The Role of Innovation in Enhancing Competitive Advantage: The Mediating Effect of Market Orientation and Moderating Effects of Business Environment Factors

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ABSTRACT

Innovation is widely recognized as a critical driver of sustainable competitive advantage in dynamic and highly competitive markets. This study examines the role of innovation in enhancing competitive advantage, focusing on the mediating effect of market orientation and the moderating influence of business environment factors. This research used the cross-sectional time horizon to collect the data from 370 participants across the selected small and medium-sized enterprises (SMEs) in the United Arab Emirates in the UAE.The data collected were analysed using Partial Least Square Structural Equation Modelling (PLS-SEM) using Smart PLS software. The hypotheses developed by this research were tested by applying the partial least square based on structural equation modelling. The results confirmed that all three innovation dimensions product, process, and organizational innovation have a significant and positive impact on competitive advantage. Organizational innovation contributed to competitive advantage through structural flexibility, knowledge-sharing mechanisms, and the development of a culture that encourages creativity and collaboration The study also found that market orientation mediates the relationship between innovation and competitive advantage, reinforcing the notion that innovation is most effective when guided by customer needs and competitive awareness. Additionally, the study confirmed the moderating effect of the business environment, indicating that the strength of the innovation–performance link is influenced by external conditions such as policy support, competition intensity, and technological infrastructure. The findings are expected to contribute to both theory and practice by clarifying the mechanisms through which innovation enhances competitive advantage and identifying the contextual conditions under which these effects are amplified. The study offers strategic implications for managers seeking to leverage innovation and market orientation to achieve sustainable competitive positioning in complex business environments.

Keywords: Innovation, Competitive Advantage, Market Orientation, Business Environment.UAE.

INTRODUCTION

Despite the extensive body of research emphasizing the critical roles of innovation and market orientation in enhancing competitive advantage, the specific mechanisms through which innovation contributes to competitive advantage via market orientation re-main underexplored (Kusa, Duda, & Suder, 2024; Zabel & O'Brien, 2024). Market orientation, which encompasses customer orientation, competitor orientation, and inter-functional coordination, is widely recognized as a pivotal approach for aligning organizational strategies with market needs and competitive dynamics (Kohli & Jawor-ski, 1990). However, within the UAE context, there is a significant research gap regarding the direct impact of innovation on competitive advantage, particularly among SMEs. While the UAE government has heavily invested in innovation-driven policies, including the UAE Innovation Strategy and Vision 2031, empirical studies examining how these policies translate into tangible competitive advantages for SMEs remain limited. The extent to which product, process, and organizational innovations directly in-fluence firm competitiveness in the UAE's unique economic and regulatory landscape is not well-documented. This gap underscores the need for a focused investigation to assess the real impact of innovation on competitive positioning within the UAE market.

While these foundational frameworks highlight the importance of market orientation, limited research has explored how these principles manifest across diverse industries and organizational contexts, leaving significant gaps in understanding their effectiveness in varying settings (Bamfo & Kraa, 2019; Christiansson & Rentzhog, 2020; Ciacci & Penco, 2024).

Extant literature provides substantial evidence supporting the mediating role of market orientation in linking innovation to firm performance and competitive advantage. For instance, Bamfo and Kraa (2019) demonstrated that market orientation mediates the relationship between innovation and performance in Ghanaian SMEs, emphasizing the need for firms to adopt market-oriented strategies to fully capitalize on innovation efforts. Similarly, research by Putri et al. (2016) revealed that innovation mediates the impact of market orientation on company performance, suggesting a reciprocal relationship between these constructs. These findings underscore the importance of customer orientation and competitor awareness in driving innovation and sustaining competitive advantage (Chiu, Chen, & Liu, 2022; Abrokwah-Larbi, 2024).

Adding to the complexity are external environmental factors such as market turbulence, technological change, and competitive intensity. These factors significantly influence the relationship between innovation, market orientation, and competitive advantage. For example, research indicates that market turbulence can amplify or constrain the effective-ness of entrepreneurial and market-oriented strategies. Furyanah et al. (2024) found that market turbulence moderates the relationship between entrepreneurial orientation and marketing performance, underscoring the importance of adapting strategies to external conditions. Similarly, Baquero (2024) demonstrated that environmental dynamism moderates the impact of green entrepreneurial orientation and innovation on performance, revealing the nuanced ways external factors shape strategic outcomes.

This study aims to address these gaps by systematically investigating the mechanisms through which innovation enhances competitive advantage via market orientation. By examining the interplay of customer orientation, competitor orientation, and inter-functional coordination within diverse sectors, the research seeks to provide a more nuanced understanding of these relationships. Additionally, it explores how environmental factors such as market turbulence and technological change, alongside organizational factors like dynamic capabilities and agility, moderate these interactions.

Theoretical Literature and Hypothesis Development

This study is grounded in two key theoretical perspectives: the Resource-Based View (RBV) and the Dynamic Capabilities Theory (DCT).According to the RBV (Barney, 1991), a firm's internal resources and capabilities—if they are valuable, rare, inimitable, and non-substitutable—can generate sustainable competitive advantage. Innovation represents such a strategic capability, as it allows firms to develop unique products, processes, or business models that competitors find difficult to replicate (Barney, 1991).Complementing RBV, the Dynamic Capabilities Theory emphasizes a firm's ability to integrate, build, and reconfigure internal and external competencies to respond to rapidly changing environments (Teece, Pisano et al., 1997). From this lens, innovation and market orientation can be viewed as dynamic capabilities that enable firms to sense market changes, seize new opportunities, and reconfigure resources to maintain competitive advantage (Teece et al., 1997).Building on these theories, the proposed framework of this study proposes that innovation directly enhances competitive advantage, that this relationship is mediated by market orientation, and that business environment factors moderate these effects.

Direct Relationship Innovation And Competitive Advantage

The empirical literature further supports the role of innovation in enhancing com-petitive advantage. For instance, studies by Aniyati and Indayani (2023) and Putri and Se-tiawan (2022) demonstrate that innovation positively impacts marketing performance and competitive positioning through its influence on the firm's adaptability and product differentiation. In their study of Malaysian SMEs, Abdullah et al. (2023) also highlighted that innovation, particularly product and marketing innovation, significantly contributes to business performance when integrated with effective design and resource management. Moreover, Tian et al. (2024) found that innovation orientation, particularly during early-stage product development, enhances internal competition and long-term market strength. The importance of innovation is amplified in the UAE's SME

landscape, where national strategies like Vision 2030 actively promote innovation-led economic diversification. As highlighted by Almehairbi et al. (2023), open innovation strategies supported by govern-mental infrastructure in Dubai play a key role in enabling SMEs to compete both locally and internationally. The UAE's business ecosystem provides favourable conditions such as innovation hubs, technology funding, and strategic partnerships that incentivize innovation as a primary lever for competitive success. As such, the following hypothesis is posited:

H1: Innovation has a positive and significant effect on competitive advantage amongst SMEs in UAE.

Empirical evidence consistently reinforces the positive link between product innovation and firm competitiveness. For instance, Abdullah et al. (2023) emphasized that product innovation, alongside marketing innovation, significantly enhances business performance by creating unique selling propositions and driving customer engagement. This is echoed in the work of Fatonah and Haryanto (2022), who noted that innovative product development not only improves firm performance but also strengthens competitive positioning under conditions of uncertainty an insight particularly relevant during the COVID-19 pandemic and the economic recovery that followed. Moreover, Razak et al. (2024) high-lighted that product innovation mediates the relationship between market orientation and SME performance, underscoring its role as a catalyst for translating internal knowledge into competitive strategies. In the UAE, product innovation has also been strategically support-ed through initiatives like the Mohammed bin Rashid Innovation Fund, Smart Dubai, and the Dubai Future Accelerators programs that provide infrastructure and funding to drive SME innovation across sectors. These initiatives align with the UAE's broader vision of transitioning to a knowledge-based economy by investing in intellectual capital and novel product development. As such, the following hypothesis is posited:

H1a: Product innovation within the innovation construct has a positive and significant effect on competitive advantage amongst SMEs in UAE.

Empirical studies have also established that organizational innovation significantly contributes to achieving competitive advantage through improved coordination, increased productivity, and the facilitation of strategic change (Adiguzel & Sonmez Cakir, 2022). Organizational flexibility and foresight help SMEs anticipate changes in customer behaviour and market structures, providing a first-mover advantage in competitive environments (Gutiérrez-Broncano et al., 2024; Abrokwah-Larbi, 2024). For SMEs in the UAE an economy characterized by strong digital infrastructure, ambitious policy frame-works, and intense regional competition organizational innovation becomes particularly impactful. By reshaping internal functions and leadership approaches, UAE-based SMEs can better align with national innovation agendas such as Vision 2030 while simultaneously enhancing their competitive positioning (Darmaki & Jaafar, 2023). Moreover, the synergistic effect of organizational innovation with other types of innovation, such as product and process innovation, amplifies firm performance by building a cohesive, adaptive system capable of leveraging innovation holistically. As such, the following hypothesis is posited:

H1b: Organizational innovation within the innovation construct has a positive and significant effect on competitive advantage amongst SMEs in UAE.

According to Abdullah et al. (2023), innovation in business processes fosters agility and cost-efficiency, two key attributes SMEs must cultivate to survive and thrive in rapidly evolving markets. Furthermore, Al Mamun et al. (2019) note that SMEs benefit from process innovations by improving productivity, ensuring better resource utilization, and reducing operational waste ultimately allowing them to offer better value at competitive costs. This aligns with findings by Bahrami et al. (2022), who demonstrated that process innovation especially when inte-grated with digital technologies and supply chain systems has a significant impact on per-formance outcomes across industries. Moreover, according to Elbanna and Abdel-Maksoud (2022), organizational strategic planning is essential in aligning process innovation initiatives with long-term objectives, suggesting that process innovation is not only operational but also strategic in nature. These improvements are directly linked to the development of sustainable competitive advantages, as evidenced in studies on Gulf-region SMEs (Aljumah et al., 2022). As such, the following hypothesis is posited:

H1c: Process innovation within the innovation construct has a positive and significant effect on competitive advantage amongst SMEs in UAE.

Innovation And Market Orientation (Mediated Pathway)

Empirical evidence continues to support the proposition that innovation contributes directly to the strengthening of market orientation. For example, Fatonah and Haryanto (2022) argue that firms with higher levels of product and process innovation tend to be more attuned to market signals and customer expectations. In their study of SMEs under uncertain conditions, innovation was found to significantly enhance firms' responsiveness to market turbulence and technological change. Similarly, Dewangga and Nugroho (2024) observed that product knowledge and innovation capabilities are significant predictors of market orientation levels among Indonesian MSMEs. Transferring this insight to the UAE setting, SMEs that actively pursue innovative practices especially in tech-intensive or customer-facing sectors are better equipped to anticipate demand shifts and adapt their offerings accordingly. This capacity becomes even more critical in a globalized, multicultural economy like the UAE, where customer expectations are diverse and continuously evolving. By leveraging innovation as a foundation, SMEs can not only survive but thrive by crafting customer-centric strategies and outperforming less responsive competitors (Chiu et al., 2023; Karaev & Mercan, 2023). As such, the following hypothesis is posited:

H2: Innovation has a positive and significant relationship with market orientation amongst SMEs in UAE.

Empirical studies support the proposition that product innovation positively con-tributes to firms' market orientation. For instance, Razak et al. (2024) found that product innovation strengthens SMEs' ability to engage with and respond to customers, thereby improving customer orientation and brand loyalty. Similarly, Fatonah and Haryanto (2022) noted that product innovation improves SMEs' responsiveness to market changes by facilitating timely product adaptations and enhancing consumer satisfaction. In the UAE, where innovation is central to national economic policy, SMEs that invest in product development are more likely to adopt a market-driven approach. Government-supported platforms such as the Mohammed Bin Rashid Innovation Fund and Dubai Future Accelerators enable SMEs to test and refine products in alignment with market demands, thereby reinforcing customer-centric practices (Almehairbi et al., 2023). As such, the following hypothesis is posited:

H2a: Product innovation has a positive and significant relationship with market orientation among SMEs in the UAE.

Empirical research by Chierici et al. (2021) supports this view by demonstrating that organizational innovation improves internal communication flows and strategic alignment, thereby fostering a stronger market-driven culture. Organizational innovation also enables inter-functional coordination, a core component of market orientation, by encouraging collaborative efforts across departments. When innovation involves restructuring workflows or introducing cross-functional teams, departments such as R&D, marketing, and customer service are more closely integrated, im-proving both operational efficiency and market responsiveness (Elbanna & Abdel-Maksoud, 2022).

This internal synergy is particularly important in the UAE's fast-paced business environment, where firms must quickly translate market signals into strategic actions. Moreover, organizational innovation facilitates customer orientation by embedding feedback loops and CRM systems that bring the voice of the customer into internal planning and execution processes (Durst et al., 2023). As such, the following hypothesis is posited:

H2b: Organizational innovation has a positive and significant relationship with market orientation among SMEs in the UAE.

In practice, process innovation enables firms to embed market orientation through-out their operations. Studies by Bahrami et al. (2022) and Pérez-Orozco et al. (2024) demonstrate that process innovation enhances responsiveness, agility, and service quality, all of which are central to effective market engagement. In the UAE, where digital trans-formation is a policy priority, SMEs benefit from innovations in logistics, automation, and analytics that allow for real-time customer data tracking and service customization (Al Mamun et al., 2019). As such, the following hypothesis is posited:

H2c: Process innovation has a positive and significant relationship with market orientation among SMEs in the UAE.

Market Orientation and Competitive Advantage

Empirical findings across emerging and developed economies affirm that market orientation positively correlates with firm performance and competitive advantage, particularly when implemented alongside innovation strategies (Ikbar et al., 2023; Karaev & Mercan, 2023). In the UAE, where SMEs are increasingly leveraging digital platforms, CRM systems, and data analytics, market orientation has evolved beyond traditional marketing practices to encompass real-time responsiveness and customer co-creation. This evolution enhances firms' ability to personalize offerings and develop long-term customer relation-ships, both of which are crucial for sustaining competitive advantage. Studies such as Abrokwah-Larbi (2024) have emphasized the centrality of customer focus in achieving superior business outcomes in SMEs across emerging markets, reinforcing the strategic role of market orientation. Furthermore, the integration of market orientation with organization-al learning and entrepreneurial behaviour creates a feedback loop that continuously informs innovation and strengthens market relevance (Fatonah & Haryanto, 2022; Razak et al., 2024). As such, the following hypothesis is posited:

H3: Market orientation has a positive and significant relationship with competitive advantage amongst SMEs in UAE.

The Mediating Effects of Market Orientation

Empirical research substantiates this mediating effect. Bamfo and Kraa (2019), in their study of Ghanaian SMEs, revealed that firms with higher levels of market orientation were significantly better at converting innovative activities into enhanced firm performance. Similarly, Abdullah et al. (2023) emphasize that the success of product and marketing innovation hinges on a firm's ability to integrate market insights into its strategic pro-cesses—an ability underpinned by strong market orientation. In the UAE, where innovation is heavily promoted through national strategies and digital transformation policies, market orientation acts as a bridge that links internal innovation capacity to real-world market competitiveness (Almehairbi et al., 2023). Moreover, studies such as Pérez-Orozco et al. (2024) demonstrate that market orientation enhances the effectiveness of innovation by ensuring alignment with external demands, improving strategic responsiveness, and increasing organizational agility. These benefits are particularly crucial in environments characterized by rapid change, where failure to align innovation with market realities can result in strategic missteps and resource wastage. As such, the following hypothesis is posited:

H4: Market orientation significantly mediates the relationship between innovation and competitive advantage among SMEs in the UAE.:

Business Environment Factors as Moderators

The business environment encompasses external factors—such as technological dynamism, competitive intensity, regulatory frameworks, and institutional support—that influence firm strategy and performance. From a contingency theory perspective, the impact of innovation on competitive advantage depends on the conditions of the external environment. When environmental dynamism is high, innovation tends to yield greater competitive benefits because firms must constantly adapt to changing market conditions. Conversely, in stable environments, the return on innovation may be lower (Ahmad et al., 2023). The moderating role of environmental factors has been confirmed in several studies; for instance, Furyanah et al. (2024) found that the external environment strengthened the positive relationship between innovation capability and SME performance in Pakistan (MDPI Sustainability).Thus, the relationship between innovation and competitive advantage (and possibly between market orientation and competitive advantage) is not uniform—it varies depending on the dynamism and favourability of the business environment.

In favourable or positive environmental conditions, the pathway from innovation to competitive advantage tends to be more robust. These environments are characterized by technological openness, relatively stable market demands, and manageable competition. Such conditions provide a fertile ground for SMEs to leverage innovation effectively, facilitating resource mobilization, strategic alignment, and faster product adoption. Similarly, Almehairbi et al. (2023) found that in the UAE's government-supported innovation ecosystem—reinforced by Vision 2031 and robust digital infrastructure—SMEs were better positioned to convert internal

innovation into externally recognized market value. The alignment between innovation and environmental readiness enables firms to capitalize on first-mover advantages, improve brand positioning, and enhance customer loyalty, all of which translate into sustained competitive advantage.

Conversely, in negative or hostile environmental conditions, innovation outcomes can become unpredictable and even counterproductive. High levels of market turbulence, rapidly shifting customer preferences, or intense competitive pressure can disrupt the translation of innovation into strategic gain. In such environments, SMEs often lack the stability or market insight necessary to integrate innovation into their value chains effectively. As Baquero (2024) notes, environmental instability introduces uncertainty in performance outcomes and can dilute the competitive edge offered by even the most well-designed innovations. Furyanah et al. (2024) further argue that high environmental hostility forces firms into reactive, short-term strategies, which may prevent them from fully leveraging their innovation investments for strategic advantage. This uncertainty is particularly critical for SMEs in the UAE operating in highly saturated sectors such as logistics and retail, where the competitive landscape is constantly evolving due to globalization, digital disruption, and shifting policy priorities.

The moderating role of environmental factors thus underscores the importance of strategic fit between innovation and market conditions. Firms operating in positive environmental settings can more easily exploit their innovation potential, translating it into superior performance. In contrast, those in adverse environments must either adapt their innovation strategies to remain competitive or risk underperforming despite high internal innovation capabilities. Ciacci and Penco (2024) provide evidence that when firms align innovation with external market dynamics, they are more likely to outperform competitors, even in turbulent industries. This highlights the need for SMEs to assess not only their internal readiness for innovation but also the external landscape in which they operate. As such, the following hypothesis is posited:

H5: Environmental factors significantly moderate the relationship between innovation and competitive advantage among SMEs in the UAE, such that the relationship is stronger under positive environmental conditions and weaker under negative environmental conditions.

The Research Framework

The research framework of this study integrates the relationships among innovation types, market orientation, and competitive advantage, emphasizing the mediating role of market orientation and the moderating effects of environmental factors. This framework is constructed to provide a comprehensive understanding of how different forms of innovation contribute to competitive advantage through the lens of market orientation, particularly in varying environmental contexts (Putri & Setiawan, 2022; Mansouri, Hosseini, & Daei, 2022). By elucidating these relationships, the framework serves as a foundation for the research methodology and analysis, guiding the investigation into the mechanisms by which firms can strategically leverage innovation and market orientation to enhance their competitive positions (Elbanna & Abdel-Maksoud, 2022; Mercan, 2023).The results of the systematic literature review no doubt played an instrumental role in supporting the research hypotheses. Finally, there are Five hypotheses identified in Figure 1.

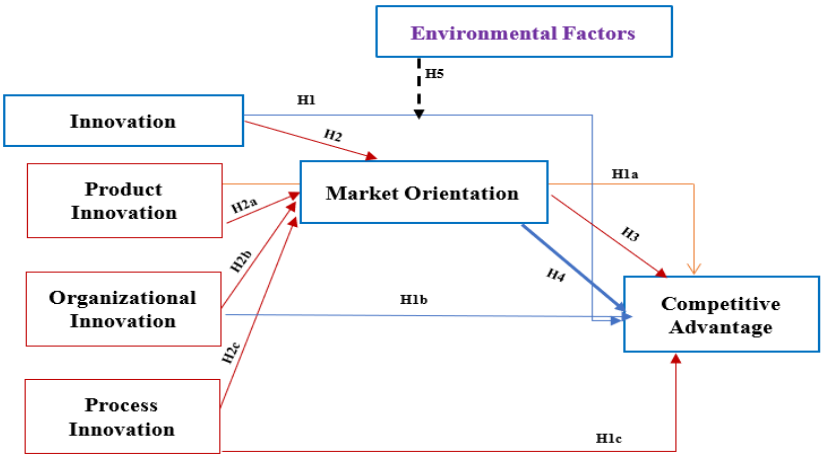

Figure 1. The research framework

DATA AND METHODOLOGY

Distribution of study questionnaire, a total of 450 questionnaires were distributed to participants across the selected small and medium-sized enterprises (SMEs) in the United Arab Emirates. Out of these, 395 questionnaires were re-turned, representing an impressive response rate of 87.77 percent. This high response rate indicates a strong willingness among respondents to contribute to the research, reflecting their recognition of the study's relevance to innovation, market orientation, and competitive advantage. After a careful review, 25 questionnaires were excluded due to incomplete or inconsistent responses, leaving a final total of 370 valid and usable responses, which ac-counts for 82.22 percent of the total distributed questionnaires As shown in Table 1. Such a high rate of valid responses demonstrates both the adequacy and reliability of the collected data for further statistical analysis. Nonetheless, the minimum sample requirement for generalisation was met. A period of six (6) weeks was allocated to collect data. The results were downloaded from the online data collection platform and analyzed with Analysis of (Smart PLS). The collected data was originally entered into the online data collection platform based on the weights of the various responses.

Table 1. Distribution of Study

Questionnaire	**Frequency**	**Percentages**
Total distributed	450	100
Returned responses	395	87.77%
Unreturned	55	12.22%
Incomplete responses	25	5.55%
Usable responses	370	82.22%

Demographic Analysis

Table 2. shows the respondents profile for those who participated in the research. As shown in the table, 370 respondents participated in the study, representing diverse backgrounds in gender, age, education, and professional experience. As shown in the table, the majority of respondents were male (78.9%), while female participants accounted for 21.1 percent of the sample. This gender distribution reflects the current composition of managerial and operational positions within small and medium-sized enterprises (SMEs) in the UAE, where male employees still hold a dominant presence, particularly in innovation-related and technical functions. However, the representation of female respondents remains significant enough to contribute to the diversity of perspectives in the dataset, which enriches the study's findings.In terms of age distribution, the largest group of respondents fell within the 36–45 age range (47.6%), followed by those aged 26–35 years (24.3%), and 18–25 years (10%), while 18.1 percent were above 45 years old. This distribution indicates that most participants were in their mid-career stage, a period characterized by professional maturity, decision-making autonomy, and accumulated experience key attributes that strengthen their insights into organizational innovation and market orientation practices. The presence of younger respondents also adds value, as their digital adaptability and openness to change can significantly influence organizational innovation strategies in modern competitive markets.Regarding educational attainment, the largest proportion of respondents held diplomas (45.7%), followed by high school certificates (37.8%), whereas bachelor's degree holders accounted for 5.9 percent, master's degree holders for 0.8 percent, and PhD holders for 4.9 percent. Additionally, 4.9 percent of participants reported having other forms of professional or technical certifications. This variation in educational background reflects the diversity of the workforce in the UAE SME sector, where both vocational and formal academic qualifications coexist, supporting different levels of innovation implementation and managerial competence (Panahi et al., 2023). Respondents with higher academic qualifications likely contribute to strategic innovation and market-oriented decision-making, while those with practical experience are crucial for translating innovation into operational effectiveness.With respect to work experience, the majority of participants had three to five

years of professional experience (37.6%), followed by one to three years (30%), over five years (20.3%), and less than one year (12.2%). This distribution suggests that the sample predominantly comprises employees with moderate to extensive professional exposure, which enhances the validity of their responses regarding organizational processes and innovation practices (Zare et al., 2022). Respondents with several years of experience are expected to possess a comprehensive understanding of their organizations' innovation strategies and competitive dynamics, thus providing reliable insights for structural equation modeling analysis (Purwanto & Sudargini, 2021).

Table 2. Profile of Respondents (N = 370)

Variable	**Category**	**Frequency**	**Percent (%)**
Gender	Male	292	78.9
	Female	78	21.1
	Total	**370**	**100**
Age	18–25	37	10
	26–35	90	24.3
	36–45	176	47.6
	>45	67	18.1
	Total	**370**	**100**
Education	High School	140	37.8
	Diploma	169	45.7
	Bachelors	22	5.9
	Master	3	0.8
	PhD	18	4.9
	Other	18	4.9
	Total	**370**	**100**
Experience	<1 year	45	12.2
	1–3 years	111	30
	3–5 years	139	37.6
	>5 years	75	20.3
	Total	**370**	**100**

Measurement Model Evaluation

As shown in Table 3. Construct Reliability and Validity, all factor loadings were above the minimum acceptable threshold of 0.70, confirming that the measurement items strongly reflect their corresponding constructs. The

Composite Reliability values ranged from 0.931 to 0.955, and Cronbach's alpha values ranged from 0.879 to 0.955, both exceeding the 0.70 cutoff, which indicates high internal consistency (Hanafiah, 2020). Additionally, the Average Variance Extracted (AVE) values were all greater than 0.50, demonstrating that more than 50% of the variance in each construct is explained by its indicators, thereby confirming convergent validity (Ghanbar, 2024).

Table 3. Construct Reliability and Validity -Model measurements

Items	Loading	Cronbach's alpha	Composite reliability	Average variance extracted (AVE)
BE1	0.923	0.946	0.947	0.860
BE2	0.940			
BE3	0.930			
BE4	0.916			
CA1	0.941	0.955	0.955	0.881
CA2	0.936			
CA3	0.935			
CA4	0.942			
MO1	0.940	0.954	0.954	0.879
MO2	0.936			
MO3	0.940			
MO4	0.933			
OI1	0.782	0.879	0.931	0.727
OI2	0.799			
OI3	0.904			
OI4	0.919			
PrdI1	0.911	0.933	0.934	0.833
PrdI2	0.915			
PrdI3	0.910			
PrdI4	0.916			
ProI1	0.915	0.935	0.936	0.836
ProI2	0.915			
ProI3	0.914			
ProI4	0.913			

CR= Composite Reliability; AVE= Average Variance Extracted

Discriminant Validity

As shown in Table 4.The Heterotrait–Monotrait Ratio of Correlations (HTMT) displays the pairwise relationships among constructs, including Product Innovation (PrdI), Process Innovation (ProI), Organizational Innovation (OI), Market Orientation (MO), Competitive Advantage (CA), and Business Environment (BE). As shown, all HTMT values range from 0.484 to 0.840, which are well below the conservative threshold of 0.85, as recommended by Henseler et al. (2015) and reaffirmed by recent methodological studies (Yusoff et al., 2020; Cheung et al., 2024). These results confirm that each construct is empirically distinct from the others, indicating satisfactory discriminant validity. The highest observed HTMT value (0.840) occurs between Market Orientation (MO) and Competitive Advantage (CA), reflecting their conceptual closeness in strategic performance literature; however, the value still remains within acceptable limits, supporting the absence of multicollinearity (Panahi et al., 2023). The lowest HTMT value (0.484) was found between Product Innovation (PrdI) and Competitive Advantage (CA), suggesting that while innovation influences competitiveness, the constructs measure distinct aspects of firm performance.

Table 4. The heterotrait-monotrait ratio of correlations (HTMT)

	BE	CA	MO	OI	PrdI	ProI
BE						
CA	0.706					
MO	0.745	0.840				
OI	0.685	0.723	0.710			
PrdI	0.486	0.484	0.669	0.623		
ProI	0.532	0.522	0.674	0.758	0.764	

Finally, the measurement model of the research is presented in figure 2. below. Based on the above discussion, it can be confirmed that the measurement is valid for further analysis as suggested by Hair et al. (2019).

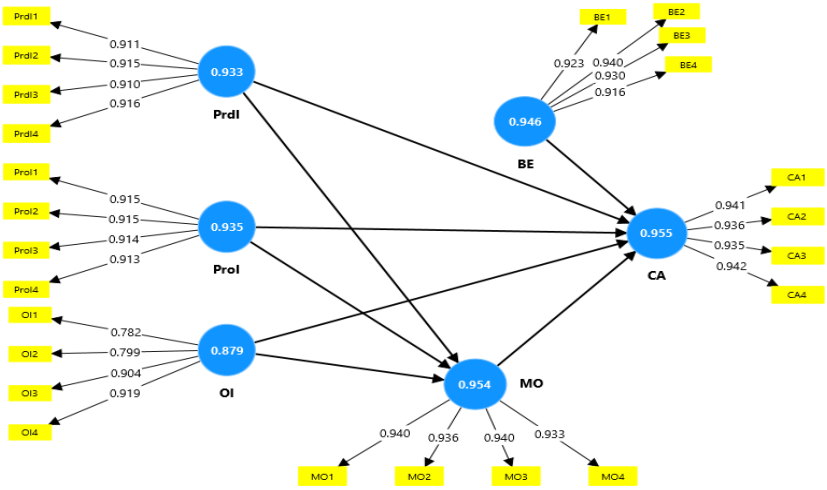

Figure 2. Measurement Model of the research

Hypotheses Testing

Testing hypotheses is the most important test in the current research since it shows whether or not the goals of the research were met. Since there is a mediation in the current research, the direct effect test, and the indirect effect test will be used to examine the hypotheses. Through the use of PLS-SEM, all of the research's hypotheses

have been verified. A good match is suggested by the statistical finding. The t-value is taken into account when evaluating the structural relationships between the variables that have been identified for this research. Hair et al. (2019) state that for a t-value to be deemed statistically significant, it must be 1.96 or above (one-tailed). The direct effect test, one sort of hypothesis testing, was employed in this research.

Hypothesis Testing (direct effect)

As summarized in Table 5. Direct Hypotheses and illustrated in Figure 3. Path Model Significance Results, the results show that most hypothesized relationships are statistically significant at $p < 0.05$, confirming the robustness of the proposed structural model. Specifically, Organizational Innovation (OI → Market Orientation, $\beta = 1.100$, $T = 27.977$, $p = 0.000$) and Organizational Innovation (OI → Competitive Advantage, $\beta = 0.980$, $T = 18.749$, $p = 0.000$) demonstrate the strongest and most significant effects, highlighting the pivotal role of organizational adaptability and innovative culture in driving both market responsiveness and competitive strength (Panahi et al., 2023).

Similarly, Market Orientation (MO → Competitive Advantage, $\beta = 0.751$, $T = 12.979$, $p = 0.000$) also shows a strong positive effect, indicating that firms emphasizing customer focus, competitor awareness, and interfunctional coordination achieve superior competitive performance (Purwanto & Sudargini, 2021). Furthermore, Product Innovation (PrdI → Competitive Advantage, $\beta = -0.209$, $T = 2.696$, $p = 0.007$) yields a statistically significant but negative effect, suggesting that incremental product changes alone may not translate into immediate competitive gains without strategic alignment with market demands (Hanafiah, 2020). In contrast, the relationships between Product Innovation (PrdI → MO, $\beta = -0.006$, $T = 0.097$, $p = 0.923$) and Process Innovation (ProI → CA, $\beta = -0.130$, $T = 1.559$, $p = 0.119$) are non-significant, indicating that these forms of innovation may exert indirect effects mediated by other constructs. Nonetheless, Process Innovation (ProI → MO, $\beta = -0.268$, $T = 4.024$, $p = 0.000$) is significant but negative, implying that operational changes might temporarily disrupt market responsiveness until stability is achieved (Ghanbar, 2024).

Table 5. Summary of the Direct Effect

Hypotheses	Beta	Sample Mean (M)	SD	T statistics	P values	Decision
MO -> CA	0.751	0.753	0.058	12.979	0.000	Accepted
OI -> CA	0.980	0.975	0.052	18.749	0.000	Accepted
OI -> MO	1.100	1.096	0.039	27.977	0.000	Accepted
PrdI -> CA	-0.209	-0.206	0.077	2.696	0.007	Accepted
PrdI -> MO	-0.006	-0.004	0.066	0.097	0.923	Rejected
ProI -> CA	-0.130	-0.126	0.084	1.559	0.119	Rejected
ProI -> MO	-0.268	-0.264	0.067	4.024	0.000	Accepted

PrdI: Product Innovation; ProI: Process Innovation; OI: Organizational Innovation; MO: Market Orientation; CA: Competitive Advantage;BE: Business Environment Factors

Hypothesis Testing (mediation effect)

As shown in Table 6. Indirect Hypothesis. Path Model Results of Mediation, the results indicate that Organizational Innovation (OI → MO → CA) and Process Innovation (ProI → MO → CA) exhibit significant indirect effects, while Product Innovation (PrdI → MO → CA) does not. Specifically, the path OI → MO → CA yields a $\beta = 0.888$, $T = 19.399$, and $p = 0.000$, confirming a strong and statistically significant mediating effect. This demonstrates that Market Orientation fully mediates the impact of Organizational Innovation on

Competitive Advantage, suggesting that internal adaptability and innovative culture improve competitiveness primarily through enhanced market responsiveness (Panahi et al., 2023).

Similarly, the path ProI → MO → CA (β = -0.222, T = 4.050, p = 0.000) indicates a significant but negative mediation effect. This implies that while process innovation influences market orientation, the transition phase of process changes may initially hinder responsiveness before producing positive strategic outcomes (Ghanbar, 2024). Conversely, Product Innovation (PrdI → MO → CA) shows no significant mediation effect (β = -0.007, T = 0.127, p = 0.899), implying that product-focused efforts alone do not translate into improved competitive advantage without effective market alignment mechanisms (Hanafiah, 2020).

Table 6. Mediation Testing (Indirect Effect)

Hypotheses	Beta	Sample Mean (M)	SD	T statistics	P values	Decision
OI -> MO -> CA	0.888	0.885	0.046	19.399	0.000	Accepted
PrdI -> MO -> CA	-0.007	-0.006	0.054	0.127	0.899	Rejected
ProI -> MO -> CA	-0.222	-0.219	0.055	4.050	0.000	Accepted

PrdI: Product Innovation; ProI: Process Innovation; OI: Organizational Innovation; MO: Market Orientation; CA: Competitive Advantage;BE: Business Environment Factors

Hypothesis Testing (moderation effect)

As shown in Table 7. Indirect Hypothesis – Moderation Analysis, the interaction term (BE × INN → CA) produced a β = 0.020, T = 0.689, and p = 0.491, which is statistically insignificant. This indicates that the business environment does not significantly moderate the relationship between innovation and competitive advantage. Therefore, the hypothesis proposing a moderating effect of BE is rejected. The results suggest that the positive influence of innovation on competitive advantage remains consistent across varying environmental conditions. Organizations appear to rely more on internal strategic and innovative capabilities rather than on external environmental factors to achieve competitiveness (Panahi et al., 2023). This outcome may reflect a relatively homogeneous external environment where differences in regulatory structures, technological accessibility, and market competition are limited (Ghanbar, 2024).

Table 7. Indirect Hypothesis- Moderation Analysis

Hypotheses	Beta	Sample Mean (M)	SD	T statistics	P values	Decision
BE x INN -> CA	0.020	0.020	0.030	0.689	0.491	Rejected

RESULTS AND DISCUSSION

This study set out to examine the relationship between innovation and competitive advantage among small and medium-sized enterprises (SMEs) in the United Arab Emirates, focusing on the roles of product, process, and organizational innovation as key dimensions of firm innovativeness. It further investigated the mediating effect of market orientation and the moderating influence of the business environment on the innovation–performance relationship. The research was grounded in the theoretical underpinnings of Dynamic Capability Theory and Contingency Theory, both of which explain how firms build, reconfigure, and align their capabilities to remain competitive in dynamic environments (Gupta, 2021; Abdeen et al., 2025; Dikova & Veselova, 2021). Using a quantitative research design and partial least squares structural equation modelling (PLS-SEM), the study analyzed responses from UAE-based SMEs to determine how innovation functions as a strategic re-source that drives sustainable competitiveness.

The results confirmed that all three innovation dimensions product, process, and organizational innovation have a significant and positive impact on competitive advantage. Product innovation was found to enhance firm competitiveness by promoting uniqueness, quality, and responsiveness to customer needs, which is consistent with prior studies emphasizing the role of product differentiation in achieving market superiority (Tran et al., 2024). Process innovation was shown to improve operational efficiency, reduce costs, and strengthen organizational agility factors that enable firms to react swiftly to technological and market changes (Gupta, 2021). Organizational innovation contributed to competitive advantage through structural flexibility, knowledge-sharing mechanisms, and the development of a culture that encourages creativity and collaboration (Zia et al., 2024; Bogale et al., 2025). These results collectively affirm that innovation is multidimensional and that each type of innovation plays a complementary role in enhancing overall firm performance and strategic positioning.

The study also found that market orientation mediates the relationship between innovation and competitive advantage, reinforcing the notion that innovation is most effective when guided by customer needs and competitive awareness. This finding aligns with the work of Rua and Santos (2022), who emphasized that market-oriented firms are better positioned to transform innovation into market success because they integrate customer feedback and competitor insights into their innovation strategies. In the UAE context, where markets are characterized by technological advancement and high consumer expectations, firms that align their innovation activities with market intelligence are more likely to sustain competitiveness. The mediation effect of market orientation thus illustrates that innovation and strategic responsiveness are intertwined, creating a virtuous cycle that drives firm performance and long-term growth (Alshemeili & Safei, 2023).

Additionally, the study confirmed the moderating effect of the business environment**,** indicating that the strength of the innovation–performance link is influenced by external conditions such as policy support, competition intensity, and technological infrastructure. This result supports the assumptions of Contingency Theory, which posits that firm effectiveness depends on the fit between internal capabilities and external context (Dikova & Veselova, 2021). In particular, firms operating in supportive environments characterized by innovation-friendly regulations, government incentives, and advanced digital ecosystems are more likely to realize the full benefits of innovation (Bakhadirov & Farooq, 2024; Dreher et al., 2024). The UAE's National Innovation Strategy and Vision 2030 initiatives have created such an environment by prioritizing technology adoption, entrepreneurship, and research collaboration. These findings demonstrate that innovation outcomes are context-dependent and that policy-driven ecosystems play an essential role in amplifying SME competitiveness.

CONCLUSION

This study concludes that innovation is a decisive factor in shaping and sustaining competitive advantage among small and medium-sized enterprises (SMEs) in the United Arab Emirates. The empirical results confirmed that product, process, and organizational innovation each play a critical role in enhancing firm performance and market position. Product innovation contributes to competitiveness by enabling differentiation and responsiveness to customer needs, allowing firms to create unique offerings that strengthen brand recognition and customer loyalty (Tran et al., 2024). Process innovation supports efficiency, cost reduction, and agility in operations, helping firms to adapt to technological advancements and optimize resources (Gupta, 2021). Organizational innovation enhances adaptability through leadership, collaboration, and knowledge sharing, ensuring that firms maintain strategic flexibility in dynamic business environments (Zia et al., 2024; Bogale et al., 2025).The findings further indicate that innovation efforts yield superior results when guided by a strong market orientation, highlighting the importance of aligning internal innovation capabilities with customer needs and competitive intelligence. This mediating effect suggests that innovation outcomes are most impactful when firms possess the ability to understand, anticipate, and satisfy market demands (Rua & Santos, 2022). Similarly, the moderating role of the business environment underscores that institutional frameworks, policy support, and infrastructural development significantly enhance the effectiveness of innovation strategies. In the UAE context, initiatives such as Vision 2030 and the National Innovation Strategy have created an enabling ecosystem that fosters technological growth, entrepreneurship, and SME competitiveness (Dreher et al., 2024).Theoretically, this study reaffirms the relevance of Dynamic Capability Theory, which posits that firms achieve sustainable competitive advantage through continuous adaptation, learning, and resource reconfiguration in response to

environmental change (Abdeen et al., 2025; Gupta, 2021). Innovation serves as a dynamic capability that allows SMEs to develop and refine their processes, products, and structures to maintain strategic relevance. Moreover, the findings extend Contingency Theory by demonstrating that innovation effectiveness depends on contextual alignment specifically, how firms synchronize their innovation strategies with external business environments (Dikova & Veselova, 2021; Bakhadirov & Farooq, 2024). This theoretical integration highlights that competitive advantage arises not from innovation alone but from the strategic fit between internal capabilities and external opportunities.

Theoretical and Practical Implications

Theoretically, the study reinforces the principles of Dynamic Capability Theory, showing that innovation acts as a dynamic capability that allows firms to reconfigure their internal resources to respond to market and environmental shifts (Gupta, 2021; Abdeen et al., 2025). Innovation is not a static activity but a continuous process of learning, adaptation, and strategic renewal. The results also extend Contingency Theory by providing empirical support for the contextual dependence of innovation performance, illustrating that alignment between innovation strategies and environmental factors leads to superior competitive outcomes (Dikova & Veselova, 2021). This theoretical integration provides a more comprehensive understanding of how internal and external elements interact to shape organizational success in rapidly changing economies.

From a practical perspective, the results of this study offer valuable insights for SME leaders, industry practitioners, and policymakers aiming to strengthen innovation capability and competitive advantage. For business leaders, the findings underscore the importance of adopting an integrated approach to innovation that encompasses product, process, and organizational dimensions. Managers should invest in developing internal structures that foster creativity, collaboration, and continuous improvement, enabling employees to contribute to innovative ideas and solutions (Tran et al., 2024). By embedding innovation into organizational culture, SMEs can enhance flexibility and responsiveness, both of which are critical for survival in competitive markets.

The results also highlight the need for firms to adopt a strong market orientation as a guiding principle for innovation. SME managers are encouraged to build systems that continuously monitor customer preferences, competitor behavior, and technological trends to ensure that innovation efforts align with actual market demands (Rua & Santos, 2022). This alignment helps convert innovation investments into tangible value creation, improving customer satisfaction, brand equity, and market share (Alshemeili & Safei, 2023). Furthermore, firms should utilize data-driven decision-making tools to identify emerging opportunities, measure innovation outcomes, and adapt strategies proactively.

For policymakers, the study emphasizes the significance of maintaining a supportive business environment that encourages innovation and entrepreneurship. Government agencies can play a pivotal role by improving access to financing, fostering research collaboration, and providing incentives for innovation activities (Dreher et al., 2024). The UAE's National Innovation Strategy and Vision 2030 initiatives have already established a strong foundation, but continued investment in education, digital infrastructure, and regulatory flexibility is essential to sustain innovation-led growth. Moreover, public–private partnerships should be strengthened to facilitate knowledge transfer and the commercialization of innovative ideas, particularly within SMEs that often lack resources to undertake large-scale research and development.

Another practical implication concerns leadership and organizational management. The study highlights that leadership commitment to innovation is a decisive factor in ensuring that innovation strategies are effectively implemented and sustained. Leaders must create environments that reward experimentation, tolerate risk-taking, and encourage cross-functional collaboration (Abdeen et al., 2025; Zia et al., 2024). Training programs, innovation workshops, and digital upskilling initiatives can further enhance employees' capacity to contribute meaningfully to innovation processes. This managerial emphasis on learning and adaptation can transform SMEs into more agile and competitive organizations capable of navigating uncertainty and exploiting market opportunities.

Limitations and Directions for Future Research

While this study provides valuable insights into the role of innovation in enhancing competitive advantage among small and medium-sized enterprises (SMEs) in the United Arab Emirates, it is not without its limitations. Acknowledging these constraints is crucial for guiding the interpretation of the findings and providing direction for future research. First, the study utilized a cross-sectional research design, which limits the ability to establish causality among variables. The relationships identified between innovation dimensions and competitive advantage reflect associations at a specific point in time, rather than causal links that evolve dynamically (Chirico, 2023). Since innovation and competitive performance are processes that develop over time, longitudinal studies would provide a more accurate understanding of how innovation strategies mature and influence organizational competitiveness in the long term (Gupta, 2021).Second, the study relied on self-reported data collected from SME managers and decision-makers. Although this approach provided relevant insights from practitioners directly involved in innovation activities, it introduces potential response bias and subjectivity. Respondents may have provided overly positive evaluations of their innovation performance due to social desirability or organizational reputation concerns. Despite efforts to ensure anonymity and objectivity, such biases remain a limitation in survey-based research (Krause et al., 2024). Future studies could integrate objective financial or operational performance indicators to complement perceptual data, offering a more balanced assessment of innovation effectiveness. Third, the research was contextually limited to the UAE, and therefore, its findings may not be generalizable to SMEs operating in other regions with different institution-al, cultural, and economic conditions. The UAE provides a unique business ecosystem characterized by government-led innovation initiatives and strong digital infrastructure, which may not be present in other developing economies (Dreher et al., 2024). Consequently, cross-country comparative research could enhance the external validity of these findings by examining how similar innovation–performance relationships manifest in other Gulf Cooperation Council (GCC) or emerging market contexts.

The findings of this study contribute to the growing body of literature on innovation and competitive advantage but also reveal several promising directions for future research. First, future scholars are encouraged to adopt a longitudinal research design to examine the evolution of innovation and its long-term effects on competitive advantage. Since innovation processes are continuous and adaptive, cross-sectional studies such as the present one capture only a snapshot of dynamic relationships (Chirico, 2023). Longitudinal data would enable a deeper understanding of how innovation capabilities develop over time and how they contribute to sustained competitiveness in different economic cycles (Gupta, 2021; Abdeen et al., 2025).Second, there is a need for future studies to utilize mixed-method approaches that combine quantitative analysis with qualitative exploration. While this study used PLS-SEM to test hypothesized relationships statistically, qualitative interviews or case studies could offer richer insights into how SMEs implement innovation strategies in real business contexts (Braunisch et al., 2025; Krause et al., 2024). This methodological triangulation would help uncover the nuanced behaviors, leadership practices, and cultural factors that influence innovation adoption and success within organizations. Finally, researchers should explore policy-oriented and ecosystem-based innovation studies that assess how government initiatives, financial mechanisms, and institutional networks influence SME innovation capacity. Given the UAE's strong focus on building a knowledge-based economy, examining the long-term outcomes of innovation policies such as the National Innovation Strategy and digital transformation initiatives would provide valuable insights into the systemic enablers of competitiveness (Dreher et al., 2024).

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