://Doi.Org/10.1016/J.Eswa.2009.06.109

Lim, A. F., Krishnan, N. R., & Foo, P. Y. (2019). TQM And Organizational Innovation: A Systematic Review And Research Framework. *International Journal Of Innovation And Learning, 26*(3), 273–300. Https://Doi.Org/10.1504/IJIL.2019.102746

Lin, H. F., & Lee, G. G. (2005). Impact Of Organizational Learning And Knowledge Management Factors On E-Business Adoption. *Management Decision, 43*(2), 171–188. Https://Doi.Org/10.1108/00251740510581902

Lizarelli, F. L., Toledo, J. C., & Alliprandini, D. H. (2019). Relationship Between Continuous Improvement And Innovation Performance: An Empirical Study In Brazilian Manufacturing Companies. *Total Quality Management & Business Excellence, 32*(9–10), 1–24. Https://Doi.Org/10.1080/14783363.2019.1652186

López, F., Guadalupe, J., Jacobo Hernández, C. A., Leyva Osuna, B. A., & Limón Valencia, L. A. (2023). The Effect Of The Knowledge Management Processes Capability On Innovation Activities In The Mexican Industry. *Administrative Sciences, 13*(1), Article 15. Https://Doi.Org/10.3390/Admsci13010015

Lopez-Nicolas, C., & Merono-Cerdan, A. L. (2011). Strategic Knowledge Management, Innovation And Performance. *International Journal Of Information Management, 31*(6), 502–509. Https://Doi.Org/10.1016/J.Ijinfomgt.2011.02.003

Maistry, K., Hurreeram, D. K., & Ramessur, V. (2017). Total Quality Management And Innovation: Relationships And Effects On Performance Of Agricultural R&D Organizations. *International Journal Of Quality & Reliability Management, 34*(3), 418–437. Https://Doi.Org/10.1108/IJQRM-05-2015-0078

Marchiori, D., & Mendes, L. (2020). Knowledge Management And Total Quality Management: Foundations, Intellectual Structures, Insights Regarding Evolution Of The Literature. *Total Quality Management & Business Excellence, 31*(9–10), 1135–1169. Https://Doi.Org/10.1080/14783363.2018.1464892

Migdadi, M. M. (2022). Knowledge Management Processes, Innovation Capability And Organizational Performance. *International Journal Of Productivity And Performance Management, 71*(1), 182–210. Https://Doi.Org/10.1108/IJPPM-04-2020-0154

Mnasri, K., & Ellouze, D. (2015). Ownership Structure, Product Market Competition And Productivity: Evidence From Tunisia. *Management Decision, 53*(8), 1771–1805. Https://Doi.Org/10.1108/MD-07-2014-0460

Nawab, S., Nazir, T., Zahid, M. M., & Fawad, S. M. (2015). Knowledge Management, Innovation And Organizational Performance. *International Journal Of Knowledge Engineering, 1*(1), 43–48. Https://Doi.Org/10.18178/Ijke.2015.1.1.008

Nguyen, H., & Harrison, N. (2019). Leveraging Customer Knowledge To Enhance Process Innovation: Moderating Effects From Market Dynamics. *Business Process Management Journal, 25*(2), 307–322. Https://Doi.Org/10.1108/BPMJ-11-2017-0319

O'Leary-Kelly, S. W., & Vokurka, R. J. (1998). The Empirical Assessment Of Construct Validity. *Journal Of Operations Management, 16*(4), 387–405. Https://Doi.Org/10.1016/S0272-6963(98)00020-5

Obeidat, B. Y., Hashem, L., Alansari, I., Tarhini, A., & Al-Salti, Z. (2016). The Effect Of Knowledge Management Uses On Total Quality Management Practices: A Theoretical Perspective. *Journal Of Management And Strategy, 7*(4), 18–29. Https://Doi.Org/10.5430/Jms.V7n4p18

Obeidat, B., Hashem, L., & Masa'deh, R. (2018). The Influence Of Knowledge Management Uses On Total Quality Management Practices In Commercial Banks Of Jordan. *Modern Applied Science, 12*(11), 1–15. Https://Doi.Org/10.5539/Mas.V12n11p1

Partlow, C. G. (1996). Human Resource Practices Of TQM Hotels. *Cornell Hotel And Restaurant Administration Quarterly, 37*(5), 67–77. Https://Doi.Org/10.1177/001088049603700515

Perdomo-Ortiz, J., González-Benito, J., & Galende, J. (2006). Total Quality Management As A Forerunner Of Business Innovation Capability. *Technovation, 26*(10), 1170–1185. Https://Doi.Org/10.1016/J.Technovation.2005.09.008

Prajogo, D. I., & Sohal, A. S. (2001). TQM And Innovation: A Literature Review And Research Framework. *Technovation, 21*(9), 539–558. Https://Doi.Org/10.1016/S0166-4972(00)00070-5

Prajogo, D. I., & Sohal, A. S. (2003). The Relationship Between TQM Practices, Quality Performance And Innovation Performance: An Empirical Examination. *International Journal Of Quality & Reliability Management, 20*(8), 901–918. Https://Doi.Org/10.1108/02656710310493625

Prajogo, D. I., & Sohal, A. S. (2004a). The Multidimensionality Of TQM Practices In Determining Quality And Innovation Performance: An Empirical Examination. *Technovation, 24*(6), 443–453. Https://Doi.Org/10.1016/S0166-4972(02)00087-5

Prajogo, D. I., & Sohal, A. S. (2004b). Transitioning From Total Quality Management To Total Innovation Management: An Australian Case. *International Journal Of Quality & Reliability Management, 21*(8), 861–875. Https://Doi.Org/10.1108/02656710410551746

Preacher, K. J., & Hayes, A. F. (2008). Asymptotic And Resampling Strategies For Assessing And Comparing Indirect Effects In Multiple Mediator Models. *Behavior Research Methods, 40*(3), 879–891. Https://Doi.Org/10.3758/BRM.40.3.879

Romero-Hidalgo, J. A., Isiordia-Lachica, P. C., Valenzuela, A., & Rodríguez-Carvajal, R. A. (2021). Knowledge And Innovation Management Model In The Organizational Environment. *Information, 12*(6), Article 225. Https://Doi.Org/10.3390/Info12060225

Sahoo, S. (2019). Quality Management, Innovation Capability And Firm Performance: Empirical Insights From Indian Manufacturing Smes. *The TQM Journal, 31*(6), 1003–1027. Https://Doi.Org/10.1108/TQM-04-2019-0092

Schaarschmidt, M., Walsh, G., & Evanschitzky, H. (2018). Customer Interaction And Innovation In Hybrid Offerings: Investigating Moderation And Mediation Effects For Goods And Services Innovation. *Journal Of Service Research, 21*(1), 119–134. Https://Doi.Org/10.1177/1094670517713323

Shehabat, I. M., & Berrish, M. (2021). Integration Between Knowledge Management And Total Quality Management In Jordanian Universities: Empirical Study. *Contemporary Knowledge And Systems Science, 1*, 256–295.

Siachou, E., Pantouvakis, A., Tsiotras, E., & Tsiotras, G. (2021). Market Knowledge Acquisition And Transfer In International Smes: Peculiarities, Specifications And Linkages To Market Success. *International Marketing Review, 39*(3), 529–567. Https://Doi.Org/10.1108/IMR-11-2020-0282

Sila, I., & Ebrahimpour, M. (2003). Examination And Comparison Of The Critical Factors Of Total Quality Management Across Countries. *International Journal Of Production Research, 41*(2), 235–268. Https://Doi.Org/10.1080/0020754021000022212

Silva, M. G., Gomes, P. J., Lages, L. F., & Pereira, Z. L. (2014). The Role Of TQM In Strategic Product Innovation: An Empirical Assessment. *International Journal Of Operations & Production Management, 34*(10), 1307–1337. Https://Doi.Org/10.1108/IJOPM-03-2012-0098

Soares, A., & Rios-Zaruma, J. (2021). Relationships Between Knowledge Management And Quality Management In Organizational Performance: An Integrative Review. In *Proceedings Of The 16th Iberian Conference On Information Systems And Technologies (CISTI)* (Pp. 1–6). IEEE. Https://Doi.Org/10.23919/CISTI52073.2021.9476586

Sofiyabadi, J., Valmohammadi, C., & Sabet Ghadam, A. (2020). Impact Of Knowledge Management Practices On Innovation Performance. *IEEE Transactions On Engineering Management, 69*(6), 2759–2773. Https://Doi.Org/10.1109/TEM.2020.2981911

Tatteh, F. K., Nyantakyi, B., Kwateng, K. O., & Osei, H. V. (2025). The Mediating Role Of Innovation In The Relationship Between Total Quality Management And Performance Of Small And Medium-Scale Enterprises. *International Journal Of Quality & Reliability Management, 42*(2), 676–705. Https://Doi.Org/10.1108/IJQRM-09-2022-0301

Waddell, D., & Stewart, D. (2008). Knowledge Management As Perceived By Quality Practitioners. *The TQM Journal, 20*(1), 31–44. Https://Doi.Org/10.1108/17542730810857383

Wang, Y., & Lin, J. (2013). An Empirical Research On Knowledge Management Orientation And Organizational Performance: The Mediating Role Of Organizational Innovation. *African Journal Of Business Management, 7*(8), 604–612. Https://Doi.Org/10.5897/AJBM12.1109

Yeh, Y. M. C., & Ta, Y. (2005). The Implementation Of Knowledge Management Systems In Taiwan's Higher Education. *Journal Of College Teaching & Learning, 2*(9), 35–42. Https://Doi.Org/10.19030/Tlc.V2i9.1814

Yusr, M. M. (2016). Innovation Capability And Its Role In Enhancing The Relationship Between TQM Practices And Innovation Performance. *Journal Of Open Innovation: Technology, Market, And Complexity, 2*(1), Article 6. Https://Doi.Org/10.1186/S40852-016-0031-2

Yusr, M. M., Mokhtar, S. S. M., Othman, A. R., & Sulaiman, Y. (2017). Does Interaction Between TQM Practices And Knowledge Management Processes Enhance The Innovation Performance? *International Journal Of Quality & Reliability Management, 34*(7), 955–974. Https://Doi.Org/10.1108/IJQRM-09-2014-0138

Yusr, M. M., Mokhtar, S. S. M., Perumal, S., & Salimon, M. G. (2021). The Impact Of Customer Knowledge Management, TQM And Marketing Capabilities On Product Innovation Performance Of Malaysian Smes: An Empirical Study. *International Journal Of Innovation Science, 14*(2), 316–338. Https://Doi.Org/10.1108/IJIS-09-2020-0186

Zack, M., Mckeen, J., & Singh, S. (2009). Knowledge Management And Organizational Performance: An Exploratory Analysis. *Journal Of Knowledge Management, 13*(6), 392–409. Https://Doi.Org/10.1108/13673270910997088

Zatar, T. S. (2017). The Role Of Knowledge Management In Applying Total Quality Management: The Case Of Saudi Arabian Universities. *Asian Journal Of Management Sciences & Education, 6*(1), 28–38.

Zeng, J., Zhang, W., Matsui, Y., & Zhao, X. (2017). The Impact Of Organizational Context On Hard And Soft Quality Management And Innovation Performance. *International Journal Of Production Economics, 185*, 240–251. Https://Doi.Org/10.1016/J.Ijpe.2016.12.031

Zuraik, A., & Kelly, L. (2019). The Role Of CEO Transformational Leadership And Innovation Climate In Exploration And Exploitation. *European Journal Of Innovation Management, 22*(1), 84–104. Https://Doi.Org/10.1108/EJIM-10-2017-0142