

## Article

# Exploring the Effects of Entrepreneurial and Digital Orientations on the Competitive Advantage of Saudi Firms: Is Strategic Agility the Missing Link?

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**Abstract:** This study explores the intricate relationships between entrepreneurial orientation (EO), digital orientation (DO), strategic agility (SA), and competitive advantage (CA) in Saudi firms. We investigate whether strategic agility serves as the missing link in these relationships. We examine direct and indirect effects among these constructs using structural equation modeling on data collected from 307 Saudi firms. The results confirm the direct positive links between EO and SA with CA. However, the findings also reveal a surprising result—there is no direct link between DO and CA. At the same time, both DO and EO exerted significant positive influences on SA. This study emphasizes the mediating role of SA. We find that SA partially mediates the relationship between EO and CA, underlining the importance of EO while pointing out the additional value given to this relationship by SA. Additionally, SA fully mediates the relationship between DO and CA, suggesting that firms must develop SA to translate their digital capabilities into CA. These results contribute to the strategic management literature by explaining the interplay between strategic orientations, agility, and competitive advantage in the Saudi context. They also provide practical implications for managers seeking to enhance the competitiveness of their firms during this digital age by showing that investing in SA in conjunction with entrepreneurial and digital resources is of paramount importance.



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## 1. Introduction

In today's dynamic and highly digital environment, companies need to adopt both digital and entrepreneurial orientations to develop strategic agility (SA) and strengthen their competitive advantage (CA). Digital orientation (DO) entails using digital technologies in all functions to enhance operations, customer engagement, and the general outlook of business models. This includes digital means of marketing products, making sales, and offering customer service that may enhance efficiency and increase customer satisfaction.

DO is critical to enable firms to make appropriate decisions that meet customer expectations and respond to abrupt market changes and changing customer needs (Doz and Kosonen 2010). Adopting digital tools enhances operational efficiency, economizes costs, and streamlines resources toward being agile in competitive environments (Qosasi et al. 2019; Shehadeh et al. 2023). A robust digital presence also fosters customer engagement, which could lead to product and service customization to improve customer satisfaction and loyalty.

On the other hand, entrepreneurial orientation (EO) indicates the firm's innovativeness, risk-taking propensity, and acting on new opportunities (Covin and Slevin 1989; Aloulou 2023, 2024). Firms with a robust EO will most likely respond quickly to market changes to leverage new prospects. This orientation encourages a creative and adaptive atmosphere,

which is much needed during these dynamic times. Entrepreneurial-oriented companies will no doubt develop more innovative and different products and services, therefore making them distinctive in very competitive markets. They also carry out proactive strategies through responding to changes via early actions ahead of the competition, which is essentially required to thrive in such a fast-moving environment. While risk-taking necessarily accompanies EO, successful firms equally weigh the need to work around possible downsides to make them more resilient against uncertainty (Aloulou 2023).

The digitally and entrepreneurially oriented combination lays the foundation for strategic agility (SA) (Bresciani et al. 2022). This is defined as the ease with which firms switch their strategies or operational focus as new information or market conditions may dictate and to do so with minimal disruption. An agile organization embeds a culture of continuous innovation into its offerings and processes to adapt its business models to evolving demands (Doz and Kosonen 2010). In doing so, it can rapidly seize emerging opportunities first and outcompete its rivals to firmly position itself as the market leader.

Only those firms will be better positioned to achieve and sustain their CA that successfully integrates DO and EO with SA (Bounfour et al. 2023; Fakunmoju et al. 2020; Khaled and Abu-Tabl 2023; Rofiaty et al. 2022; Sajdak et al. 2022). This integrated orientation, in a dynamic and digitized world, enhances the CA of firms in several ways: first, it helps them to create unique selling propositions that can be differentiated in cluttered markets and thereby attract more customers; second, agility may enable them to change the direction of strategy in pursuit of sustained growth, hence their long-term success in volatile environments; finally, real-time data and insight enable the firm to make informed strategic choices by allocating appropriate resources relative to the market needs.

Yet, there are challenges. From the resource-based view (RBV), many firms fail to identify or leverage distinctive and strategic resources such as DO and EO (Zhou et al. 2005; Aloulou 2023; Kindermann et al. 2021). SA, seen as a dynamic capability according to the dynamic capability view (DCV), becomes imperative in radically changing environments (Teece et al. 2016). The information-processing view (IPV) shows how those with greater DO can handle their information more efficiently to reach decisions that enhance their operations and improve customer engagement using technology. However, a firm typically suffers from data overload or lacks the appropriate systems to analyze market trends.

This study aims to address these challenges by investigating whether SA mediates the relationship between DO, EO, and CA in Saudi firms. Recent research shows that Saudi firms are actively engaging in entrepreneurial behaviors (Aloulou 2023). Despite being in the developing stages of digital transformation, they are also increasingly leveraging cutting-edge technologies to improve operational processes, develop innovative products and services, and provide added value to customers (Alnasser et al. 2024). This combination of entrepreneurial activity and emerging digital capabilities makes Saudi firms an appropriate context for examining the mediating role of SA in achieving competitive advantage.

By addressing this research gap, the current study makes a two-fold contribution to the strategic management literature. First, it clarifies the interplay between strategic orientations—digital orientation (DO) and entrepreneurial orientation (EO)—agility (SA), and competitive advantage (CA) within the Saudi context, an emerging economy undergoing digital transformation. While prior studies have examined aspects of these relationships independently, to the best of our knowledge, this is the first study to analyze these elements simultaneously, specifically within the context of a developing country experiencing significant economic transition. Second, it offers practical implications for managers by demonstrating how investing in and aligning these resources could enhance their firms' competitive advantage.

The paper proceeds as follows: the subsequent section delineates the underlying theory by introducing DO, EO, SA, and CA through the lenses of RBV, DCV, and IPV. This section also describes the proposed model and develops the associated hypotheses. Section 3 details the methodology of the study and the strategy of data analysis. Section 4 presents the results, and Section 5 provides a discussion of these findings. The paper

concludes with theoretical and managerial implications, a summary of the key results, limitations, and suggestions for future research in the final section.

## 2. Theoretical Background and Literature Review

### 2.1. Theoretical Foundations on Resource-Based, Dynamic Capabilities and Information Process Views

Several writers have correlated digital and information technology (IT) with a business's agility and adaptability. For example, [Agarwal and Sambamurthy \(2020\)](#) examine several organizational models for the IT function often seen in agile businesses. [Hobbs and Scheepers \(2010\)](#) mentioned that IT is associated with the ability of an organization to adapt and respond to changes in the business environment quickly. They add that digital choice can be utilized since it requires factors such as resource constraints, top-level regulations, and the reliability of information systems. However, [Dubey et al. \(2022\)](#) argue that the theoretical basis relating to the impacts of agility is still lacking in development, and there is a necessity for empirical research guided by theory.

The foundation of the research is based on IPV, RBV, and DCV. Firms must successfully apply digital technology and use the information they get, particularly when confronted with varying levels of uncertainty ([Srinivasan and Swink 2018](#); [Hobbs and Scheepers 2010](#)). [Hobbs and Scheepers \(2010\)](#) mentioned that digital choices increase an information systems' agility by quickly reacting to opportunities. They add that competence may be described as possessing three interconnected capabilities: the exploitation capabilities result from the combination of knowledge and IS expertise, the reusable technology infrastructure, and the proficient use of processes, which are considered essential aspects of an IS capacity for agility.

The IPV highlights information processing demand and capacity and aligns with the two to achieve the highest possible efficiency. The business asserts that companies require high-quality information to enhance their decision-making ability and effectively manage volatility. In fact, [Huang et al. \(2014\)](#) mentioned that enterprises use two techniques to deal with uncertainty and growing demands for information. First, organizations can enhance their flexibility by using sophisticated and effective information processing methods to minimize uncertainty and provide timely, appropriate information ([Mithas et al. 2011](#)). Second, companies can improve reliability by establishing predetermined activities, such as formulating regulations to minimize the impact of uncertainty and providing guidance within the company to facilitate the decision-making process ([Huang et al. 2014](#)).

Many researchers integrate information processing theory with other theories to gain further explanations. For example, [Dubey et al. \(2022\)](#) integrate organizational IPV theory with a relational view to recognize the significance of sharing information and supply chain visibility as critical activities and characteristics and to comprehend the role of sharing information and supply chain visibility of inefficient supply chains which in turn fosters more extraordinary dedication, cooperation, and agility. [Paiva et al. \(2008\)](#) use knowledge-based approaches with RBV theory to comprehend the impact of cross-functional orientation and enhanced information approachability on firm strategy. Furthermore, other studies have used DCV as a tool to investigate agility, as shown by [Aslam et al. \(2020\)](#) and [Gligor et al. \(2015\)](#).

According to [Teece et al. \(1997\)](#), the DCV concept emphasizes an enterprises' need for dynamic capabilities to survive and maintain a competitive edge in a constantly changing market. The DCV concept focuses on utilizing a firm's resources that are subject to change, resulting in different outcomes and capacities ([Asamoah et al. 2021](#)). However, [Aslam et al. \(2020\)](#) argue that companies may decrease uncertainties and enhance their ability to respond effectively in a constantly changing environment by adopting an agility approach, as has been mentioned by [Fayezi et al. \(2017\)](#).

In addition, an analysis of SA may be conducted using the RBV, which considers DO and EO as valuable and fundamental resources that support creating capabilities ([Kindermann et al. 2021](#); [Zhou et al. 2005](#)). The RBV theory suggests that an organization's

distinctive resources and skills are the origins of its CA (Zhang et al. 2023). The RBV theory examines how a company's resources influence its performance in a constantly changing environment of competition.

In addition, Barney (1991) mentioned that the RBV is based on four components: valuable, rare, imperfectly imitable, and non-substitutable organizational resources (VRIN). Within RBV theory, acquiring crucial resources such as data and knowledge from exterior sources or combining interior and exterior resources in distinctive manners that cannot be easily replicated are the two main ways to obtain CA (Nguyen et al. 2023; Bresciani et al. 2022; Arias-Pérez et al. 2023). In addition, intangible and tangible assets, including information and knowledge, comprise the organization's resources (Barney et al. 2001).

Arias-Pérez et al. (2023) argue that while further advancements in the RBV propose that VRIN resources might not be valuable enough unless they are utilized distinctly and more effectively (Sonenshein 2014), the DO of using digital technologies is becoming a significant driver of CAs (de Assis Santos and Marques 2022) as long as firm capability is combining tangible and intangible assets to establish sustainable CA (Bresciani et al. 2022). They add that the organization adjusts its in-house assets and embraces technology requirements to enhance its agility and competitiveness.

However, fundamental concepts of the information process, DCV, and RBV give a solid theoretical basis for investigating the role of entrepreneurial and digital positioning and their impact on SA to create the CA of firms.

## 2.2. Literature Review

### 2.2.1. Digital Orientation

DO refers to an organization's inclination to utilize digital technologies for efficiently managing its structures and activities (Barba-Sánchez et al. 2024). This approach embodies the organization's beliefs on conducting activities (Zhou et al. 2008) and involves collectively adopting digital technologies for task coordination. Rooted in performance-enhancing values and beliefs, DO encompasses developing digital capabilities, coordinating digital ecosystems, and reshaping digital architectures (Kindermann et al. 2021). This philosophy is crucial for guiding IT capabilities towards effective digital transformation and improved performance. While it has been shown to impact performance positively, further research is needed to understand this relationship fully. The social aspects of technology management are critical but often overlooked, and external factors can complicate the relationship between IT capabilities and performance (Kindermann et al. 2021; Barba-Sánchez et al. 2024).

Digitalization is revolutionizing how firms create value (Joensuu-Salo 2021) and significantly impacting society. Kuusisto (2017) identified several effects of digitalization, including changes in organizational learning, digital innovations, agility, business ecosystems, and structures. DO, defined as "a firm's commitment to applying digital technology to deliver innovative products, services, and solutions" (Khin and Ho 2019; Nasiri et al. 2022), suggests that digital-oriented firms are willing and able to acquire and use new digital technologies in product development. This orientation makes firms more receptive to digital technologies and initiatives (Khin and Ho 2019).

### 2.2.2. Entrepreneurial Orientation

EO has emerged as a main theme in business research, representing a firm's strategic posture and competitive inclination (Khaled and Abu-Tabl 2023). Scholars have conceptualized EO as a multidimensional construct, typically encompassing innovativeness, proactiveness, and risk-taking (Covin and Slevin 1989; Rofiaty et al. 2022; Miller 2011; Suharto and Subagja 2018; Lumpkin and Dess 1996). Some other researchers expanded this framework to include competitive aggressiveness and autonomy (Khaled and Abu-Tabl 2023; Nofiani et al. 2021). EO is fundamentally characterized as an ongoing organizational activity aimed at enhancing innovative capabilities, managing risks effectively, optimizing



resource utilization, and developing value to retain customers and enhance organizational competitiveness (Rofiaty et al. 2022; Al-Mamary and Alshallaqi 2022).

Research has consistently indicated that EO, as a strategic orientation, serves as a valuable intangible resource for gaining CA and improving organizational performance (Alsadi et al. 2021; Aloulou 2023, 2024). Studies have shown that firms with stronger EO, characterized by willingness to take risks, engagement in innovative activities, and demonstrations of high proactivity, tend to achieve significantly better performance outcomes (Rofiaty et al. 2022; Gupta and Batra 2016). This highlights the importance of EO as a strategic tool for firms seeking to enhance their CA and achieve superior performance in changing business environments.

### 2.2.3. Strategic Agility

Agility denotes the capability to easily move and circulate while making quick adaptations to changes. In the context of business, this would involve the issue of responding fast enough to market shifts and changes in customer needs with respect to budding opportunities and maintaining a competitive edge (Franco et al. 2023; Motwani and Katatria 2024; Weber and Tarba 2014). Consequently, organizational agility is the ability of a firm to detect market shifts, alter its strategies fast, continuously breed improvement, and create value in dynamic business environments to be and stay ahead of the competition. It involves flexible organizational structures, fast decision-making processes, an adaptive workforce, and customer focus with continuous emergent innovation. Scholars have coined the term 'SA' for firms to be independent of exogenous changes (Clauss et al. 2021a).

Scholars have introduced the concept of SA for firms to remain independent from external changes (Doz and Kosonen 2010; Doz 2020; Teece et al. 2016; Weber and Tarba 2014; Nejatian et al. 2019). The concept has gained more attention in the last two decades (de Diego and Almodóvar 2022; de Diego Ruiz et al. 2024). SA can be defined as a firm's capability to adapt quickly and respond decisively to any changes in the business environment, while staying on course vis-à-vis the long-term vision, and then renew itself continuously to maintain flexibility without compromising efficiency (Doz and Kosonen 2010; Weber and Tarba 2014; Teece et al. 2016). Providing an existence from which to hang SA in association with dynamic capabilities is the argument of Teece et al. (2016). The ability provides an assurance that firms are placed in a position to extend their influence and flourish in uncertain and potentially disruptive settings.

According to Doz and Kosonen (2010), SA enables firms to make rapid, real-time, effective, and proactive actions even in a turbulent, complex, and constantly changing setting. They identified three specific capabilities that formed the basis for SA: (1) strategic sensitivity, (2) leadership unity, and (3) resource fluidity. Strategic sensitivity is a company's capability to sense and anticipate changes in its environment, threats, and opportunities. It consists of the intense observation, interpretation, and foresight of business trends and discontinuities that are rapidly communicated to decision makers. Leadership unity refers to the ability of top management to make swift, bold decisions collaboratively without being barricaded by internal politics or power struggles. It focuses on unity in cohesive leadership that can respond fast and decisively when the need for change comes. This collective commitment facilitates top management collaboration to solve organizational problems. Resource fluidity is the reallocation of business systems and competencies with great speed. This enables the firm to be flexible, allowing it to easily develop new value propositions when the conditions change.

How these three dimensions interact with each other in the organization makes it strategically agile: strategic sensitivity diagnoses that a change is needed, unity of leadership allows for rapid decisions in response to the need, and the fluidity of resources enables a quick initiation of those decisions. These, taken together, empower an organization with the ability to adapt quickly and effectively to dynamic business environments.

A consensus around the composition of SA has emerged, which is generally believed to encompass the three core capabilities (Clauss et al. 2021b; Doz and Kosonen 2010; de

Diego Ruiz et al. 2024). All these capabilities need to be fully developed for the firm to create integration in the company to achieve higher SA (Doz 2020). Competitiveness can be achieved through SA in times of change (Seyadi and Elali 2021).

#### 2.2.4. Competitive Advantage

CA is a fundamental concept in strategic management, representing a firm's ability to outperform rivals and create superior value for customers. Researchers have seen CA as a firm's strategic benefit or capability that allows it to create and sustain a defensible position over its rivals, resulting in superior performance within its industry through the generation of higher economic value, more effective fulfilment of customer demands, or maintenance of above-average profits over time (Anwar 2018; Lee et al. 2015). A CA enables companies to generate more economic value than their competitors (Qosasi et al. 2019). Achieving this advantage is a challenging task that demands significant skills and dedication from organizational members (Barney 1991; Clauss et al. 2021b).

To shape the understanding of CA, we follow Anwar (2018) when particularly distinguishing between two primary types of CA. The differentiation-based CA involves offering unique and novel products to customers with innovations incorporated into product features, design, and structure. On the other hand, the cost-based CA focuses on achieving cost-based advantages by reducing costs associated with materials, product development, marketing, operations, suppliers, wages, and management (Anwar 2018).

Researchers have identified several key indicators in operationalizing CA. Lee et al. (2015) list product and service quality, product design and innovation, and customer response as manifest constructs used to examine CA. Additionally, Suharto and Subagja (2018) mention product uniqueness, product quality, and competitive prices as indicators used to measure CA. Moreover, Anwar (2018) used items related to brand name and effective advertising and promotional campaigns as indicators.

### 2.3. Hypotheses Development

#### 2.3.1. Direct Relationships Among Main Constructs

SA and CA are closely linked concepts in business and strategic management (Doz and Kosonen 2010; Nkuda 2017). SA helps firms adapt and respond to changes in the external environment (market trends, technological advancements, regulatory shifts, and competitive pressures). This agility enables a firm to continuously realign its strategies and operations to maintain relevance and effectiveness in a dynamic business landscape and gain CA (Alhosseiny 2023; Fakunmoju et al. 2020). It is a key driver of sustainable CA by efficiently exploiting fleeting market opportunities, turning uncertainties into advantages over less flexible competitors (Motwani and Katatria 2024).

Several studies investigated the relationship between SA and performance outcomes in different contexts and industry sectors: operational, firm or organizational performance (Kale et al. 2019; Çallı and Çallı 2021; Clauss et al. 2021a; Arokodare and Asikhia 2020; Khoshnood and Nematizadeh 2017; Shin et al. 2015; Lyn Chan and Muthuveloo 2021); CA (Al-Romeedy 2019; Clauss et al. 2021b; Khristianto et al. 2021; Sampath and Krishnamoorthy 2017; Amini and Rahmani 2023; Battour et al. 2021); sustainable CA (Al Shawabkeh 2024; Tufan and Mert 2023). For example, Clauss et al. (2021b) found that SA affected the CA of 150 medium-sized German firms in the engineering industry through reliability, quality, delivery, price, and product innovation. From the above, this hypothesis can be stated as follows:

**H1.** *There is a positive relationship between SA and CA.*

The relationship between EO and SA has emerged as a significant area of interest in organizational research. EO, characterized by innovativeness, proactiveness, and risk-taking, has been recognized as a crucial factor in directing organizations toward exploiting and exploring market opportunities, particularly in turbulent environments. Simultaneously,

SA enables firms to outperform rivals through flexible and rapid strategy changes and resource orchestration (Khaled and Abu-Tabl 2023). The synergy between these two constructs becomes apparent when considering that firms with high levels of entrepreneurial activities are likely to organize their resources in an agile manner, especially in turbulent markets (Al-Darras and Tanova 2022).

Moreover, the key dimensions of EO, such as innovation and proactivity, have been linked to developing more agile strategies, which are crucial in today's global marketplace where responsiveness to environmental changes is paramount (Rofiaty et al. 2022). Research has also demonstrated that EO enhances companies' SA and innovation capabilities (Puspita and Widjaja 2023), playing a vital role in facilitating SA at micro-levels of organization (Puspita and Widjaja 2023; Sanasi et al. 2020). Given these relationships, it appears logical to posit that organizations with a strong EO would be better positioned to develop and maintain the agility necessary to thrive in dynamic business environments. Thus, we hypothesize:

**H2.** *There is a positive relationship between EO and SA.*

DO means that a company focuses on using digital technology in all aspects of its business, from operations and decision-making to customer interactions. This includes using digital tools and platforms to improve their processes, develop new ideas, and create value (Karina and Astuti 2022). Firms with higher DO found their operations streamlined by digital technologies, their process efficiency improved, and new technology leveraged to innovate continuously, which set the firm apart from competitors and attracted customers with unique offerings. While there is previous literature investigating the relationship between digital (transformation) orientation and performance outcomes (Barba-Sánchez et al. 2024; Kindermann et al. 2021; Ranjan 2024; Shehadeh et al. 2023; Wang et al. 2023; Zhou et al. 2024; Rupeika-Apoga et al. 2022; Khin and Ho 2019), little work has been performed to uncover the relationship between DO and CA. From the above, we can state the following hypothesis:

**H3.** *There is a positive relationship between DO and CA.*

The RBV suggests that EO, as an intangible organizational resource, can form the basis for sustainable CA (Aswan 2023; Alsadi et al. 2021). This perspective aligns with the DCV, which emphasizes the integration and reconfiguration of resources to address rapidly changing business environments (Aswan 2023). The key dimensions of EO—innovativeness, proactiveness, and risk-taking—create favorable conditions for organizations to explore and exploit opportunities, potentially enhancing firms' CA (Qosasi et al. 2019).

Empirical evidence from various studies has demonstrated a strong relationship between these EO dimensions and CA across different contexts (Widyanti and Mahfudz 2020; Parkman et al. 2012; Ibrahim and Madichie 2014; Shehadeh et al. 2023). While some studies have found mixed results, particularly during economic crises (Aswan 2023), based on the previous discussions, we hypothesize:

**H4.** *There is a positive relationship between EO and CA.*

A DO supports greater agility, enabling firms to quickly adapt to changes in the market, technology, or customer preferences. This adaptability helps firms stay ahead of competitors who may be slower to react to change. With a higher DO, a firm can be equipped with real-time data and analytics to make quicker and more informed decisions (Bounfour et al. 2023; Sajdak et al. 2022). This speed is crucial for SA, allowing firms to pivot or adjust strategies promptly in response to emerging opportunities or threats. Teece et al. (2016) explored how digital capabilities enhance organizational agility, emphasizing the role of digital tools in enabling firms to adapt and innovate quickly. Sambamurthy et al.

(2003) provided a comprehensive analysis of how digital options, as part of a DO, shape a firm's SA, enabling rapid response to environmental changes.

From the above, the following hypothesis can be stated:

**H5.** *There is a positive relationship between DO and SA.*

### 2.3.2. Indirect Relationships Among Constructs: Mediating Role of Strategic Agility

SA has been proposed as a significant mediator in the relationship between EO and CA. As a dynamic capability, SA enables organizations to respond rapidly and flexibly to turbulent environments by actively sensing environmental changes, seizing opportunities, and continuously adapting. This capability is deeply ingrained in strategic decision-making processes, potentially amplifying the impact of entrepreneurial initiatives on firm performance. The multidimensional nature of SA, encompassing strategic sensitivity, leadership unity, and resource fluidity, suggests a complex mediation effect that may enhance various aspects of the EO-performance relationship (Khaled and Abu-Tabl 2023).

Research indicates that agility, in its various forms, plays a crucial role in mediating between HRM practices, absorptive capacity, ambidexterity, or EO and performance outcomes such as CA, entrepreneurial outcomes or organizational performance (Alborathy et al. 2023; Battour et al. 2021; Kale et al. 2019; Khristianto et al. 2021; Mata et al. 2023; Tufan and Mert 2023). Studies have shown that manufacturing agility can mediate improvements in operational performance, while organizational agility has been found to mediate overall organizational performance. In the context of entrepreneurial firms, SA is proposed to act as an intermediary, strengthening the influence of EO on company performance (Rofiaty et al. 2022). This suggests that SA may serve as a critical mechanism through which entrepreneurial firms can translate their innovative, proactive, and risk-taking tendencies into tangible CA in dynamic market environments.

Based on the previous discussion, we propose:

**H6.** *SA mediates the relationship between EO and firms' CA.*

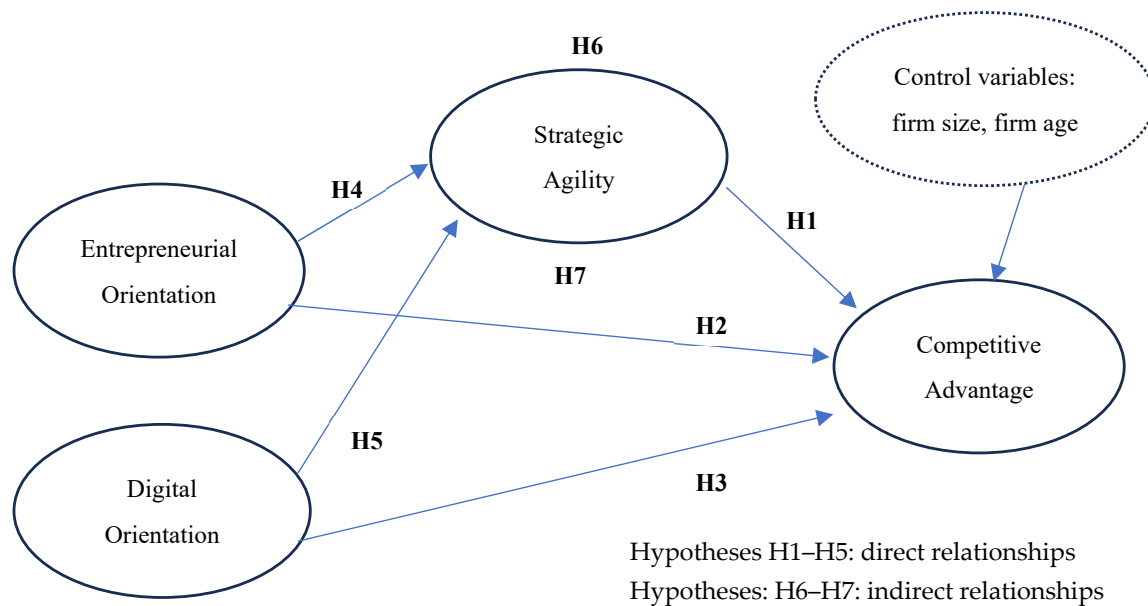
Firms acquiring the ability to quickly and effectively respond to changes in the external environment can benefit from their commitment to adopting and integrating digital technologies into their business processes and strategies to transform them into a CA by offering better value, lower costs, or unique products/services compared to competitors. The literature investigating the mediating role of SA found that this agility construct plays a key role in mediating the relationship between ICT- and digital technology-based capabilities and firm performance (Ayadi et al. 2024; Qosasi et al. 2019). In our study, DO provides the technological foundation (e.g., real-time data analytics, digital platform, automation, cloud computing) that enhances a firm's agility which is, in return, crucial for maintaining or gaining a CA (capitalizing on new opportunities, increased customer satisfaction and loyalty, reducing costs, capturing market share more effectively) (Teece et al. 2016; Sambamurthy et al. 2003; Karina and Astuti 2022). In this vein, SA becomes an important mediator between DO and CA because it helps firms apply digital technologies in responsive and innovative ways that sustain their adaptation and CA.

**H7.** *SA mediates the relationship between DO and CA.*

### 2.4. Conceptual Model

The hypothetical research model, shown in Figure 1, illustrates the influence of DO and EO on SA and the subsequent impact of SA on CA. The model depicts a mediation model of SA that examines direct and indirect relationships in this study.





**Figure 1.** Research Model and its hypothesized relationships.

### 3. Methods

#### 3.1. Sampling and Data Collection

The basis for the research is a questionnaire, which was built from items tailored from previous studies. At first, the researchers invited three experts to review the questionnaire and pretested it with 10 respondents. The data were collected between May and November 2023 using an online survey questionnaire, which was located on a free Google Forms platform. In this regard, due to the non-availability of publicly available information about firms, this study particularly planned to mobilize a couple of research assistants who could collect data by approaching professionals closer to their networks in various firms with different breadth levels.

The research was primarily based on data collected from respondents who are the Middle and Senior management involved in Saudi firms. In the present study, 307 observations have been gathered. A purposive sampling method was employed since the focus of this study was on Saudi firms, which are located in Saudi Arabia's most prominent regions (Central, Northern, Western, Eastern, and Southern) and belong to various industry sectors.

Demographic features of the sample are shown in Tables 1 and 2.

**Table 1.** Sample characteristics (N = 307).

| Firm's Characteristics         | Frequency | %    |
|--------------------------------|-----------|------|
| Firm Size                      |           |      |
| Less than 50 employees         | 90        | 29.3 |
| Between 50 and 249 employees   | 91        | 29.6 |
| Between 250 and 499 employees  | 47        | 15.3 |
| Between 500 and 2999 employees | 36        | 11.7 |
| 3000 employees and more        | 43        | 14.0 |
| Firm Age                       |           |      |
| Less than 5 years              | 64        | 20.8 |
| 5–10 years                     | 83        | 27.0 |
| 11–15 years                    | 37        | 12.1 |

**Table 1.** *Cont.*

| <b>Firm's Characteristics</b>                                | <b>Frequency</b> | <b>%</b> |
|--------------------------------------------------------------|------------------|----------|
| 16–20 years                                                  | 22               | 7.2      |
| More than 20 years                                           | 101              | 32.9     |
| <b>Firm Localization</b>                                     |                  |          |
| Central                                                      | 207              | 67.4     |
| Northern                                                     | 31               | 10.1     |
| Western                                                      | 35               | 11.4     |
| Eastern                                                      | 18               | 5.9      |
| Southern                                                     | 16               | 5.2      |
| <b>Firm Sector</b>                                           |                  |          |
| Trading sector                                               | 88               | 28.7     |
| Processing and manufacturing sector                          | 33               | 10.7     |
| Service sector (delivery, promotion/marketing, transport...) | 64               | 20.8     |
| ICT sector                                                   | 37               | 12.1     |
| Hospitality and tourism sector                               | 22               | 7.2      |
| Healthcare sector                                            | 21               | 6.8      |
| Education and training centers                               | 23               | 7.5      |
| Other                                                        | 19               | 6.2      |

Source: Authors' elaboration.

**Table 2.** Respondents' characteristics (N = 307).

| <b>Respondent's Characteristics</b> |     |      |
|-------------------------------------|-----|------|
| <b>Respondent's Qualification</b>   |     |      |
| High school diploma or less         | 32  | 10.4 |
| Intermediate diploma                | 20  | 6.5  |
| Bachelor's                          | 196 | 63.8 |
| Postgraduate                        | 59  | 19.2 |
| <b>Respondent's Position</b>        |     |      |
| Top managers                        | 138 | 45.0 |
| Middle managers                     | 101 | 32.9 |
| Board member                        | 32  | 10.4 |
| Firm's consultant                   | 17  | 5.5  |
| Other                               | 19  | 6.2  |
| <b>Respondent's Work Experience</b> |     |      |
| Less than 5 years                   | 90  | 29.3 |
| Between 5 and 10 years              | 103 | 33.6 |
| Between 10 and 15 years             | 60  | 19.5 |
| Between 15 and 20 years             | 27  | 8.8  |
| More than 20 years                  | 27  | 8.8  |

Source: Authors' elaboration.

When classifying the firm's size, we found that 58.9% had up to 249 employees and the bulk of the participants (72.9%) were represented by the age groups of 5 years and more (Table 1).

Regarding the distribution by position of the respondents (Table 2), the general manager category emerged with 45.0% of the responses. About work experience by respondents, most (53.1%) had more than 5 years.

### 3.2. Variables Measurement

In the current study, four constructs—DO, EO, SA, and CA—were operationalized and measured using various existing scales drawn from previous studies. All the constructs were measured using a five-point Likert scale with options ranging from 1, "Strongly disagree", to 5, "Strongly agree". The measurements for these constructs were performed through items adapted and modified from previous research studies. Table 2 presents the constructs, provides a sample item for each of their scales, and identifies the main references used for each of these constructs.

Digital Orientation: DO is measured in this study by 8 items adopted by [Khin and Ho \(2019\)](#) to assess the acceptance, acquisition, and use of new technologies to identify (digital) opportunities, develop new innovative products/services/processes, and gain superiority with them.

Entrepreneurial Orientation: EO is measured using the 9-item scale developed by [Covin and Slevin \(1989\)](#). EO's dimensions are innovativeness (3 items), proactiveness (3 items), and risk-taking (3 items). This scale was previously validated in the Saudi context ([Aloulou 2023, 2024](#)).

Strategic Agility: SA is measured using the 9-item scale developed by [Clauss et al. \(2021b\)](#) and validated by [Mata et al. \(2023\)](#) in the IT sector of small-medium sized Portuguese enterprises (SMEs). The scale consists of three dimensions: strategic sensitivity (3 items); leadership unity (3 items); and resource fluidity (3 items).

Competitive Advantage: CA is measured using the 8-item scale developed by [Anwar \(2018\)](#) of which there are five items for differentiation-based advantage and three items for cost-based advantage (2015).

Control variables: Firm size and firm age. These variables were used in previous studies to control their effects on firm CA ([Anwar 2018](#)).

Table 3 presents the main variables of the study, their theoretical constructs, some sample items and main references supporting these constructs.

### 3.3. Strategy of Analysis

First, we conducted an exploratory factor analysis to explore, validate, and check the measurement of different constructs. Then, the measurement model was validated through confirmatory factor analysis, and the validity, along with the reliability of every construct, was carefully checked. Further, we extended the measurement model to a structural equation model by including mediators and satisfaction as dependent variables to test the hypothesized relationships.

### 3.4. Measurement Model

The measurements were found to be reliable, with convergent and discriminant validity as shown in Table 4. With the use of a principal components analysis method on exploratory factor analysis, varimax rotation was employed. A Cronbach's alpha value of 0.897 or higher for reliability indicates that the constructs had high internal consistency, while composite reliability (CR) exceeded 0.917 for all the other variables measured in this study. Convergent validity was established through significant factor loadings (either significant or >5), CR which is greater than 0.7, and average variance extracted (AVE) that was more than 0.5. All constructs had normally distributed items which accounted for most of their respective variances ([Hair et al. 2019](#)). Exploratory factor analysis indicated that all constructs were unidimensional.

**Table 3.** Variables, constructs, sample item, and references.

| Variable             | Construct                   | Sample Item (*)                                                                                                                                                                                                                                                                                                                                       | References                                                                                  |
|----------------------|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| Independent variable | Digital Orientation         | We develop innovative products/service/process using digital technology.                                                                                                                                                                                                                                                                              | Adopted from <a href="#">Khin and Ho (2019)</a>                                             |
| Independent variable | Entrepreneurial Orientation | In dealing with its competitors, our firm is very often the first business to introduce new products/services, administrative techniques, operating technologies, etc.                                                                                                                                                                                | Adapted from <a href="#">Covin and Slevin (1989)</a> and <a href="#">Aloulou (2024)</a>     |
| Mediator             | Strategic Agility           | We are very sensitive to external changes (regarding customers, competitors, technologies etc.) and integrate these into strategic planning of our company.                                                                                                                                                                                           | Adopted from <a href="#">Clauss et al. (2021b)</a> and <a href="#">Mata et al. (2023)</a> . |
| Dependent variable   | Competitive Advantage       | We successfully differentiate ourselves from others through effective advertising and promotional campaigns                                                                                                                                                                                                                                           | Adopted from                                                                                |
| Control variables    | Firm age,<br>Firm size      | Firm age:<br>“Less than 5 years” took “1”;<br>“5–10 years” “2”;<br>“11–15 years” “3”;<br>“16–20 years” “4”;<br>“More than 20 years” “4”.<br>Firm size:<br>“Less than 50 employees” took “1”;<br>“Between 50 and 249 employees” “2”;<br>“Between 250 and 499 employees” “3”;<br>“Between 500 and 2999 employees” “4”;<br>“3000 employees and more” “5” | <a href="#">Anwar (2018)</a>                                                                |

(\*) The full list of variables’ items is available in Appendix A.

**Table 4.** EFA, % variance, KMO, Cronbach’s alpha, CR, and AVE.

| Construct                                 | # Items | Factor Loading | % Variance | KMO   | Cronbach's Alpha | CR    | AVE   |
|-------------------------------------------|---------|----------------|------------|-------|------------------|-------|-------|
| Dependent variable: Competitive Advantage |         |                |            |       |                  |       |       |
| CA                                        | CA1     | 0.792          | 58.834%    | 0.894 | 0.899            | 0.919 | 0.588 |
|                                           | CA2     | 0.792          |            |       |                  |       |       |
|                                           | CA3     | 0.827          |            |       |                  |       |       |
|                                           | CA4     | 0.808          |            |       |                  |       |       |
|                                           | CA5     | 0.771          |            |       |                  |       |       |
|                                           | CA6     | 0.764          |            |       |                  |       |       |
|                                           | CA7     | 0.700          |            |       |                  |       |       |
|                                           | CA8     | 0.668          |            |       |                  |       |       |
| Mediating variables: Strategic Agility    |         |                |            |       |                  |       |       |
| SA                                        | SA1     | 0.750          | 59.771     | 0.935 | 0.915            | 0.930 | 0.598 |
|                                           | SA2     | 0.753          |            |       |                  |       |       |
|                                           | SA3     | 0.795          |            |       |                  |       |       |
|                                           | SA4     | 0.772          |            |       |                  |       |       |
|                                           | SA5     | 0.814          |            |       |                  |       |       |
|                                           | SA6     | 0.760          |            |       |                  |       |       |
|                                           | SA7     | 0.745          |            |       |                  |       |       |
|                                           | SA8     | 0.753          |            |       |                  |       |       |
|                                           | SA9     | 0.811          |            |       |                  |       |       |

Table 4. Cont.

| Construct             | # Items | Factor Loading | % Variance | KMO   | Cronbach's Alpha | CR    | AVE   |
|-----------------------|---------|----------------|------------|-------|------------------|-------|-------|
| Independent variables |         |                |            |       |                  |       |       |
| EO                    | EO1     | 0.734          | 55.115     | 0.929 | 0.897            | 0.917 | 0.551 |
|                       | EO2     | 0.788          |            |       |                  |       |       |
|                       | EO3     | 0.764          |            |       |                  |       |       |
|                       | EO4     | 0.778          |            |       |                  |       |       |
|                       | EO5     | 0.698          |            |       |                  |       |       |
|                       | EO6     | 0.768          |            |       |                  |       |       |
|                       | EO7     | 0.700          |            |       |                  |       |       |
|                       | EO8     | 0.688          |            |       |                  |       |       |
|                       | EO9     | 0.757          |            |       |                  |       |       |
| DO                    | DO1     | 0.784          | 69.582%    | 0.932 | 0.937            | 0.948 | 0.696 |
|                       | DO2     | 0.870          |            |       |                  |       |       |
|                       | DO3     | 0.855          |            |       |                  |       |       |
|                       | DO4     | 0.848          |            |       |                  |       |       |
|                       | DO5     | 0.853          |            |       |                  |       |       |
|                       | DO6     | 0.807          |            |       |                  |       |       |
|                       | DO7     | 0.833          |            |       |                  |       |       |
|                       | DO8     | 0.821          |            |       |                  |       |       |

Note: Items with factor loadings that are below 0.40 have been excluded, and the remaining items have been sorted based on their loadings for each factor. The extraction method used was principal component analysis, and the rotation method employed was varimax with Kaiser normalization.

The correlation analysis results are shown in Table 3 and indicate significant relationships between the study constructs, which in this case involve DO, EO, SA and CA. The size of the firm positively related with its age. Every correlation between independent and dependent variables was statistically significant at 0.01 level (two-tailed).

Tables 4 and 5 confirm discriminant validity in line with [Fornell and Larcker's \(1981\)](#) recommendations. In fact, the square root of the AVE estimated for each construct surpassed the correlation between that specific construct and all other constructs in the model.

Table 5. Correlation matrix, discriminant validity.

|          | Mean  | S.D.  | EO           | DO           | SA           | CA           | FirmSize | FirmAge |
|----------|-------|-------|--------------|--------------|--------------|--------------|----------|---------|
| EO       | 3.554 | 0.857 | <i>0.767</i> |              |              |              |          |         |
| DO       | 3.781 | 0.979 | 0.686 **     | <i>0.773</i> |              |              |          |         |
| SA       | 3.684 | 0.863 | 0.714 **     | 0.707 **     | <i>0.742</i> |              |          |         |
| CA       | 3.618 | 0.845 | 0.705 **     | 0.636 **     | 0.701 **     | <i>0.834</i> |          |         |
| FirmSize | 2.510 | 1.385 | 0.203 **     | 0.206 **     | 0.180 **     | 0.109        | -        |         |
| FirmAge  | 3.040 | 1.581 | 0.096        | 0.019        | 0.089        | 0.027        | 0.398 ** | -       |

Notes: S.D. = standard deviation; \*\* correlation is significant at the 0.01 level (2-tailed); diagonal elements (*Italic*) are the square root of the AVE. Off-diagonal elements are correlations between variables.

### 3.5. Common Method Bias

To address the potential impact of common method bias as recommended by [MacKenzie and Podsakoff's \(2012\)](#), a multi-pronged approach was employed. First, exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were conducted to examine any common method deviations.

Harman's single-factor test was then carried out via EFA. The results showed the extraction of four factors, with the first factor accounting for 47.747% of the total variance—below the 50% threshold. This indicates that common method bias did not significantly influence the research model.

To further validate this, CFA was used to assess Harman's one-factor test, wherein all items were combined into a single factor. The model fit indices for this single-factor model [ $\chi^2/DF = 3.239$ ; CFI = 0.836; GFI = 0.719; RMSEA = 0.086; IFI = 0.837] were found to



be unsatisfactory and notably inferior to the original measurement model [ $\chi^2/DF = 1.762$ ; CFI = 0.947; GFI = 0.856; RMSEA = 0.050; IFI = 0.947]. These indices meet the commonly accepted cutoff for a good fit, as suggested by Hair et al. (2019). In summary, the results indicate that the studied model is well fitted and ready for further analysis, with no significant influence from common method bias.

#### 4. Results

##### 4.1. Structural Model

Following the successful establishment of the measurement model, an SEM analysis was run to evaluate the research model (Figure 1). The initial analysis focused on testing the direct relationships between the investigated variables. Subsequently, the second analysis (mediation) examined indirect relationships.

The estimating phase of the structural model was completed using SPSS Amos. The structural model between the hypothetical model and the sample data produces an acceptable fit ( $\chi^2/DF = 1.762$ ; RMR = 0.074; GFI = 0.851; CFI = 0.943; RMSEA = 0.049; IFI = 0.944) (Hair et al. 2019). The results of the path analysis for the model are shown in Table 6.

**Table 6.** Path relationships analysis.

| Relationship |      |          | Estimate | S_Estimate | S.E.  | C.R.   | <i>p</i> | Hypothesis       |
|--------------|------|----------|----------|------------|-------|--------|----------|------------------|
| CA           | <--- | SA       | 0.299    | 0.411 ***  | 0.071 | 4.164  | ***      | H1 supported     |
| CA           | <--- | EO       | 0.324    | 0.418 ***  | 0.092 | 3.523  | ***      | H2 supported     |
| CA           | <--- | DO       | 0.075    | 0.102      | 0.061 | 1.150  | 0.250    | H3 not supported |
| SA           | <--- | EO       | 0.686    | 0.637 ***  | 0.110 | 6.210  | ***      | H4 supported     |
| SA           | <--- | DO       | 0.259    | 0.272 **   | 0.088 | 2.948  | 0.003    | H5 supported     |
| CA           | <--- | FirmSize | −0.009   | −0.019     | 0.017 | −0.539 | 0.590    | -                |
| CA           | <--- | FirmAge  | −0.013   | −0.030     | 0.015 | −0.844 | 0.399    | -                |

Notes: SE Standard Errors; \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

##### 4.2. Direct Relationship Analysis

The SEM analysis examined the relationships between EO, DO, SA, and CA. The path analysis results indicated significant relationships between several constructs.

As shown in Table 4, path relationships analysis revealed that the influence of SA on CA was significant ( $\beta = 0.411$ , SE = 0.071, CR = 4.164,  $p < 0.001$ ), supporting H1. EO also had a significant positive effect on CA ( $\beta = 0.418$ , SE = 0.092, CR = 3.523,  $p < 0.001$ ), supporting H2. However, DO did not significantly impact CA ( $\beta = 0.102$ , SE = 0.061, CR = 1.150,  $p = 0.250$ ), leading to the rejection of H3. The effects of EO and DO on SA were both significant (EO:  $\beta = 0.637$ , SE = 0.110, CR = 6.210,  $p < 0.001$ ; DO:  $\beta = 0.272$ , SE = 0.088, CR = 2.948,  $p = 0.003$ ), supporting H4 and H5, respectively. Neither firm size nor firm age had a significant impact on CA.

##### 4.3. Mediation Analysis

Following the procedure from Zhao et al. (2010) and Collier (2020), a mediation analysis requires all variables involved to be correlated within the entire mediation process. We used bootstrapping to test the indirect effects of EO on CA and DO on CA. The results of these mediation analyses are presented in Table 7.

**Table 7.** Results of the mediation analysis.

| Hypothesis | From Independent Variables | Mediation | To Dependent Variable | Direct Effect | Indirect Effect | Total Effect | Mediation Test    |
|------------|----------------------------|-----------|-----------------------|---------------|-----------------|--------------|-------------------|
| H6         | EO                         | SA        | CA                    | 0.418 *       | 0.262 *         | 0.680 *      | Partial mediation |
| H7         | DO                         | SA        | CA                    | 0.102         | 0.112 *         | 0.214        | Full mediation    |

Notes: \*  $p < 0.05$ . Bootstrapping was performed for mediation analysis. The number of bootstrap samples was 2000, with 95 bias-corrected confidence intervals.

Further mediation analysis shown in Table 5 revealed the mediating role of SA in the relationship between EO and CA. This finding showed that SA partially mediated this relationship (Direct effect = 0.418, Indirect effect = 0.262, Total effect = 0.680,  $p < 0.05$ ), supporting H6. Conversely, the relationship between DO and CA was fully mediated by SA (Direct effect = 0.102, Indirect effect = 0.112, Total effect = 0.214,  $p > 0.05$ ), supporting H7.

These findings highlight that SA is a crucial mediator in translating both EO and DO into CAs, with its role varying between partial and full mediation depending on the primary orientation. These results will be discussed in the following section, highlighting the importance of SA in the dynamic interplay of organizational orientations towards enhancing competitive positioning for firms.

## 5. Discussion and Implications

The findings of the study revealed that SA and CA are positively related. This confirms studies on the topic performed earlier, such as by [Al-Romeedy \(2019\)](#), [Clauss et al. \(2021b\)](#), [Khristianto et al. \(2021\)](#), [Sampath and Krishnamoorthy \(2017\)](#), [Amini and Rahmani \(2023\)](#), [Battour et al. \(2021\)](#), and [Oyedijo \(2012\)](#).

Specifically, the findings provide valuable insights into how EO, SA, and CA interact specifically within the Saudi context as it demonstrates that EO plays a crucial role in enhancing both SA and competitiveness, with SA partially mediating the EO-CA relationship. In the dynamic Saudi business environment where companies are constantly adapting to changes driven by Vision 2030 programs and initiatives along with the intensified global competition, these findings show the importance of fostering an entrepreneurial mindset within Saudi firms, as firms with stronger EO are better positioned to remain agile and adaptable, leveraging opportunities and addressing challenges promptly. This finding is consistent with the RBV, where EO could be considered a valuable strategic resource that is crucial for developing organizational capabilities like agility. The results are consistent and contribute to the existing literature ([Al-Darras and Tanova 2022](#); [Khaled and Abu-Tabl 2023](#); [Puspita and Widjaja 2023](#); [Rofiaty et al. 2022](#); [Khristianto et al. 2021](#)) by reinforcing the idea that EO is an essential driver for enhancing the ability of firms to respond to environmental changes effectively. The alignment between EO and SA is becoming increasingly important as Saudi firms strive to diversify their operations and compete effectively in an evolving and knowledge-driven economy.

The study also confirms the positive relationship between EO and SA, this result is consistent with previous studies ([Kiyabo and Isaga 2020](#); [Suharto and Subagja 2018](#); [Tajeddini et al. 2023](#); [Widyanti and Mahfudz 2020](#)). Saudi firms that exhibit a higher degree of EO are better positioned to differentiate themselves and outperform competitors. Here also the RBV helps in explaining this finding by suggesting that EO, as an intangible, valuable, and rare resource, allows firms to develop unique competencies that translate into sustained CA. Additionally, the DCV, which is an extension of the RBV, further suggests that EO fosters not just SA but also enables firms to continuously renew and adapt in volatile and changing markets. In the Saudi context, firms are navigating a rapidly evolving economy and the ability to remain innovative and proactive allows them to stay ahead of competitors by consistently seizing new opportunities. By fostering a strong EO, Saudi firms can enhance their dynamic capabilities such as SA, ensuring their strategic positioning is adaptable to both local and global shifts.

Regarding the relationship between DO and CA, the results show that no relationship exists between the two. However, there is a significant relationship between DO and SA. This finding is not consistent with previous studies (Barba-Sánchez et al. 2024; Shehadeh et al. 2023; Zhou et al. 2024; Rupeika-Apoga et al. 2022; Khin and Ho 2019), especially those focusing on the effects of DO on CA (Kindermann et al. 2021; Wang et al. 2023; Ranjan 2024). Moreover, the results show that DO has a direct and positive relationship with a firm's SA. This finding is consistent with previous studies (Bounfour et al. 2023; Sajdak et al. 2022; Sambamurthy et al. 2003).

The findings of this study provide significant insights into the relationship between DO, SA, and CA within the context of Saudi firms. By examining the mediating role of SA, the current study demonstrates that DO plays a crucial role in enhancing only SA and not CA, with SA fully mediating the DO-CA relationship.

A key contribution of this study is the confirmation of the very few previous research findings (Rofiaty et al. 2022; Khaled and Abu-Tabl 2023) that SA partially mediates the relationship between EO and SA and fully mediates the relationship between DO and CA. These findings suggest that while EO has a direct impact on CA, its effect is significantly amplified through the development of SA. Companies that prioritize innovation and take a proactive approach are better positioned to develop the agility needed to adapt quickly to a changing market. This is especially crucial for businesses in Saudi Arabia, where economic diversification efforts and policy changes are rapidly reshaping the competitive landscape. This study's findings also align with the RBV and its extensions, firms must develop unique capabilities, such as agility, to fully capitalize on their EO. In this context, SA provides Saudi firms with the needed flexibility to respond to market changes and enhance their competitive position. By aligning EO with SA, firms can better deal with uncertainties, seizing opportunities while minimizing risks.

The study's findings also align with the IPV, firms must develop unique capabilities, such as agility, to fully capitalize on their DO. The effect of DO on CA is indirect through SA. For instance, digital technologies are deemed to be accepted and used as means to enhance the SA of Saudi firms for the purpose of making strategic decisions based on gathered information and data regarding the market, partners and competitors through such technologies. In this context, SA provides Saudi firms with the needed flexibility to respond to market changes and enhance their competitive position in the market.

For Saudi managers and business leaders, the implications of these findings are significant. Firms operating in uncertain and competitive markets must not only promote entrepreneurial behaviors like innovativeness, risk-taking, and proactiveness but also encourage the use of digital technologies to look for new (digital) opportunities to seize, and products, services and processes to innovate. With these two strategic orientations, Saudi managers ensure that their firms will be ready to succeed the digital transformation and be able to behave entrepreneurially in a competitive market. This dual focus is essential for enhancing their SA as an organizational capability and sustaining their CA. Specifically, Saudi firms should prioritize developing capabilities such as strategic sensitivity, cross-functional collaboration to make fast strategic choices, and resource reallocation flexibility and fluidity, the critical elements of SA.

To foster these capabilities, managers should invest in building a responsive organizational culture that values change and promotes quick decision-making. Saudi businesses should also focus on continuous learning and adaptability to remain competitive, aligning these efforts with national goals of the Saudi Vision 2030 to make a smooth transition toward a more diversified and innovation-driven economy.

To sum up, the findings of our study demonstrate that SA is an essential mediator in the EO-CA relationship and DO-CA relationship, highlighting the need for firms to remain agile to fully leverage their strategic orientations (DO, EO) and improve their SA. Both orientations are crucial to enhancing the SA of Saudi firms, but in different ways. In contrast to EO, DO can only enhance CA when efficiently employed to make firms more

agile. Firms with high EO, however, can improve their SA in a way and enhance their SA in another way.

## 6. Conclusions, Limitations, and Future Research Directions

This research is specifically focused on Saudi enterprises and uncovers their complex interconnections among EO, DO, SA, and CA. We investigate whether SA functions as the mediator connection in these connections. The research has employed the IPV, RBV, and DCV theories to examine how organizations in Saudi Arabia could explore and exploit opportunities and respond strategically to their dynamic business environments by leveraging their strategic orientations, mainly, DO and EO, and transform them into enhanced CA.

One of the most significant conclusions of this research is related to the mediating role of SA in the strategic orientations (DO and EO) and CA relationships. The statistical analysis of the empirical data in this research confirms that these orientations alone do not automatically translate into CA. In fact, SA substantially impacts the CA of Saudi enterprises and fully mediates the link between DO and CA. While it partially mediates the link between EO and CA, this underscores the importance of SA in acquiring the ability to quickly adapt and respond to changing circumstances to effectively use digital resources for an enhanced CA in diverse Saudi Arabian firms. It acts as a dynamic capability that bridges the gap between strategic orientations and CA.

The study also provided insights into the managerial staff to improve their businesses' competitiveness in the digital era. The results indicate that companies should prioritize SA and demonstrate the crucial need for them to focus on entrepreneurial and digital competencies.

Nevertheless, this study has some constraints and opportunities for further exploration that must be acknowledged. Firstly, considering additional digital capabilities inside the research framework may enhance digital competencies. In alignment with the perspective of [Davenport and Bean \(2018\)](#), [Pappas et al. \(2018\)](#) found that a data-driven culture is crucial for firms to use digital technologies and generate competitive value.

Furthermore, it is essential to consider other elements that can be associated with SA to gain CA for a more comprehensive understanding. Following [Ragazou et al. \(2022\)](#), this future research direction could be explored involving the adoption of new business model innovations that combine digitalization, agility, and (open) innovation by Saudi firms to quickly adapt to the new business environment of Saudi Arabia.

Since the present study is quantitative in nature and relies on survey data, further studies may focus on qualitative approaches to delve more deeply and complement the factors that determine the SA and CA.

Finally, for future research comparing two or more sectors or regions, it is recommended to conduct a multi-group analysis to investigate potential differences in the main study variables. This would provide valuable insights into the context-specific effects of the main variables and enhance the generalizability of the findings.

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### Abbreviations

|     |                             |
|-----|-----------------------------|
| RBV | Resource Based View         |
| IPV | Information Processing View |
| DCV | Dynamic Capabilities View   |
| DO  | Digital orientation         |
| EO  | Entrepreneurial Orientation |
| SA  | Strategic Agility           |
| CA  | Competitive Advantage       |
| AVE | Average Variance Extracted  |

### Appendix A. Items of the Main Variables

| Entrepreneurial Orientation                                                                                                                                                           | Item's Code |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| In dealing with competitors, our firm typically initiates actions, to which competitors then respond.                                                                                 | EO1         |
| In dealing with competitors, our firm is very often the first business to introduce new products/services, administrative techniques, operating technologies, etc.                    | EO2         |
| In general, the top managers of our firm have a strong tendency to be ahead of others in introducing novel ideas or products.                                                         | EO3         |
| Our firm has very many new lines of products/services that have been marketed in the past 3 years.                                                                                    | EO4         |
| In general, the top managers of our firm favor a strong emphasis on R&D, technological leadership, and innovations.                                                                   | EO5         |
| Changes in product or service lines that our firm has marketed in the past 3 years have usually been quite dramatic.                                                                  | EO6         |
| In general, the top managers of our firm have a strong proclivity for high-risk projects (with chances of very high returns).                                                         | EO7         |
| When confronted with decisions involving uncertainty, our firm typically adopts a bold posture in order to maximize the probability of exploiting opportunities.                      | EO8         |
| In general, the top managers of our firm believe that, owing to the nature of the operational environment, bold and wide-ranging acts are necessary to achieve the firm's objectives. | EO9         |
| Strategic Agility                                                                                                                                                                     | Items' Code |
| Strategic Sensitivity                                                                                                                                                                 |             |
| We are very sensitive for external changes (regarding customers, competitors, technologies etc.) and integrate these into strategic planning of our company.                          | SA1         |
| We utilize different mechanisms to become aware of strategic developments early.                                                                                                      | SA2         |
| Requirements for strategic adaptations are communicated fast and comprehensively through the organization.                                                                            | SA3         |
| Leadership Unity                                                                                                                                                                      |             |

|                                                                                                                           |                    |
|---------------------------------------------------------------------------------------------------------------------------|--------------------|
| Our top management is able to make bold and fast strategic decisions.                                                     | SA4                |
| Our management collaborates for strategic decisions.                                                                      | SA5                |
| Strategic questions are collectively solved by our management without being bogged down in top-level ‘win-lose’ politics. | SA6                |
| Resource Fluidity                                                                                                         |                    |
| We are able to reallocate and utilize capital resources fluidly.                                                          | SA7                |
| Our people and their competencies are highly mobile within our organization.                                              | SA8                |
| Our organizational structure allows for flexible redeployment of our resources.                                           | SA9                |
|                                                                                                                           |                    |
| <b>Digital Orientation</b>                                                                                                | <b>Item’s Code</b> |
| New digital technology is readily accepted in our organization.                                                           | DO1                |
| We always look out for opportunities to use digital technology in our innovation.                                         | DO2                |
| We acquire important digital technologies.                                                                                | DO3                |
| We identify new digital opportunities.                                                                                    | DO4                |
| We respond to digital transformation.                                                                                     | DO5                |
| We master state-of-the-art digital technologies.                                                                          | DO6                |
| We develop innovative products/services/processes using digital technology.                                               | DO7                |
| Our products/services/solutions have superior digital technology.                                                         | DO8                |
|                                                                                                                           |                    |
| <b>Competitive Advantage</b>                                                                                              | <b>Item’s Code</b> |
| Our new products and service development offer superior benefits to customers.                                            | CA1                |
| We make great effort in building a strong brand name.                                                                     | CA2                |
| We successfully differentiate ourselves from others through effective advertising and promotional campaigns.              | CA3                |
| We successfully differentiate ourselves from others through effective design (ex. brand and store identity).              | CA4                |
| We constantly offer overall differential advantage.                                                                       | CA5                |
| Internal operation system has decreased the cost of our products.                                                         | CA6                |
| Production (manufacturing a product/providing a service) costs are lower than that of our competitors.                    | CA7                |
| We constantly offer low opening costs than our competitors.                                                               | CA8                |

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