

Marketing-Technical Integration and Supply Chain Integration in Innovative Firms: Achieving What Public Procurement Demands

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Abstract

A supplier's attractiveness in public procurement mainly depends on its competitiveness in price, quality, and delivery. The current study aimed to investigate the suppliers' capabilities that can develop this competitiveness. The study identified market orientation, marketing-technical integration, and supply chain integration as knowledge-based dynamic capabilities and empirically attempts to define their role in the development of firms' competitiveness through innovation capability. Taking a quantitative approach, we developed a theoretical framework and analyzed the data collected through a survey questionnaire from the 216 managers of pharmaceutical firms by partial least squares structural equation modeling. The results showed positive effects of market orientation, marketing-technical integration, and supply chain integration on innovation capability and established a major role for innovation capability in competitiveness development. The study is unique in the sense that it deals with a real-time problem of manufacturing industries selling their products to the public sector. Firms' knowledge-based dynamic capabilities are not properly identified in the literature, and their appropriate role is not established. The study offers a new perspective on knowledge-based research by highlighting the role of these capabilities. It guides managers to develop a positive approach to the use of firms' capabilities.

Keywords: Innovation Capability, Market Orientation, Marketing-technical Integration, Supply Chain Integration, Public procurement, Competitiveness.

Introduction

Public procurement is a government activity to acquire goods or services from suitable suppliers using public funds. It is a complex process, firms taking part in the process have to face intense competition, and the majority failed to be selected as suitable suppliers. Although the literature describes much about public procurement, supplier-side studies have remained limited. Before discussing the suppliers' aspect, there is a

need to understand what public sector procuring organizations demand from suppliers. Value for money has become one of the most important considerations for public procurement. It is considered a contribution to government policies and procedures for the best return on money spent (Rejeb, Rejeb, Appolloni, Kayikci, & Iranmanesh, 2023). The value of money can be measured by the parameters of economy, efficiency, and effectiveness (Matto, Ame, & Nsimbila, 2021a). The parameter of the economy can easily be achieved when a product of prescribed quality is purchased at the lowest possible cost with on-time delivery to the right place. Efficiency is achieved when we use the minimum resources to obtain the required quality and quantity of output. Hence, a public sector purchaser needs to ensure high-quality output with the lowest possible input. Finally, the purchaser has to ensure that procurement is closely aligned with objectives that reflect the effectiveness of the procurement procedure. In simple words, the purchaser can achieve effectiveness by relating the outcomes of the purchase activity to its intended objectives (Matto, Ame, & Nsimbila, 2021b).

The parameter of the economy is directly related to suppliers and demands suppliers' competitiveness in price, quality, and delivery. A firm must build this competitiveness if it wants to sell its products to the public sector. A substantial research gap exists in the literature about firms' capabilities that can develop competitiveness in price, quality, and delivery. Several studies indicate that knowledge-based dynamic capabilities produce competitiveness (Robertson, Caruana, & Ferreira, 2023). Several types of these capabilities have been identified. The major types are knowledge-acquiring capabilities, knowledge-combining capabilities, and knowledge-creating capabilities, which are important for the current study. Knowledge-acquiring capabilities are understood as firms' abilities to acquire knowledge from external sources, valuable for the firms. Knowledge-combining capabilities are firms' abilities to integrate internal and external knowledge. Knowledge-creating capabilities are recognized as abilities to develop a process that facilitates thinking and develops new knowledge (Bhardwaj, Srivastava, Mishra, & Sangwan, 2023). In this way, market orientation can be identified as a knowledge-acquiring capability, marketing-technical integration as a knowledge-combining capability, and supply chain integration as a knowledge-creating capability.

The literature suggests that knowledge-based dynamic capabilities alone are not sufficient to develop competitiveness and indicates the possible role of innovation capability besides these capabilities (Mele, Capaldo, Secundo, & Corvello, 2024). Knowledge-acquiring, knowledge-combining, and knowledge-creating capabilities positively affect innovation capability (Li, Wu, Zhang, & Yang, 2023). So, market orientation, marketing-technical integration, and supply chain integration can directly contribute to innovation capability. Innovation capability causes a major decrease in the cost of production and distribution processes. It also increases product quality and improves delivery methods (Migdadi, 2022). In this way, innovation capability creates competitiveness in price, quality, and delivery. In other words, it can be said that knowledge is a crucial input for innovation capability (Zheng, Zhang, & Du, 2011). Although separate work has been conducted on factors of knowledge management, an integrated framework study is required to clarify the inside relations of the factors and their influence on competitiveness.

Based on the above discussion, the current study identifies market orientation, marketing-technical integration, and supply chain integration as knowledge-based dynamic capabilities and establishes their relationships with innovation capability and competitiveness (Figure 1). The study deals with a practical problem and wants to contribute to the literature on suppliers' attractiveness in public procurement. The pharmaceutical industry in Pakistan is selected to conduct the research. The industry is almost \$1.64 billion in size (Jannat, Shafiq, Hanif, Riasat, & Rafique, 2023). The total number of pharmaceutical firms is around 625 (Ahmad, Shahzad, Ishaq, & Aftab, 2023). Firms' majority participate in the public procurement process and sell products worth almost \$1 billion to the public sector annually (Ahmed & Chandani, 2020). Hence, public sector organizations are among the major customers of pharmaceutical firms in Pakistan, which makes pharmaceutical firms' competitiveness in price, quality, and delivery important.

Problem Statement with Research Objective

The firms that want to sell their products to the public sector need competitiveness in price, quality, and delivery. The current study considers the importance of knowledge-based dynamic capabilities and innovation capabilities for this competitiveness. The objective of the study is to identify the firms' important knowledge-based dynamic capabilities and establish their relationship with innovation capability to achieve competitiveness. By considering market orientation, marketing-technical integration, and supply chain integration as knowledge-based dynamic capabilities, the study establishes a theoretical framework and attempts to provide empirical evidence of their effect on innovation capability to achieve competitiveness.

Research Questions

1. How do market orientation, marketing-technical integration, and supply chain integration work as knowledge-based dynamic capabilities to develop innovation capability?
2. What is the direct impact of innovation capability on competitiveness?
3. Does innovation capability mediate the respective relationship of market orientation, marketing-technical integration, and supply chain integration with competitiveness?

Literature Review

Public Procurement

Public procurement is described as an important government activity. Traditionally, it is strictly regulated, and contracts are awarded to the lowest bidder. However, some other aspects have recently been considered for it (Czarnitzki, Hünermund, & Moshgbar, 2020). Now, low prices are considered less frequently, and procurement methods combining quality and price are used. The use of quality and price at the same time in public procurement enhances its efficiency. Bakhtiar (2021) identified value for money as a reflection of accountability and transparency in utilizing public funds to obtain maximum benefits from available resources. Recent studies have included the concepts of total cost of ownership and whole-life cost in the explanation of value for money. Cost-saving is not a suitable indicator of value for money. In a quality- and cost-based system, the most beneficial tender is a bid of high quality at a given price. In this way, tenders achieve a high combination of quality and price (Polonsky, Wijayasundara, Noel, & Vocino, 2022). Public sector purchasers want to procure high-quality products at reasonable prices and demand their on-time delivery at an appropriate place (Guarnieri & Gomes, 2019; Matto et al., 2021a). Hence, suppliers' competitiveness in price, quality, and delivery becomes important.

Competitiveness

The concept of competitiveness arose from the classical literature on manufacturing strategy (Gkinko & Elbanna, 2023). In the manufacturing industry, competitiveness is generally described as a manufacturer's competency to perform simultaneously in quality, flexibility, delivery, and cost. It is argued that a competitive firm has the necessary internal competency. In a hypercompetitive environment where unanticipated changes continuously occur, this competency allows the firm to handle variability so that it can compete effectively. In a target market, this competency provides actual strength to a firm relative to its primary competitors (Chikán, Czakó, Kiss-Dobronyi, & Losonci, 2022).

Innovation Capability

During the previous decade, research scholars have emphasized a lot on the firms' capability to build innovation capability to meet the challenging needs and demands of customers. Multiple research studies have found that innovation capability is a basic pillar for business survival and growth (Alghamdi & Agag,

2024). Innovation capability is the ability to develop something new by changing the existing procedures, routines, or products (Lozada, Arias-Pérez, & Henao-García, 2023). It is identified as a marketing capability (Gligor, 2014), which guides managers to solve current business problems and shape the future. Innovation capability provides a means to identify the business environment and develop the efficiency of quality, speed, and flexibility (Daronco, Silva, Seibel, & Cortimiglia, 2023). In this way, innovation capability adds value to the firms' structures, which is needed for competitiveness.

Market Orientation

Market orientation is an important marketing capability (Foerstl, Kähkönen, Blome, & Goellner, 2020) that is accessed from cultural and behavioral perspectives. From the cultural perspective, market orientation is considered an organizational culture, including the productive and effective behaviors that create superior customer value (Aydin, 2021). From the behavioral perspective, market orientation includes the generation of market intelligence related to customers' needs, its dissemination across the firm, and organization-level responsiveness (Ghonim, Zakaria Elsayy, Elsouhy, & Khashan, 2022). Market orientation connects firms to their business environments. It leads firms to the internal coordination required for an appropriate response to the external environment (Aslam, Khan, Rashid, & Rehman, 2020). The marketing literature considers it a capability that improves firm performance by understanding market dynamics and any change caused by external factors. Market-oriented firms can understand the change in customers' needs and develop products of superior quality. Market orientation leads to customer satisfaction, productivity, and profitability (Meisya & Surjasa, 2022).

Marketing-Technical Integration

Marketing-technical integration is related to collaboration between marketing and technical groups of an organization (Robson, Chuang, Morgan, Bıçakcıoğlu-Peynirci, & Di Benedetto, 2023). This collaboration builds a transformational platform that facilitates cross-functional interaction and exchange of knowledge within the firms (Roach, Ryman, Jones, & Ryman, 2018). So, marketing-technical integration builds the capacity to process the information that helps managers develop an integrated strategy for product development (Ghonim et al., 2022). Roach (2011) described marketing-technical integration as an important ability to link marketing and technical functions. He also focused on its role in product management.

Supply Chain Integration

Supply chain integration defines strategic coordination within and outside the organization (Rua & Santos, 2022). It has two major components: external and internal integration. External integration includes supplier integration and customer integration. Supplier integration is a firm's coordination with its suppliers to organize its behavior, strategies, practices, and procedures to meet customers' needs at a low cost with efficient deliveries (El-Mokadem & Khalaf, 2023). Supplier integration not only reduces transaction costs, inventory costs, and uncertainty but also increases knowledge sharing. Customer integration is a firm's coordination with customers to enhance visibility. This coordination results in an appropriate flow of services, materials, and information between the firm and customers. Particularly, the information from customers helps the firm forecast accurate demand so that it can develop an efficient strategy (Kamble et al., 2023). Internal integration interconnects all the departments of a firm. It includes practices for improving and integrating information and resources across functional boundaries within the firm (Cui, Wu, Wu, Kumar, & Tan, 2023). Hence, supply chain integration improves the management capability for the internal and external functions of the firm. An efficient flow of information helps in decision-making (Dadzie, Dadzie, Johnston, Winston, & Wang, 2023).

Theoretical Exposition and Hypotheses Development

The concept of knowledge-based dynamic capabilities emerged from the synthesis based on the knowledge-based view (Robertson et al., 2023) that identifies firms as knowledge-bearing entities and postulates knowledge as a source to attain competitiveness (Bhardwaj et al., 2023). Through strategic planning, these sources can be converted into capabilities (Mubarik, Bontis, Mubarik, & Mahmood, 2022). In this way, the knowledge-based view establishes a link between knowledge-based dynamic capabilities and competitiveness. The literature identifies positive impacts of firms' knowledge-acquiring, knowledge-combining, and knowledge-creating capabilities on innovation capability (Li et al., 2023). The current study identifies valuable marketing and supply chain management capabilities as knowledge-based dynamic capabilities and investigates their positive effects on innovation capability and competitiveness. The details are provided in the subsequent text.

Market-oriented firms conduct market surveillance and generate data about customers and competitors (Kurniawan, Budiastuti, Hamsal, & Kosasih, 2020). This type of firm behavior is considered its competence (Buratti, Profumo, & Persico, 2021). As market orientation is related to data collection, analysis, and some other related activities (Fernandes, Ferreira, Lobo, & Raposo, 2020), it is an important source of information collection. The collected information is incorporated into the firm at the strategic level (Correia, Dias, & Teixeira, 2020). So, market orientation is a knowledge-acquiring capability. Marketing-technical integration describes an interaction between marketing and the technical functions of a firm (Roach, 2011). This coordination at the functional level between marketing and technical personnel provides a platform for exchanging novel ideas (Roach et al., 2018). Hence, this type of interaction is an important source for knowledge combination, and marketing-technical integration can be considered a knowledge-combining capability. Suppliers and customers, two major groups of partners in the supply chain, have an important role in the creation of knowledge (Benitez, Ferreira-Lima, Ayala, & Frank, 2022). When the integration is upstream in a supply chain, the suppliers take part in product development. The product design is discussed with suppliers, and new products are developed accordingly. When the integration is downstream, the information on customers' needs is conveyed to the firm. This participation facilitates knowledge transfer, and new knowledge is created (Kumar, Jabarzadeh, Jeihouni, & Garza-Reyes, 2020). Hence, supply chain integration is a knowledge-creating capability.

The knowledge-based view presents knowledge as an important element for the development of innovation capability (Kumar et al., 2020), and a positive effect of firms' knowledge-acquiring, knowledge-combining, and knowledge-creating capabilities on innovation capability is established in the literature (Li et al., 2023). Thus, the following hypotheses are formed:

- H1: Market orientation has a positive effect on innovation capability
- H2: Marketing-technical integration has a positive effect on innovation capability
- H3: Supply chain integration has a positive effect on innovation capability

Innovation capability, a dynamic capability, reflects a firm intention for innovation. Almost a consensus is found in the relevant literature that innovation capability leads to competitiveness (Akter et al., 2023). Firms with innovation capability develop high-quality products at a low cost and address all issues of product delivery to customers (Migdadi, 2022). In this way, innovation capability develops competitiveness in price, quality, and delivery.

- H4: Innovation capability has a positive effect on competitiveness

As the relation of supply chain integration, market orientation, and marketing-technical integration with innovation capability has already been proposed in the current study and the relation of innovation capability with competitiveness is established in the literature, three further research hypotheses regarding mediation can be formulated:

- H5: Innovation capability mediates the positive effect of market orientation on competitiveness.
 H6: Innovation capability mediates the positive effect of marketing-technical integration on competitiveness.
 H7: Innovation capability mediates the positive effect of supply chain integration on competitiveness.

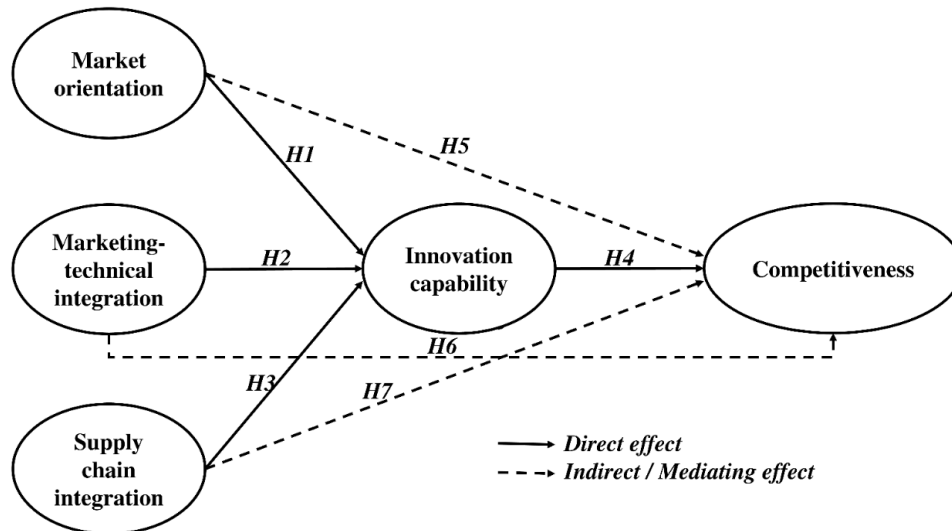


Figure 1: Theoretical Framework

Research Method

Data was collected from the pharmaceutical industry in Pakistan. The total number of pharmaceutical firms operating nationwide is around 625 (Ahmad et al., 2023). Instead of drawing samples, all firms were selected for analysis. The questionnaires, with a brief description of the study's importance, were sent to top-level managers by post. The reason behind the selection of top-level managers was their understanding of firms' capabilities. After sending a few reminders, 253 responses were received, out of which 216 were considered for analysis.

Relevant, well-established scales with suitable validity and reliability were identified in the literature and adopted to measure the constructs of the study. Scale by Lukas and Ferrell (2000) was adopted for market orientation, scale by Roach (2011) was adopted for marketing-technical integration, scale by Tseng and Liao (2015) was adopted for supply chain integration, scale by Alshanty and Emeagwali (2019) was adopted for innovation capability, and scale by Liao, et al. (2017) was adopted for competitiveness. All constructs of the study were measured using a 5-point scale ranging from strongly disagree to strongly agree

Analysis and Result

For analysis, the study utilized partial least squares structural equation modeling (PLS-SEM). We performed data analysis in two steps. First, the measurement model was evaluated, and then the hypothesized model was tested. PLS-SEM provided flexibility regarding sample size.

Measurement Model

Factor loading and cross-loading analysis for the items of variables was performed. Factor loadings for all items were found in the range of 0.631 to 0.809 which were larger than their respective cross-loadings with

other variables. Items with lower loadings than 0.665 were deleted. Composite reliability (CR) and Cronbach's α (CA) were utilized to assess construct reliability. Table 1 shows the values CR and CA of market orientation (CR = 0.929, CA = 0.915), market-technical integration (CR = 0.827, CA = 0.685), supply chain integration (CR = 0.905, CA = 0.879), innovation capacity (CR = 0.894, CA = 0.865) and competitiveness (CR = 0.925, CA = 0.910).

Table 1: Measurement Model

Constructs	CR	CA	AVE	Loadings
Market Orientation	0.929	0.915	0.593	
MO1				0.771
MO2				0.804
MO3				0.812
MO4				0.748
MO5				0.792
MO6				0.773
MO7				0.788
MO8				0.782
MO9				0.650
Market-technical Integration	0.827	0.685	0.614	
MTI1				0.795
MTI2				0.772
MTI3				0.783
Supply Chain Integration	0.905	0.879	0.543	
SCI1				0.696
SCI3				0.715
SCI4				0.740
SCI5				0.797
SCI6				0.726
SCI7				0.733
SCI8				0.719
SCI9				0.763
Innovation Capability	0.894	0.865	0.515	
I2				0.620
I3				0.720
I4				0.753
I7				0.700
I8				0.713
I10				0.741
I11				0.734
Competitiveness	0.925	0.910	0.580	
C1				0.776
C2				0.717
C3				0.735
C4				0.807
C5				0.800
C6				0.794
C7				0.738
C8				0.714
C9				0.768

The values of CR and CA should be in the range of 0.6–0.7 for acceptable internal consistency, and values above 0.7 illustrate satisfactory results for good reliability (Hair, Risher, Sarstedt, & Ringle, 2019). Based

on these guidelines, the results are acceptable. To measure convergent validity, values of average variance extracted (AVE) were used. The AVE values of all latent constructs are greater than 0.50 (Table 1), which meets the criteria of convergent validity (Fornell & Larcker, 1981).

The discriminant validity of constructs was evaluated by heterotrait–monotrait (HTMT) ratio, as it is more acceptable in literature than the Fornell and Larcker criterion. Table 2 shows that all values are lower than 0.90, which provides evidence of discriminant validity (Panzeri, Castelnuovo, & Spoto, 2024).

Table 2: Heterotrait-Monotrait Ratio (HTMT)

	C	I	MO	MTI
Innovation Capability	0.650			
Market Orientation	0.652	0.795		
Marketing-technical Integration	0.392	0.505	0.324	
Supply Chain Integration	0.558	0.762	0.620	0.486

Note. C is Competitiveness, I is Innovation Capability, MO is Market Orientation, and MTI is Marketing-technical Integration.

Variance inflation factor (VIF) values were determined at the item level to test multicollinearity. All values are in the range of 1.276-2.89, less than the value of 10, so multicollinearity is not an issue in the study (Huang & Lu, 2020).

Structural Model

The study used PLS bootstrapping with 5000 samples to evaluate the significance of path coefficients (Aslam et al., 2020). Model fitness was examined using the standardized root mean square residual (SRMR) value. SRMR value in the range of 0.08–0.10 is considered acceptable, while a value lower than 0.08 reflects a good fit model (Shi, Distefano, Maydeu-Olivares, & Lee, 2022), and the obtained value of 0.079 reflects adequate model fitness. The coefficient of determination (R^2) values exhibit that 34.7% of the variance in competitiveness is explained by innovation capability, and 64.3% of the variance in innovation capability is explained by market orientation, marketing-technical integration, and supply chain integration. The values of R^2 are greater than 0.1, which reflects the predictive significance of the model. Moreover, effect size (f^2) assessment Cohen guidelines were used that provide values of 0.02, 0.15, and 0.35 as small, medium, and large effects of exogenous variables, respectively (Fey, Hu, & Delios, 2023). The obtained f^2 value of 0.532 in the study shows a significant effect (Table 3).

Table 3: Structural Model

Variable	R^2	Adj. R^2	f^2	SRMR
Competitiveness	0.347	0.344	0.532	0.079
Innovation Capability	0.643	0.638		

The hypothesis with t -value greater than 1.96 and p -value less than 0.05 is considered accepted (Meisya & Surjasa, 2022). The results show that market orientation ($\beta = 0.517$, $t = 11.190$, $p < 0.001$), marketing-technical integration ($\beta = 0.126$, $t = 2.908$, $p < 0.01$), and supply chain integration ($\beta = 0.322$, $t = 6.094$, $p < 0.001$) positively affect innovation capability, H1, H2, and H3 are accepted. Furthermore, innovation capability ($\beta = 0.591$, $t = 12.126$, $p < 0.001$) has a positive effect on competitiveness, H4 is accepted. Market orientation ($\beta = 0.306$, $t = 7.219$, $p < 0.001$), marketing-technical integration ($\beta = 0.074$, $t = 2.797$, $p < 0.01$), and supply chain integration ($\beta = 0.190$, $t = 5.727$, $p < 0.001$) also indirectly affect competitiveness through innovation capability, H5, H6, and H7 are also accepted (Table 4). The acceptance of the last three hypotheses empirically proves the partial mediating roles of innovation capability in respective relationships.

Table 4: Hypothesis Testing

Effects	Relationships	β	Mean	t-statistics	Decision
Direct					
H1	Market Orientation → Innovation Capability	0.517	0.522	11.190***	Supported
H2	Marketing-technical Integration → Innovation Capability	0.126	0.129	2.908**	Supported
H3	Supply Chain Integration → Innovation Capability	0.322	0.320	6.094***	Supported
H4	Innovation Capability → Competitiveness	0.591	0.598	12.126***	Supported
Indirect / Mediating					
H5	Market orientation → Innovation Capability → Competitiveness	0.306	0.313	7.219***	Supported
H6	Marketing-technical Integration → Innovation Capability → Competitiveness	0.074	0.077	2.797**	Supported
H7	Supply Chain Integration → Innovation Capability → Competitiveness	0.190	0.191	5.727***	Supported

Note: ***, ** and * indicate $p < 0.001$, $p < 0.01$, and $p < 0.05$ respectively.

Discussion and Theoretical Implications

The current study theoretically contributes to body knowledge of knowledge-based dynamic capabilities, with a major focus on suppliers' attractiveness in public procurement. Literature indicates that knowledge-based dynamic capabilities enhance competitiveness (Akter et al., 2023). However, these studies do not describe the mechanism that produces the effect. The current study considers market orientation, marketing-technical integration, and supply chain integration as antecedents of innovation capability.

In line with the results, the study provides proof of the effect of market orientation on innovation capability, the result is supported by literature (Meisya & Surjasa, 2022). Market orientation enables a firm to understand customer needs and contributes to the creation of new ideas (Aydin, 2021). Several studies have determined that market orientation contributes to the success of product development (Taghvaei & Talebi, 2023). So, firm resources can effectively be used for the creation of superior customer value. In this way, market orientation becomes an important choice to develop the innovation capability required for competitiveness. Marketing-technical integration is found to be a strong predictor of firm innovation capability, the finding obtained is quite similar to that described by Roach et al. (2018). Marketing-technical integration includes information sharing, mutual participation, and collaboration at work (Yuan & Cao, 2022). This coordination between marketing and technical departments reduces costs, increases efficient use of resources (Ghonim et al., 2022), and enhances innovation capability. Therefore, marketing-technical integration is important for the efficient use of the knowledge required for innovation.

Previous studies have proved a direct positive effect of inter-organizational collaboration on innovation capability (Bettiol, Capestro, Di Maria, & Grandinetti, 2023). The current study finds that integration with supply chain elements has a direct positive impact on firm innovation capability. Collaboration with customers, suppliers, and competitors is important in this respect. Knowledge sharing among these elements can reduce risk for firms (Kumar et al., 2020). As knowledge is a basic requirement for innovation (Kumar et al., 2020), supply chain integration facilitates the flow of knowledge (Dadzie et al.,

2023). Notably, the study suggests that market orientation, marketing-technical integration, and supply chain integration via innovation capability contribute to competitiveness. However, the role of market orientation alone is prominent in this contribution. In a competitive business environment, firms must focus on innovation capability to enhance competitiveness.

Practical Implications

The study offers useful insights for practitioners. It guides managers to believe that competitiveness should be developed to meet the requirements of public sector customers. Managers must focus on customers' opinions and competitors' information and develop a culture to strengthen inter-functional cooperation. Firms can strengthen their innovation capability not only by interacting with supply chain partners but also by encouraging their employees to inquire about operational activities. The customers' choices should be considered at the strategic level, and the management approach should match the ever-changing needs of customers. Firm rigidity, inertia, and path dependence are the major constraints for innovation. Managers must adjust firm marketing strategies to handle these constraints.

Limitations

The study has demonstrated notable contributions both in theoretical and practical domains, but it has limitations. The effect of innovation capability was studied on overall competitiveness. The differential impact of innovation capability on competitiveness in price, quality, and delivery was not examined in the study. Innovation capability might not equally affect all of these. Therefore, by considering competitiveness as a single construct, we failed to estimate differences in the amount of variance in competitiveness in price, quality, and delivery explained by innovation capability. Similarly, there are three dimensions of market orientation, but it was considered a single construct. Inter-functional coordination may not affect all other variables in the study model.

Future Direction

For further research, we recommend the study of the differential impact of all the variables. Data was collected from top-level managers in the current study through survey questionnaires. These managers were not available for interviews. For future research work, we recommend an interview-based study so detailed information can be collected. Furthermore, supervisors can be included in further study, as top-level managers might not be aware of the ongoing activities of the firm, particularly those related to the supply chain. The study has managerial implications, so further work is needed for concrete guidelines. The focus of our work is the manufacturing sector, further studies can consider the service sector, particularly transportation, insurance, and telecom.

Conclusion

The current study establishes the need for firms' competitiveness in price, quality, and delivery to fulfill the requirements of public sector procuring organizations. The study highlights the important role of innovation capability in the development of this competitiveness. Considering knowledge-based dynamic capabilities as antecedents of innovation capability, the study identifies market orientation as a knowledge-acquiring capability, marketing-technical integration as a knowledge-combining capability, and supply chain integration as a knowledge-creating capability and empirically establishes their positive impact on innovation capability and competitiveness. The study is important for firms that want to develop innovation capability to achieve competitiveness.

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