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Does the Pricing Capabilities Mediate the Relationship between Total Quality Management Orientation on Radical Innovations?

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ABSTRACT

Radical innovation is one of the main indicators that companies always seek to own, however, its link to the approach to total quality through product development capabilities is rarely covered in studies. Therefore, the study sought to know that effect through the use of (RBV) theory and previous studies to evaluate the study model and its hypotheses, by applying it to Sudanese business organizations in Khartoum State. The study also relied on the descriptive and analytical approach, and the questionnaire was used as the main tool for collecting data from the study sample of (300) individuals working in the top management in those companies. And to test the hypotheses of the study; the statistical packages program (SPSS) and (AMOSv25) were used to analyze the data, and the method of path analysis and structural equation modeling was used to test the hypotheses of the study. The study reached a set of results which are: There is a partial relationship between the approach to total quality management and radical innovation. There is a partial relationship between the approach to total quality management and pricing capabilities. There is no relationship between pricing capabilities and radical innovation. There is no mediation of product development capabilities in the relationship between TQM orientation and radical innovation. The result of study extends the body of knowledge in terms of Radical Innovations. Further, it will help policymakers to make relevant decisions related to Radical Innovations.

Keywords: Pricing, Total Quality Management Orientation, Radical Innovations, Strategic Planning, Operations Management
JEL Classifications: M11, M21, L15, O31, D40

1. INTRODUCTION

The change in business models and structures as a result of the tremendous advances in technology, made emerging business organizations and others tend to pay attention to improving their position, to face the fierce competitive attacks that are striking them from everywhere, in a complex and highly globalized environment the economic environment that must improve the quantity and quality of production. Innovative performance is one of the main drivers for starting a business change and development; it is one of the main mechanisms for improving its competitiveness and ensuring its long-term viability (Alofan et al., 2020).

The term quality is basically an economic term that arose based on industrial and technological competition between advanced industrial nations to control (Rosak-Szyrocka et al., 2024). It is an examination of the extent to which TQM practices usually affect performance because innovative performance is the main basis for sustainable competitive advantage. Studies conducted in recent years have focused on shedding light on the relationship between TQM and innovative performance. However, some studies show that there is no consensus about the extent to which quality management affects innovative performance.

The failure to obtain consistent results about the relationship of quality management to performance may be due to the large

differences in aspects of research design, and this has led to TQM being considered a strategic resource for businesses (Yunis et al., 2013). The study focuses on the impact of total quality management and product pricing capabilities on the radical innovation of business firms in Khartoum State. Although the relationship between TQM and radical innovation has already been examined in previous studies, the interaction between TQM and product pricing capabilities and its contribution to radical innovation has not been sufficiently addressed.

Previous studies have dealt with managing the TQM approach on several different traditional dimensions as illustrated by several studies, including Manzani and Cegarra (2023), Zaid et al. (2023) and other studies. This study focuses on four dimensions (senior management support and support, customer focus, operations management, and strategic planning), and their impact on radical innovation. And there are previous studies that showed this relationship, including: (Azam et al., 2023; Hudnurkar et al., 2023) these studies were conducted in different environments, but this study is recent in Sudanese commercial companies.

There have been many studies looking at variables that illustrate the relationship between the TQM approach and radical innovation, but there are few studies that have used product pricing capabilities as a variable intermediary between these two variables. Therefore, this study attempts to fill the gaps from the literature review. This study aims to examine the relationship between the TQM approach, radical innovation, and the mediating effect of product pricing capabilities. Therefore, the theoretical importance of this study is trying to bridge the gap through the mediating role in product development capabilities between total quality management and radical innovation and then trying to build a conceptual framework that would contribute to the theoretical development of this issue.

2. LITERATURE REVIEW

There is no clear agreement among the authors on defining the concept of quality, as it is a difficult concept to define completely, and there is no agreement on how to measure it and the reason that it does not exist independently of the context of its use (Mari et al., 2023). It can also be defined as a broad management philosophy around the principles of quality and productivity management and focuses on guidelines and process standards to eliminate errors in business processes and enhance customer satisfaction (Prada Pérez et al., 2026). It is defined as a set of techniques and procedures applied to functional processes, to improve the efficiency, reliability, and quality of business activities that lead to adding value, reduce manpower and production cost and improve delivery (Ambarwati and Sischasari, 2026). Total quality management (TQM) is the management philosophy used on a wide range in all manufacturing and service sectors. Institutions apply total quality to gain a competitive advantage in terms of quality, productivity, customer satisfaction, and profitability (Ali et al., 2026). Some of them like Masoudi and Shahin (2026) (Guerola-Navarro et al., 2024) provided that the four dimensions listed below are their requirements (support and endorsement of management; focus on customer management; operations management; strategic planning).

In terms of management support, there is hardly any research that did not address this active component, that commitment to senior management means the clarity of senior management, its mission, and strategic direction, the ability to take responsibility for continuous improvement and evaluation (Pudjono et al., 2026). Business strategy change should be made as required. It has been evident that quality management is concerned with supervision. For all the activities and tasks the organization needs to maintain the level of excellence it chooses (Buyukbay, 2026). The importance of leadership appears in all project management literature and has been identified as a condition of project excellence, as a determinant of the overall project culture, and as a means of mobilizing people for change (Culqui-Arce et al., 2026). It is also the responsibility of top management to collect information related to the target's satisfaction and concerns.

That top management can play a better role in improving for the better in the field of TQM research to improve the overall quality of service and it was clearly demonstrated that leaders see TQM as an institutional system to support employee development; Establishing communications between employees, managers, and clients and using the information efficiently and effectively (Septiowati, 2026). Leadership is defined as the personal influence of the manager who exercises his attitudes and orientations, through the communication process, towards the achievement of a specific goal or objective.

Furthermore, focusing on customers is one of the important pillars to which TQM must be applied because of its clear importance. The Malcolm International Award allocated 25% of the marks to receive this award on the organization's interest in its clients and how it meets their desires. Studies have shown that satisfying and maintaining actual customers, as well as acquiring new customers, is the main goal of many companies, especially in the service sector (Gao et al., 2026). A study has shown that a successful company will recognize the need to put the customer first in every decision that is made, which will be considered key to TQM in maintaining a closer relationship with the customer to define his needs and desires. Customer satisfaction metrics are also recognized as the most popular non-financial performance indicator (Zarzycka and Krasodomska, 2022). The high level of customer satisfaction improves the company's image and protects its market share. As for the study Albadry et al. (2025) its results showed that TQM practices are closely and positively correlated with customer satisfaction and service quality of small service firms.

In this regard, the concept of operations management, a modern term for production management; provides a broader acronym for more than just plant management; deals with product and operations strategy. It can be pointed out that the daily production of goods or the provision of services to practitioners requires continuous decision-making and the implementation of changes; This is called Operations Management; Focus on the "real" concerns of the needs of practitioners.It became clear that the operations management department is concerned with determining product quality by knowing the market requirements in terms of type and quality, then determining the required quantity of the main production items (Vickram et al., 2025).

It has been pointed out that with the increasing technological advancements in process management practices, manufacturing companies should pay attention to the reliability of production processes as well as quality management systems as this can be measured.The study saw that the operations management is aware of the required technological changes and a systematic review to steer the product towards the required improvements.

Through follow-up, it was emphasized that operations management lacks a strong theoretical base to focus on, and this is what some previous studies showed that operations management is still subject to a weak conceptual base, but there is no need to destroy this path. Operations management theories only to replace them with other theories (Omland et al., 2025). It has been shown that total quality management practices can improve the performance of production processes, such as the performance and quality of inventory.

Another important concept is strategic planning. Strategic planning is a process in which the organization determines its strategy to achieve goals. It has been pointed out that strategic planning plays a fundamental role in the application of total quality and its success and in determining the requirements for its application, as it is the mainstay, and appointed for it in facing future challenges It has been made clear that total quality is a long-term stage that requires integrated strategic planning with high accuracy and objectivity, and planning includes basic aspects, starting with knowing the previous and current situation of the institution. What needs to be achieved, the organization's plan to achieve what it wants, quality plans, and how to meet total quality requirements (Gamit et al., 2025). Strategic planning works to clarify the general objectives of the initiatives and this is one of their advantages, which leads to the emergence of many plans in the field of work and management, which constitute the general goal that governs all the resulting decisions. The study also confirmed that good project planning may lead to the completion of projects that are less than the expected cost and shorten the expected time. It has been found that increased quality of planning improves project efficiency, especially high-risk projects, and improves project effectiveness in low-risk projects (Kaleli et al., 2025).

Concerning the pricing capabilities, the previous study showed a positive relationship between value-based pricing (but not competition-based pricing) and the company's performance. Moreover, the authors found that all pricing trends differently affect the pricing capabilities of the company (Hiltunen, 2026).The study indicated that the findings of the United States of America indicated that price promotion strategies can be effective in many contexts (Leong and Koay, 2026). There are a limited number of studies looking at the effectiveness of these strategies in other countries, particularly in Latin America and emerging countries. To avoid impromptu pricing that is not based on scientific methodology or objective study, setting pricing objectives is a necessary requirement for a professional marketer. The reference study this article explores the pricing capabilities that companies seek to develop; how learning affects the development of these capabilities, which reveal the capabilities of the task of value-based pricing and value-based selling. The results indicate that pricing and selling cannot be understood separately (Ghasemzadeh and Ghahremannasab, 2026). Managers can benefit from an understanding of the broader implications of the possibilities of value-based pricing and value-based pricing including how the two are related.

In terms of radical innovations, previous study has shown that innovation is the driving force of economic growth, as a knowledge base for the production of something useful, which is the modification or discovery of ideas; some studies consider the economy to be clearly and fundamentally dependent on innovative performance (Qian and Xie, 2026).The study showed that innovative performance can be described in different categories, including dividing the OECD into two dimensions: efficiency and effectiveness. While many studies define innovative performance into four dimensions, namely: product innovation, process innovation, attitude innovation, and exemplary innovation, some divide innovative performance into two dimensions, namely, radical innovation and incremental innovation.A study showed that the types of innovation according to technology, divided into technological or non-technological innovations, according to the field of work, divided into product, process, marketing or organizational; By degree of seriousness, divided into radical or incremental innovations; And in terms of the degree of impact, broken down into idle or non-disruptive innovations; In terms of the degree of control over the innovation process, it is divided into open or closed development (Zhao et al., 2026). A study showed that they adopted widely used metrics for incremental innovations and radical innovations to measure the innovative performance of firms, building on this in several previous studies (Zhao et al., 2026). Incremental innovations refer to some minor changes that companies make overtime to maintain their growth without making sweeping changes to product and service lines; Radical innovation refers to the reflection of the dominant technology or product in the market. Because radical innovations involve disrupting current technologies and transforming prevailing knowledge.

Previous studies have been used several theories to explain the relationship between total quality management orientation and radical innovation. To provide a coherent and unique theoretical basis to contribute to the enrichment of scientific research, the resource theory was used as a guide for the study model, which is a theory that depicts work as a group of resources, some of which are usually available to all business organizations and others in particular that work to establish and maintain competitive advantage and distinction from the other facility and the idea. The core enables an organization to possess distinct resources and skills that act as barriers to competitors. Dzreke (2025) Most companies that position themselves on the learning curve have the ability to stop competitors from advancing towards them; to do this, distinct resources must be developed and empowered that cannot be easily imitated. A study Xu et al. (2026) provided evidence of the impact of TQM on a company's financial results. Regarding (RBV) contributions, it has shown that the introduction of TQM can generate a wealth of distinct competencies that partly explain how competitive advantage can be maintained. The Sangani and Muddangala (2026) study confirmed that "resource theory" has contributed to the marketing literature in several

ways. The theoretical principles of (RBV) logic have been verified experimentally and that resources and capabilities have different performance outcomes depending on the processes in which the firm incorporates a cumulative effect. The study Rodrigues et al. (2026) that adopts a resource-based perspective seeks to answer the question about which of the company's resources is the most contributing to product innovation performance; This study is based on theory (RBV) and looks at tangible and intangible assets. Noting that intangible resources in the Malaysian context are the main drivers of this (RBV) product innovation performance; we can conclude that product innovation performance can be considered as one of the determining factors of a firm's performance in product innovation.

In order to achieve the aim of the study, many previous studies and research related to the subject of the study were reviewed and then linked to the relationships between the study variables, thus developing a model for the study as well as concluding hypotheses related to it.

In terms of relationship between total quality management and radical innovation, the study Koomson (2026) contributed by clarifying the relationship between the approach to total quality management and the innovative (radical) performance. The results of the research showed that innovation is affected by TQM practices. A study Tolosa and Kitaw (2026) has shown regarding the controversy of the relationship between TQM and innovation, this study supports the positive relationship between TQM and innovative performance. A study Nofri and Ahmad (2026) demonstrated that TQM practices have an impact on innovative performance. There is a significant indirect impact of TQM practices on financial performance through innovative performance. The study Zhang et al. (2026) showed the effect of total quality management (TQM) resources on (strategic innovation), but they do not directly affect (radical) innovation. As for the study Bazrkar et al. (2022) it concluded that total quality management It is, by itself, able to promote organizational innovation activities. The results of the study Masoudi (2026) showed that (TQM) has a superior role in enhancing the ability to innovate, but it does not have a direct impact on innovation performance. The study aimed to answer the main question of whether total quality management can influence the innovation performance of Iranian oil companies. According to the results of the study, it is possible to increase the rate of (radical) innovation in companies by raising the level of TQM. This has a good effect on innovative (radical) performance. Hence, the first main hypothesis can be concluded:

- H_1: There is a relationship between the factors of the trend in total quality management and radical innovation.

In terms of the relationship between total quality management orientation and pricing capability, this can be illustrated by studying a comprehensive quality management system with the representation of many elements of marketing capabilities (cost, price, and customer satisfaction). And that total quality management to achieve. Some previous studies illustrate the relationship, such as that Espejel et al. (2007) explored that a consumer's perception of quality not only results from an evaluation of the intrinsic quality features of a product, but is also influenced by the marketing mix (such as price, advertising, and warranties) adopted by the company that sells. This paper examines the relationship between strategy and implementation of total quality management (TQM) as well as the impact of adaptation to both organizational performances. We used the focus on cost leadership (aiming to lead by showing the lowest price) pricing capabilities, differentiation in marketing, and differentiation in innovation as strategic dimensions to develop four major strategic configurations. The results indicate that there is a relationship - not just a theoretical one - between total quality management and the strategies adopted by companies. Hence, the second main hypothesis can be concluded:

- H_2: There is a relationship between trend factors in TQM and pricing capabilities.

Regarding the relationship between pricing capabilities and innovative performance, it can be illustrated through previous studies. The results of the study indicate that the ability to innovate is highly conditional on marketing capabilities and resources and that this ability to innovate affects the financial results of the companies analyzed. Likewise, he concludes that a market-oriented management philosophy contributes to the development of these marketing capabilities. Focusing on the relationship between marketing capabilities and innovative performance through previous studies, this paper explores the investigation of how specialized capabilities, including pricing and marketing capabilities, affect the commercialization of innovation in manufacturing and service companies. Including openness and formal innovation training. The main aim of the study is to build a conceptual model for investigating the relationship between a company's marketing potential and innovative performance. Marketing and innovation are increasingly seen as two major factors for competitive advantage, the impact of the company's marketing capabilities is represented in the following dimensions (price management, sales management, promotion management, customer relationship management) on the radical innovator) and the results indicated a positive relationship between them. The purpose of this study is to explore the impact of operations strategy (cost, quality, flexibility, and delivery) on innovative performance under the influence of learning orientation. The results show that cost and delivery strategies do not have a significant impact on innovative performance. Hence, the third main hypothesis can be concluded:

- H_3: There is a relationship between the factors of a trend in total quality management and pricing capabilities.

Concerning the mediation role of pricing capabilities on the relationship between total quality management orientation and innovative performance, it is the main contribution of the current study. Numerous studies, in which the marketing potential, whether pricing, promotional, or other capabilities mediated, indicated that the relationship between the use of marketing analysis and marketing performance, and that marketing capabilities are important drivers of marketing performance and that they enable companies to do so (Raji et al., 2026). Gain valuable knowledge and ideas to improve company performance. The results show that the use of marketing analytics is positively correlated. Between

the use of marketing analytics and marketing performance. This study (Sonmez Cakir et al., 2026) aims to examine and define the mediating role of specialized marketing capabilities (pricing capabilities) and others in the relationship between market intelligence and business performance in companies. The results of the data analysis show that specialized marketing capabilities have an important role as a partial mediator in the relationship between creating a market intelligence, disseminating market intelligence, and responding to market intelligence with business performance. The study Amoa-Gyarteng et al. (2026) demonstrated support for mediating the effects of innovative and dynamic marketing capabilities regarding performance between the concept of international entrepreneurship culture and new international ventures. This research, results indicate that market direction has direct effects. And indirectly on the performance of the company, while the trend of entrepreneurship has a significant indirect impact on the performance of the company through the mediation of marketing capabilities. A study Al Buraiki and Nofal (2026)in which the results indicate that marketing capabilities have no direct impact on organizational performance. The relationship between carrying capacity and performance is fully mediated by marketing capabilities. From here it is possible to conclude the fourth main hypothesis:

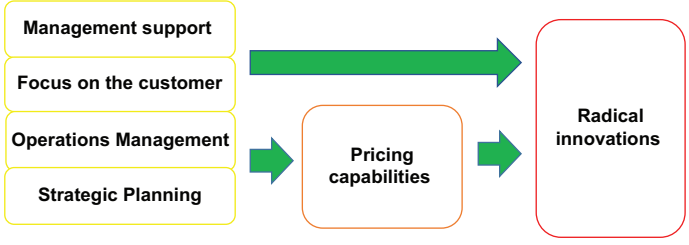
- H_4: Pricing capabilities mediate the relationship between TQM approach and radical innovation.

3. METHODOLOGY

This study aims to examine the relationship between TQM and radical innovation. Further, it examines the mediating effect of product pricing capabilities on the relationship between TQM and radical innovation. Figure 1 shows the conceptual framework of the study that we adopt.

The study relied on the descriptive and analytical approach, and the questionnaire was used as the main tool to collect data from the study sample consisting of (300) individuals working in the higher management of these companies, by applying it to the Sudanese business organizations community in Khartoum State. The percentage of retrieved and correct questionnaires for analysis was (242) questionnaires, representing (80.6%) of the study sample, and for testing the study hypotheses. The statistical packages program (spss) and (AMOSv25) were used to analyze the data, and the method of path analysis and structural equation modeling was used to test the hypotheses. Determine the objective of the questionnaire, which is to reveal the mediating role of product development capabilities in the relationship between the influences of TQM directive on radical innovation. The study

Figure 1: Conceptual framework of the study



model and hypotheses were based on resource theory (RBV) and previous literature.

The questionnaire was used as the main data set. According to the five-point Likert scale, which consists of five levels as follows: Strongly Agree, Agree, Neutral, Disagree, and Strongly Disagree. To verify the validity of the content of the study tool and to ensure that it serves the objectives of the study, it was presented to a group of (8) qualified referees in the field of business administration, and after retrieving the questionnaire from all experts, the notes were taken into account and the proposal was submitted and amendments were made. The TQM approach is measured using four dimensions (management support and advocacy, customer focus, operations management, and strategic planning), and radical innovation is measured as one dimension in addition to product pricing capabilities.

4. RESULTS

The Statistical Packages Program (SPSS) and (AMOSv25) were used to analyze the data, to conduct the necessary analyzes and statistics for the questionnaire data, using the Likert scale, which consists of five levels as follows: Strongly agree, agree, neutral, disagree, strongly disagree. In terms of exploratory factor analysis of the study variables, the statistical analysis software package (SPSS v25) was used in conducting the exploratory factor analysis process for the model, where each of the statements that were used to measure all the variables of the questionnaire was given, showing the results of the exploratory factor analysis process for the study consisting of several statements.

It was found from Table 1 through the results of the exploration factor analysis that the value of the KMO test amounted to (0.928)

Table 1: Exploratory factor analysis

Exploratory factor analysis Total quality management orientation		Factor exploratory analysis Pricing capacity		Exploratory factor analysis Radical innovation	
Component		Component		Component	
Management 1	0.744	Pricing 1	0.846	Innovations1	0.864
Management 2	0.928	Pricing 2	0.899	Innovations2	0.928
Management 3	0.832	Pricing 3	0.893		
Management 4	0.914	Pricing 4	0.703		
Management 5	0.780				
Management 6	0.813				
Operations 2	0.755				
Operations 3	0.960				
Customer 1	0.617				
Customer 2	0.821				
Customer 3	0.955				
Customer 4	0.873				
Customer 5	0.850				
Customer 6	0.599				
Planning 1	0.904				
Planning 2	0.778				
Planning 3	0.778				
Planning 4	0.856				
Planning 5	0.856				

according to Park and Kang (2026)which states that the lowest acceptable value for KMO must exceed (0.5).

Further, Table 2 shows the result of Cronbach's alpha after analyzing the confirming factors of the variables.

Table 3 shows the descriptive statistics of the variables used in the study. Through the data of the above table, it is clear that, in general, it appears that the level of orientation in total quality management in the researched companies from the point of view of the study sample is very high.

In terms of correlation analysis between study variables, it has been used to find out the correlation between the independent variables, the dependent variable and the modifier. Table 4 shows that the higher the degree of correlation is near the correct one, this means that the strong correlation between the two variables.

The statistical analysis of the data was based on the structural equation modeling method, specifically, the use of the path analysis method, as this method has many advantages, commensurate with the nature of the study in this research. Table 5 shows the values of the path analysis between the direction of total quality management and product development capabilities and innovative performance.

The effects are considered statistically significant if the value of the calculated significance level is less than the normal level of significance (0.05) and vice versa, and Table 6 shows the indirect relationship values.

Table 2: Cronbach's alpha

Variables	CR	AVE	MSV	MaxR (H)
Management support	0.925	0.673	0.489	0.926
Focus on the customer	0.930	0.690	0.564	0.937
Operations management	0.694	0.534	0.464	0.716
Strategic planning	0.925	0.713	0.607	0.931
Pricing capabilities	0.906	0.706	0.682	0.908
Radical innovations	0.805	0.674	0.701	0.806

Table 3: Descriptive statistics

Variables	Mean	Std. deviation
Radical innovations	3.6801	0.65503
Pricing capabilities	4.0096	0.73355
Operations management	3.7907	0.69129
Focus on the customer	3.1675	0.63312
Strategic planning	3.8262	0.74344
Management support	4.0291	0.70253

Table 4: Correlation coefficient between the variables of the study

Variable		Relationship	Estimate
Management support	<-->	Focus on the customer	0.699
Management support	<-->	Strategic planning	0.679
Management support	<-->	Operations management	0.482
Focus on the customer	<-->	Strategic planning	0.751
Focus on the customer	<-->	Operations management	0.574
Strategic planning	<-->	Operations management	0.643
Management support	<-->	Pricing capabilities	0.486
Management support	<-->	Radical innovations	0.487
Focus on the customer	<-->	Pricing capabilities	0.683
Focus on the customer	<-->	Radical innovations	0.656
Strategic planning	<-->	Pricing capabilities	0.591
Strategic planning	<-->	Radical innovations	0.617
Operations management	<-->	Pricing capabilities	0.566
Operations management	<-->	Radical innovations	0.480
Pricing capabilities	<-->	Radical innovations	0.637

5. DISCUSSION

The summary of the results of the study, which examined the relationship of the trend with the total quality in its dimensions (support and support of senior management, operations management, focus on the customer, and strategic planning) came to radical innovation by mediating pricing capabilities in the Sudanese business companies sector as follows: There is a partial relationship between the approach to TQM and Radical innovation. There is a partial relationship between the approach to total quality management and pricing capabilities. There is no relationship between pricing capabilities and radical innovation. There is no mediation of pricing capabilities in the relationship between the approach to total quality management and radical innovation. When testing the initial main hypothesis, which requires that there is a relationship between the factors of the direction of total quality management and the factors of innovative performance, the results of the study showed that, based on data analysis, there is no statistically significant relationship between support and endorsement of top management and radical innovations, and this is an indication that support and endorsement of senior management is a strategic direction. It does not affect the radical innovations in the companies researched, which refer to the radical changes that the companies make to preserve the competitive advantage after making comprehensive changes to the product lines and services provided by the companies under study, and this result is in agreement with the study Qadeer et al. (2026) and Akter and Ahmed (2026)Which concluded that there is no positive relationship between support and endorsement of senior management and radical innovations, and the agreement is attributed to the lack of support and endorsement of the top management for radical innovations for several reasons linked to the policies and cultures of the companies studied and differed with the study Iqbal et al. (2026)which concluded that there is a strong positive relationship between support and endorsement of top management and radical innovations, and this may be due to differences in the environment. The studies on which the study was conducted, the policies of the institutions and companies of the countries studied, as well as the sectors in which the studies were conducted and their different views on the concepts of the relationship between the studies variables. The results of the study indicated, based on the data analysis, the existence of a statistically significant relationship between the focus on the customer and the radical innovations. This indicates the importance of focusing on the Client. This result is in agreement with several previous studies. And it agreed with the study Gupta et al. (2026) that confirms a positive statistically significant relationship between Client focus and radical innovations. Perhaps this broad agreement is the influence of a strong rationale for client concern on radical

Table 5: Results based on structural equation modeling

Hypothesis	Estimate	S.E	CR	p	Result
Management suppor→Radical innovation	−0.025	0.092	−0.270	0.787	Reject the hypothesis
Focus on the customer→Radical innovation	0.412	0.120	3.423	***	Acceptance of the hypothesis
Operations management→Radical innovation	−0.040	0.094	−0.423	0.672	Reject the hypothesis
Strategic planning→Radical innovation	0.066	0.119	0.552	0.581	Reject the hypothesis
Management support→Pricing capabilities	0.019	0.091	0.214	0.831	Reject the hypothesis
Strategic planning→Pricing capabilities	−0.048	0.117	−0.408	0.683	Reject the hypothesis
Focus on the custome→Pricing capabilities	0.645	0.126	5.131	***	Acceptance of the hypothesis
Operations management→Pricing capabilities	0.207	0.109	1.906	0.057	Reject the hypothesis
Pricing capabilities→Radical innovation	0.175	0.119	1.474	0.140	Reject the hypothesis
Management support→Pricing capabilities	0.017	0.092	0.181	0.857	_____
Focus on the customer→Pricing capabilities	0.650	0.126	5.139	***	_____
Operations management→Pricing capabilities	0.178	0.104	1.722	0.085	_____
Strategic planning→Pricing capabilities	−0.041	0.118	−0.350	0.726	_____

Table 6: Indirect effects - two tailed significance (BC)

Variable	Operations management	Strategic planning	Focus on the customer	Management support
Pricing capabilities				
Radical innovation	0.120	0.656	0.054	0.756
Mediation type	No mediate	No mediate	No mediate	No mediate

innovation; However, it disagreed with the study Aftab et al. (2026) which emphasized that there is no statistically significant positive relationship between customer focus and radical innovations. The results of the study showed that, based on data analysis, there is no statistically significant relationship between operations management and radical innovations, and this is an indication that operations management as an effective management approach does not affect the radical innovations in the researched companies. This study showed agreement with the study Wang et al. (2026) that there is no strong positive relationship between operations management and radical innovations. The agreement is attributed to the absence of a relationship between operations management and root innovations for several reasons, including the lack of proper direction for operations management to activate root innovations. This study also showed a difference with many of the previous studies, as it disagreed with the study which Abu-Siam et al. (2026) concluded that there is a strong positive relationship between operations management and radical innovations. This is due to the differences represented in the policies of the companies in the studied countries, as well as the sectors in which the studies were conducted, their differing views on the concept of the relationship between operations management and radical innovations. The results of the study showed, based on data analysis, that there is no statistically significant relationship between strategic planning and radical innovations, and this is an indication that strategic planning as an approach does not affect the radical innovations in the companies under study And also a study Borah et al. (2025)which concluded that there is a positive relationship between customer focus and pricing capabilities. The results of the study showed, based on data analysis, that there is no statistically significant relationship between strategic planning and pricing capabilities. This is an indication that strategic planning is one of the orientation tools. Total quality management does not affect the pricing capabilities of the researched companies, and these results differed with the study Usman and Moinuddin (2025) which concluded that there is a positive relationship between strategic planning and marketing capabilities. The results of the study showed, based on data analysis, that there is a statistically significant relationship between operations management and pricing capabilities. The results of the study showed, depending on the data analysis, that there is a statistically significant relationship between operations management and pricing capabilities. This is an indication that operations management as one of the tools to direct operations management does not affect me and the pricing capabilities of the companies in question, and these results differed with the study, Tetteh et al. (2025) which concluded that there is a positive relationship between operations management and pricing capabilities. It is noted from the above that the relationship between the approach to total quality management and marketing capabilities when compared with previous studies has emerged between agreement, disagreement, and non-relationship, and this has been clarified according to what appears and the nature of the relationship. When testing the third main hypothesis, which implies that there is a relationship between pricing capabilities and radical innovation. The results of the study revealed that, based on the analysis of the data, there is no statistically significant relationship between pricing capabilities and radical innovations. This is an indication that pricing capabilities as one of the tools of marketing capabilities do not affect me and the radical innovations in the researched companies, and these results differed with the study Yang et al. (2025) which concluded that there is a positive relationship between pricing capabilities and radical innovations. When testing the fourth main hypothesis, which requires that pricing capabilities mediate the relationship between the approach to total quality and radical innovation, the results of the study showed that there is no mediation of marketing capabilities (pricing capabilities) in the relationship between the approach to total quality management and radical innovation between all dimensions of the independent variables (support and support Senior management, operations management, customer focus, strategic planning) and the dependent variable (root innovation). The results of the study differed from a study Yaqub et al. (2025) in which the literature establishes complex relationships between entrepreneurial

orientation and performance under the influence of the mediating role of marketing capabilities. The results showed support for the relationship between the two variables through the mediation of marketing capabilities and differed with a study Hat et al. (2025) to determine the mediating role of marketing capabilities between the use of customer relationship management technology and organizational performance.

6. CONCLUSION

The implications of the theoretical study emerged through examining the mediating role of pricing capabilities in the relationship between the approach to total quality management and radical innovation between business companies in Khartoum State/Sudan. Accordingly, the theoretical importance of this study comes through bridging the research gap, enriching the study variables, and building a theoretical model by examining the resource theory (RBV) and its components and contributing to enriching the literature of scientific research by revealing a set of relationships between its variables as it tested the relationship of orientation with total quality management and its impact on performance. Innovative, the theoretical importance of this study comes through knowing the role that the orientation contributes to managing total quality and innovative performance in Sudanese business organizations, and learning about the study variables and the influences applied to them. The contributions of the theoretical study are evident through its findings. They are (1) that there is a relationship with a significant impact between the dimensions of the approach to total quality management and radical innovation, and this is an indication that comprehensive quality is one of the factors and components of a strategic dimension that forms the basis for creating the benefits of innovation. This is what the resource theory (RBV) referred to. Cross-cutting can generate a wealth of distinct competencies that partly explain how competition can support a competitive advantage. (2) there are positive relationships between the dimensions of the approach in total quality management and pricing capabilities. (3) there is no positive relationship between pricing capabilities and radical innovation. The study revealed that pricing capabilities were not mediated in the relationship between the approach to total quality management and radical innovation, which is a new addition and a contribution to knowledge. The study also examined the application of resource theory and its fundamentals, and the linkage between them to explain the study variables, which is considered an addition and contribution to knowledge. The implications of the applied study. The results of this study showed for decision-makers the importance of adopting strategic directives related to the direction of total quality management in enhancing innovation by mediating pricing capabilities. This study can be applied to business companies and other organizations that seek to improve their innovative performance. This model can also be used at all administrative levels. The results of this study may be useful for those interested in business companies, especially when their results are taken into account.

In terms of determinants of the study and proposals for future research, the study was limited to a sample of commercial, industrial, service, and other companies operating in the state of Khartoum/Sudan, to concentrate most of the companies in it. Therefore, a comparative study should be conducted between Sudanese business companies operating in all states of Sudan. Future research could also be expanded in generalizing the results by examining the relationship of the hypotheses with samples from other countries. (1) The study dealt with pricing capabilities and despite the importance of this dimension in impact as a marketing capacity, and it was chosen for this study according to a matrix of a group of previous studies that have proven its importance, but there are many dimensions of marketing capabilities that may have a clear impact. The mediating role of other dimensions of capacity must be tested. Marketing approach in explaining the relationship between total quality management and innovation. (2) Innovation was dealt with as a radical innovation. Innovative performance is usually composed of two dimensions (incremental innovations and radical innovations). Although this division is inclusive of all types of innovations, as was evident in previous studies, most of the previous studies deal with innovative performance (as one dimension) and are not divided and there Some writers divide innovative performance into different dimensions, including product innovation, technological innovation, managerial innovation, etc. All this has created a kind of difficulty in classifying innovative performance into incremental and radical innovations in studying and classifying previous studies. Therefore, the same study can be re-applied with the use of a different methodology, such as the case study, on specific Sudanese companies or institutions.

REFERENCES

Abu-Siam, Y., Alquqa, E.K., Shwedeh, F., Alzoubi, H.M., El Khatib, M. (2026), Harnessing Fourth Industrial Revolution Technologies for Disruptive Innovation: The Mediating Power of Digital Transformation in the UAE Food Manufacturing Sector. England: Emerald Group Publishing Ltd.

Aftab, J., Abid, N., Aftab, F., Wei, F. (2026), Balancing exploration and exploitation: Investigating the nexus of entrepreneurial orientation, disruptive innovation and digitalization strategy. Business Process Management Journal, 32(3), 910-942.

Akter, H., Ahmed, W. (2026), Driving Employee Creativity Through Emotional Intelligence and Knowledge Sharing Skills Knowledge Management and Innovation. Vol 2. Enabling Creativity in Organisations. London: Springer. p43-66.

Al Buraiki, W., Nofal, R. (2026), Entrepreneurial orientation and marketing performance in SMEs: The mediating roles of digital marketing capabilities and digital marketing implementation in Oman. Sustainability, 18(4), 1925.

Albadry, O., Alenezi, M., Al Naqbi, S. (2025), Total quality management, organizational agility and service quality: Addressing the needs for small and medium enterprises (SMEs). Total Quality Management Business Excellence, 36(5-6), 424-452.

Ali, B.B., Elmoustafa, A.M., Atta, A.A., Mohamed, K.A., Mohamed, M.H. (2026), The impact of applying quality systems on the efficiency of marketing performance in service organizations. Journal of Statistics Applications and Probability, 15(3), 331-348.

Alofan, F., Chen, S., Tan, H. (2020), National cultural distance, organizational culture, and adaptation of management innovations in foreign subsidiaries: A fuzzy set analysis of TQM implementation in Saudi Arabia. Journal of Business Research, 109, 184-199.

Ambarwati, R., Sischasari, D. (2026), Optimizing operational costs to

improve accessibility of higher education: A novel integration of activity-based costing and Lean management. International Journal of Lean Six Sigma, 17(3), 921-942.

Amoa-Gyarteng, K., Dhliwayo, S., Onyin-Emi, E., Sisay, S. (2026), The role of innovation strategy in entrepreneurial venture survival: A moderated mediation analysis of organizational adaptability and environmental influences. Journal of Small Business and Enterprise Development, 33(8), 32-62.

Azam, T., Songjiang, W., Jamil, K., Naseem, S., Mohsin, M. (2023), Measuring green innovation through total quality management and corporate social responsibility within SMEs: Green theory under the lens. The TQM Journal, 35(7), 1935-1959.

Borah, P.S., Dogbe, C.S.K., Marwa, N. (2025), Green dynamic capability and green product innovation for sustainable development: Role of green operations, green transaction, and green technology development capabilities. Corporate Social Responsibility and Environmental Management, 32(1), 911-926.

Buyukbay, S.E. (2026), Achieving HR Excellence Through People: Strategies for Leadership-Oriened HR Applications Bridging Traditional Theory and Emerging Corporate Strategies. Pennsylvania: IGI Global Scientific Publishing. p191-230.

Culqui-Arce, C., Balcázar-Zumaeta, C.R., Mori-Mestanza, D., Vergara, A.J., Medina-Mendoza, M., Fernández-Jeri, A.B., Castro-Alayo, E.M., Cayo-Colca, I.S. (2026), Achieving goals toward excellence: How managing organizational excellence leads to project delivery success through knowledge management and transformational leadership. Journal of Industrial and Management Optimization, 22(4), 2044-2069.

Dzreke, S.S. (2025), The competitive advantage of AI in business: A strategic imperative. International Journal for Multidisciplinary Research, 7(4), 50400.

Gamit, A.M., Santos, A.R., Claudio, A.E.G. (2025), Exploring digital and documentation issues in state university–LGU collaborative programs for sustainable quality education. International Journal of Learning, Teaching and Educational Research, 24(6), 497-522.

Gao, C., Peinkofer, S.T., Griffis, S.E. (2026), Are we delivering what customers want? Charting Logistics service quality research—a process view. Journal of Business Logistics, 47(1), e70050.

Ghasemzadeh, F., Ghahremannasab, B. (2026), A queuing approach to pricing strategy in B2B markets. Spectrum of Decision Making and Applications, 3(1), 52-61.

Gupta, S., Gupta-Rawal, S., Shrivastava, P. (2026), Dynamic AI-embedded super app: A design-based process innovation for customer engagement and value creation. Journal of Product Innovation Management, 43(1), 99-124.

Hat, N.D., Tan, K.L., Ngoc Vi, N.L., Phu, N.A., Ting, H. (2025), The influence of customer relationship management in enhancing hospitality business performance: The conditional mediation of digital marketing capabilities. International Journal of Hospitality and Tourism Administration, 26(3), 520-546.

Hiltunen, R. (2026), Does price disclosure promote competition in private MRI markets? A difference-in-differences analysis. Health Economics Review, 16(1), 4.

Hudnurkar, M., Ambekar, S., Bhattacharya, S., Sheorey, P.A. (2023), Relationship of total quality management with corporate sustainability in the MSME sector: Does innovation capability play a mediating role? The TQM Journal, 35(7), 1860-1886.

Iqbal, S., Ullah, S., Rizwan, A., Nazeer, N., Rasheed, M., Siddiqi, A.F.I. (2026), Building competitive advantage: How organizational culture shapes absorptive capacity through knowledge sharing. Journal of Organizational Effectiveness: People and Performance, 13(1), 170-188.

Kaleli, Z., Konteos, G., Avlogiaris, G., Kilintzis, P. (2025), Total quality management as competitive advantage for the internal strategy and policy of Greek special education school units. Journal of the Knowledge Economy, 16(1), 739-758.

Koomson, S. (2026), Leveraging strategic agility for innovation performance in Ghana's telecommunication industry: Roles of total quality management and industry pressures. International Journal of Quality and Reliability Management, 43(1), 82-100.

Leong, M.K., Koay, K.Y. (2026), How and when perceived social sustainability of brands increases consumers' willingness to pay a premium: A multi-sample study. Acta Psychologica, 262, 106024.

Manzani, Y.E., Cegarra, J.J. (2023), The complementary effect of quality management and proactive market orientation on radical product innovation under environmental uncertainty. International Journal of Technology Management, 93(1-2), 1-35.

Mari, L., Wilson, M., Maul, A. (2023), Measurement Across the Sciences: Developing a Shared Concept System for Measurement. Netherlands: Springer.

Masoudi, E. (2026), The impact of TQM on green innovation with the mediating role of green supply chain integration: PLS-SEM and IPMA approach. International Journal of Quality and Reliability Management, 1-27.

Masoudi, E., Shahin, A. (2026), The impact of green entrepreneurial orientation on supply chain learning: The mediating role of TQM. International Journal of Productivity and Performance Management, 2026, 1-23.

Nofri, O., Ahmad, S.W. (2026), The influence of total quality management (TQM) On operational performance mediated by innovation; study on msms under the guidance of the MSME incubator In Makassar City. International Journal of Education Management and Religion, 3(1), 376-389.

Omland, M., Hontvedt, M., Siddiq, F., Amundrud, A., Hermansen, H., Mathisen, M.A., Rudningen, G., Reiersen, F. (2025), Co-creation in higher education: A conceptual systematic review. Higher Education, 90(4), 1017-1047.

Park, K.Y., Kang, K. (2026), Confirmatory factor analysis of the role performance scale for patient safety coordinators: Secondary data analysis. Nursing Open, 13(5), e70563.

Prada Pérez, M., Carmenate Acosta, Y., Ash Hernández, G., Reyes Domínguez, D. (2026), Efficiency and Effectiveness Gaps Analysis in the Event Management Process at Hotel Nacional de Cuba Advances in Technical Sciences and Architecture: Selected Contributions of CCIA 2024. Berlin: Springer.

Pudjono, A.N.S., Wibisono, D., Fatima, I. (2026), Enhancing public sector performance management in Indonesia: The role of soft systems methodology in addressing local government challenges. Systems Research and Behavioral Science, 43(1), 281-305.

Qadeer, N., Aftab, J., Khan, T.M. (2026), How ambidextrous leadership drives sustainable project performance through green knowledge and innovation. International Journal of Managing Projects in Business, 19(1), 81-104.

Qian, P., Xie, X. (2026), Task-technology fit leads to conflict: The double-edged-sword effect of generative artificial intelligence on scientific creative performance in humanities and social sciences research. International Journal of Human-Computer Interaction, 42(3), 1867-1891.

Raji, I.A., Oyelakin, O., Kassoh, F.S. (2026), The role of learning capability in driving innovation performance of market-oriented enterprises in the creative industries. Creativity and Innovation Management, 35(1), 40-59.

Rodrigues, C., Martins, H., Pitacho, L., Carvalho, L.C., Xara-Brasil, D., Pardal, P., Cordeiro, J.P. (2026), Green Human Resource Management and Employer Branding: A Resource-Based Perspective for Sustainable Competitive Advantage Smart Business Models for

Sustainability in Circular and Climate Neutral Economy: Creating Opportunities for Smart and Sustainable Regions. Vol. 1. Berlin: Springer. p227-251.

Rosak-Szyrocka, J., Żywiołek, J., Shahbaz, M. (2024), Quality Management, Value Creation, and the Digital Economy. London, UK: Routledge.

Sangani, S.B., Muddangala, N.B. (2026), Mindfulness and sales job performance: The serial mediating roles of commitment to customers and commitment to profession. International Journal of Business and Management, 5(1), 429-447.

Septiowati, R. (2026), Analysis of the application information technology on employee work productivity pt rajendra kesatria perkasa depok. International Journal of Cyber and IT Service Management, 6(1), 1-9.

Sonmez Cakir, F., Ozdemir, S., Adiguzel, Z. (2026), Harnessing knowledge management for enhanced performance: The mediating roles of market orientation and customer relationship capability in e-commerce. Business Process Management Journal, 32(3), 817-837.

Tetteh, F.K., Nyantakyi, B., Owusu Kwateng, K., Osei, H.V. (2025), The mediation role of innovation in the relationship between total quality management and performance of small and medium scale enterprises. International Journal of Quality and Reliability Management, 42(2), 676-705.

Tolosa, B., Kitaw, D. (2026), The role of TQM practice on innovation and healthcare performance. International Journal of Process Management and Benchmarking, 22(3), 361-377.

Usman, M., Moinuddin, M. (2025), Integrated analytics: The role of business intelligence in data-driven supply chain and marketing. Multidisciplinary Research in Computing Information Systems, 5(1), 75-85.

Vickram, S., Infant, S.S., Balamurugan, B.S., Jayanthi, P., Sivasubramanian, M. (2025), Techno-economic and life cycle analysis of biorefineries: Assessing sustainability and scalability in the bioeconomy. Environmental Quality Management, 34(4), e70077.

Wang, H., Wu, W., Zhang, C. (2026), Learning before adopting: Unleashing radical innovation potential through a learning-centred digital technology strategy. Technology Analysis and Strategic Management, 1-17.

Xu, C., Ruanggoon, J., Thavorn, J. (2026), Total quality management and organizational performance in the manufacturing industry: Integrating contingency theory and the resource-based view. Cogent Business and Management, 13(1), 2635755.

Yang, M., Yang, J., Torres de Oliveira, R. (2025), How do ambidextrous capabilities promote disruptive innovation in emerging markets, from the lens of knowledge-based view? Journal of Knowledge Management, 29(5), 1730-1752.

Yaqub, M.Z., Yaqub, R.M.S., Alsabban, A., Baig, F.J., Bajaba, S. (2025), Market-orientation, entrepreneurial-orientation and SMEs' performance: The mediating roles of marketing capabilities and competitive strategies. Journal of Organizational Effectiveness: People and Performance, 12(4), 809-843.

Yunis, M., Jung, J., Chen, S. (2013), TQM, strategy, and performance: A firm-level analysis. International Journal of Quality and Reliability Management, 30(6), 690-714.

Zaid, A., Sleimi, M., Saleh, M.W., Othman, M. (2023), The mediating roles of knowledge transfer and supply chain quality management capabilities on organisational performance. VINE Journal of Information and Knowledge Management Systems, 53(6), 1041-1064.

Zhang, T., Cui, Z., Liu, X. (2026), How strategic quality management shapes innovation: The moderating role of operational complexity. IEEE Transactions on Engineering Management, 99, 1-14.

Zhao, K., Gholkar, N., Maruf, H., Dhanotia, A., Weiner, J., Price, G., Sun, N., Dwivedi, B., Clark, S., Skarlatos, D. (2026), Equilibria: Fair Multi-Tenant CXL Memory Tiering at Scale. [arXiv Preprint].