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Enacting resilience through entrepreneurial ambidexterity in technologically turbulent emerging economies

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Abstract

This study examines how firms operating in emerging-economy contexts build organizational resilience, emphasizing the entrepreneurial mechanisms through which strategic resources are transformed into adaptive capacity. Drawing on perspectives from international entrepreneurship and dynamic capabilities, the study argues that entrepreneurial ambidexterity is a core factor enabling firms to navigate uncertainty and technological turbulence. Using survey data from 588 firms across multiple industries in Middle Eastern countries, the study employs structural equation modeling to test mediation and moderation effects. The findings show that organizational capabilities and resource alignment enhance organizational resilience primarily through entrepreneurial ambidexterity, which facilitates opportunity exploration and exploitation under volatile conditions. Technological turbulence further conditions these relationships, shaping the effectiveness of entrepreneurial responses to environmental change. By theorizing resilience as an entrepreneurial outcome rather than a static organizational attribute, this study advances international entrepreneurship research by explaining how firms in emerging markets enact resilience through ambidextrous entrepreneurial action in turbulent international environments. The findings extend dynamic capabilities theory by demonstrating how international and technological turbulence jointly influence entrepreneurial adaptation beyond developed-economy settings.

Keywords Organizational capabilities · Resource alignment · Strategic frameworks · Entrepreneurial ambidexterity · Technological turbulence · Organizational resilience

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Introduction

Given the ever-evolving and interconnected nature of the global environment, an organization's ability to adapt swiftly has emerged as a pivotal determinant of its continued viability and success (Duchek, 2020). Organizations often face severe disruptions due to technological advancements, supply chain instability, global conflicts, and environmental problems. These challenges necessitate more than standard strategies (Grego et al., 2024). Since it is difficult for firms to cope with a rapidly changing environment, factors such as building capabilities, efficient resource use, and well-considered strategies become crucial for enhancing organizational stability (Bocken & Geradts, 2020; Duchek, 2020). These provide a means of being aware of threats, changes in organizational structure, and new opportunities. It is also argued that organizations become more resilient when they leverage their existing skills while simultaneously exploring opportunities to acquire new ones (Grego et al., 2024).

This argument is particularly salient in the Middle East, where the pressure on strategic management is high due to changing social, economic, and technological conditions. For many years, oil and gas have been the mainstay of the Middle Eastern economy, but recent policies call for a shift toward knowledge- and innovation-based economies (Fawcett, 2021; Rahman & Al-Azm, 2023). For instance, the United Arab Emirates (UAE), Saudi Arabia, and Qatar are implementing ambitious programs to transform their economies, embrace technology across sectors, and foster entrepreneurship. However, regional firms face several major issues, including infrastructure limitations, political challenges, and the risk of being caught off-guard by rapidly evolving technological innovations (Edler et al., 2023).

Today's competitive environment is exacerbated by the presence of global and local companies across a wide range of fields. To survive, organizational resilience is critical, as firms focus on new ideas to strengthen their positions and manage long-term challenges. However, most resilience research is developed from Western perspectives, as these regions have solid institutional arrangements and mature market systems. As a result, major theories, such as Dynamic Capabilities Theory (DCT), have rarely been applied to emerging markets. Although DCT provides a strong perspective on how organizations reallocate their internal talents in response to change (Teece et al., 1997), its application in uncertain, limited-resource contexts remains underexplored in the extant literature.

To address this gap, this study examines how organizational capabilities, resource integration, and appropriate frameworks help Middle Eastern firms build resilience. This also investigates how entrepreneurial ambidexterity links these elements and how technological turbulence affects their interactions, determining firms' ability to adapt. This is significant, given that the context under investigation is the embrace of technological innovation as part of governments' efforts to pivot away from purely oil- and gas-based economies. Theoretically, the study relies on DCT to conceptualize resilience as achieved through appropriate capabilities and orchestrating strategies, rather than as a single characteristic. In this study, resilience is understood to arise from the interplay between internal resources and external reactivity, particularly in dynamic and uncertain environments.

Despite the growing body of research on organizational resilience, existing studies largely treat resilience as a direct outcome of capabilities, resources, or strategic alignment, without sufficiently explaining how firms actively transform these elements into adaptive responses under persistent uncertainty. This limitation is particularly evident in emerging economies, where institutional fragility, resource constraints, and technological volatility challenge the assumptions underpinning much of the resilience literature developed in Western contexts. While dynamic capabilities research explains firms' ability to reconfigure resources, it remains unclear why firms with similar capabilities often display markedly different resilience outcomes in turbulent environments. This study argues that the missing explanatory link lies in entrepreneurial ambidexterity, the firm's capacity to simultaneously exploit existing competencies while exploring new opportunities. Rather than resilience being an automatic consequence of possessing capabilities, this research conceptualizes resilience as an entrepreneurial outcome, enacted through ambidextrous behavior. By foregrounding ambidexterity as the central mechanism, the study addresses a key theoretical gap in explaining the formation of resilience in emerging, technologically turbulent economies.

This research makes three contributions. First, it enhances DCT by incorporating entrepreneurial ambidexterity amid environmental turbulence;it helps explain the link between capabilities and resilience in non-Western contexts with high unpredictability. Second, it contributes to current research by examining organizations in the Middle East, a region that is underrepresented, despite significant economic and technological change. Third, the research helps managers and policymakers identify how to create resilient systems for their organizations; it shows that companies need flexible business strategies, flexible resource allocation, and innovative ideas to maintain stable performance amid disruption. Because of these findings, organizations and government policies that focus on innovation, entrepreneurship, and sustained growth in emerging economies can benefit considerably.

Theoretical framework

DCT is employed in this study to explain how firms adapt their actions and resources in response to rapid environmental and technological change. According to Teece et al. (1997), dynamic capabilities reflect a firm's ability to integrate, build, and reconfigure internal and external competencies to address shifting environments. This perspective is particularly relevant in contexts characterized by uncertainty and technological turbulence, where static resources or routines are insufficient for sustained performance (Chowdhury & Quaddus, 2017). Within this framework, organizational capabilities represent the firm's capacity to sense environmental changes by continuously learning, integrating knowledge, and coordinating activities across functions. These capabilities enable firms to identify emerging opportunities and threats and to respond proactively rather than reactively (Lengnick-Hall et al., 2011; Teece et al., 2016). In technologically volatile environments, such adaptive capabilities enhance firms' ability to absorb shocks and adjust operating routines, thereby supporting resilience (Haarhaus & Liening, 2020).

Resource alignment corresponds to the seizing dimension of dynamic capabilities, as it reflects a firm's ability to mobilize and redeploy financial, human, and technological resources in line with evolving strategic priorities. Unlike static resource allocation, dynamic alignment allows firms to respond swiftly to disruptions and shifting demands (Canhoto et al., 2021). Empirical evidence suggests that firms that continuously reassess and reconfigure their resources are better positioned to avoid obsolescence and mitigate vulnerability during periods of technological disruption (Majhi et al., 2022; Pelletier & Raymond, 2024).

Strategic frameworks capture the reconfiguring dimension of DCT by providing adaptive structures, decision rules, and planning processes that enable firms to realign goals, routines, and strategies in response to environmental shocks. Rather than relying on rigid, long-term plans, dynamic strategic frameworks emphasize flexibility, experimentation, and learning, allowing organizations to adjust course as conditions evolve (Chowdhury & Quaddus, 2017). Such frameworks reduce ambiguity during crises and support coordinated organizational responses to sudden change.

Although organizational capabilities, resource alignment, and strategic frameworks are grounded in DCT, they represent analytically distinct layers of capability deployment rather than alternative labels for adaptation or reconfiguration. Organizational capabilities capture the firm's sensing capacity, reflecting learning, knowledge integration, and environmental interpretation processes that allow firms to recognize emerging opportunities and threats (Teece et al., 1997; Wang & Ahmed, 2007). Resource alignment corresponds to the seizing dimension of dynamic capabilities, emphasizing the mobilization, prioritization, and redeployment of financial, human, and technological resources in response to sensed opportunities (Canhoto et al., 2021; Majhi et al., 2022).

Hypotheses development

Organizational capabilities serve as the foundation for a company to acquire knowledge, adapt to changing circumstances, and effectively manage dynamic environments. Organizational learning theory posits that these capabilities are developed by integrating knowledge from employees' daily activities and interactions with the company's routines, systems, and decision-making processes (Chiva et al., 2014; García-Morales et al., 2012). The acquisition of such competencies enables companies to adapt swiftly and anticipate challenges in unpredictable or unstable conditions. Learning within an organization amid chaotic environments enhances its flexibility and ability to overcome obstacles. The presence of robust learning systems within a firm facilitates the organization's ability to adapt as change unfolds, driven by ongoing knowledge updates (Shin et al., 2017). Consequently, resilience emerges from the company's proactive initiatives to acquire knowledge, perceive opportunities, and innovate, supported by well-developed competencies. For instance, Kantur and Say (2015) identify resilience as a characteristic that typically emerges in organizations that prioritize internal learning and foster adaptable ideas. Robust organizations demonstrate a propensity to adopt novel and alternative approaches

during periods of uncertainty, enabling them to manage diverse changes effectively. Liu et al. (2024) underscore the significance of regular changes, assessments, and adjustments in defining the dynamic capabilities employed within organizations (Shatila et al., 2025a, b). Additionally, Nair et al. (2024) and Do et al., (2022) emphasize that an organization's strategy must be aligned with its objectives to maintain robust capabilities and performance. Consequently, when these organizational capabilities are implemented effectively, they empower the company to achieve resilience. We posit the following:

H1a: There is a positive relationship between organizational capabilities and organizational resilience.

To optimize resource allocation, a company strategically deploys its financial, human, and technical resources to support its overarching strategy. According to the DCT, companies continuously adjust their resources to respond swiftly and effectively to evolving circumstances (Canhoto et al., 2021). This adaptability is paramount in a dynamic business environment characterized by rapid technological advancements. Proper resource placement mitigates challenges and enables swift recovery from unforeseen operational disruptions. Majhi et al. (2022) underscore the significance of internal talent adjustment, emphasizing that it should not be limited to periodic reviews but should be an ongoing process. Their study revealed that effective resource matching enhances an organization's resilience to disruption, as firms capable of this strategy demonstrate greater ease in managing and overcoming challenges. Furthermore, in rapidly evolving, turbulent technological environments, where uncertainties and change are commonplace, the significance of resource alignment becomes even more pronounced. Outdated resource plans become ineffective in such dynamic settings. Consequently, firms must continuously evaluate their current resources and usage to maintain their agility (Pelletier & Raymond, 2024; Do et al., 2018). This aligns with Sarwar et al. (2024), who assert that strategic realignment enhances an organization's resilience by ensuring the timely provision of essential resources to support ongoing operations and foster innovative ideas. These attributes make resource alignment a pivotal antecedent to resilience. We posit the following:

H1b: There is a positive relationship between resource alignment and organizational resilience.

A strategic framework ensures companies have clear plans, methods, and directions when deciding what to do and how to use their resources. In DCT, such frameworks are designed to adapt to ongoing environmental changes. Frameworks made agile help an organization act fast, adjust its goals in real time, and work simultaneously amid uncertainty. According to Bustinza et al. (2019), a strong strategy is necessary to help businesses using new technologies transform their strengths into endurance. They claim that addressing challenges requires a strong plan, not merely a strong foundation. Likewise, Pratono (2022) shows that firms that employ adaptive strategic management are better prepared for evolving technological trends because they respond more effectively to environmental changes. During a crisis, a framework

helps organize and make sense of what is occurring. Decision protocols and reconfiguration pathways reduce ambiguity and enable organizational members to respond quickly and collaboratively (Riaz et al., 2023). They enable organizations to adjust as necessary through flexible plans, whereas older plans or fixed goal hierarchies may constrain change (Shatila et al., 2024; Kitapci and Çelik, 2014). By incorporating learning loops, flexibility, and scenario planning, resilience can become an integral aspect of an institution's management if guided by a well-defined strategy. Consequently, strategic frameworks are essential for translating a company's environmental perceptions into sustained success and effective transformations. We thus propose the following:

H1c: There is a positive relationship between strategic frameworks and organizational resilience.

Entrepreneurial ambidexterity as a mediating mechanism

While dynamic capabilities enable firms to adapt, they do not directly translate into organizational resilience. Organizational capabilities, resource alignment, and strategic frameworks represent enabling conditions, but resilience emerges only when these conditions are activated through purposeful entrepreneurial action. Entrepreneurial ambidexterity is conceptualized as the behavioral transmission mechanism through which dynamic capabilities are converted into resilient outcomes. Entrepreneurial ambidexterity refers to the firm's ability to exploit existing competencies while simultaneously exploring new opportunities under uncertainty (Kafetzopoulos, 2021; Wang et al., 2019). Unlike broader organizational ambidexterity, entrepreneurial ambidexterity emphasizes opportunity recognition, experimentation, and innovation amid technological and institutional volatility, consistent with international entrepreneurship theory (Guo et al., 2022). Without ambidextrous action, organizational capabilities may remain latent, resource alignment may become rigid, and strategic frameworks may turn procedural rather than adaptive. Firms may possess strong learning systems or flexible strategies, yet fail to translate them into resilience if they cannot balance short-term efficiency with long-term opportunity creation (Iborra et al., 2020). Entrepreneurial ambidexterity therefore explains why firms with similar capability endowments often display markedly different resilience outcomes in turbulent environments. Guo et al. (2022) assert that entrepreneurial hubris can hinder firms from leveraging dynamic capabilities, underscoring the importance of strategic awareness for achieving simultaneous success. Process studies reveal that entrepreneurs can enhance business efficiency and develop new inventions by leveraging dynamic capabilities within their business strategy (Wang et al., 2024; Nigam & Shatila., 2024). Lacking these values makes it difficult to work toward goals simultaneously in the short term and the distant future. We thus propose the following:

H2a: There is a positive relationship between organizational capabilities and entrepreneurial ambidexterity.

Capabilities provide teams with flexibility in their actions, and having resources in place facilitates establishing a stable framework for achieving ambidextrous objectives. This framework delineates a company's proficiency in effectively leveraging human, technological, and financial capabilities to achieve its objectives. Ambidextrous organizations require distinct resource management strategies: exploitation requires cost-saving measures, whereas exploration entails allocating additional budgets, experimenting with ideas, and accepting risk. Tai et al. (2019) assert that senior managers within such organizations allocate resources among diverse functional groups, thereby enabling the organization to manage its goals of adaptability and stability simultaneously. Similar to Wang et al. (2024) posit that human resource initiatives, such as promoting workforce flexibility, decentralizing control, and providing ongoing employee training, contribute to ambidexterity by facilitating the movement of individuals and knowledge across departments within the organization. In other words, the skillful alignment of resources leads to better innovation management (Abazeed and Ahmad 2020; Shatila et al., 2025a, b). According to Mostaghel et al. (2022), comprehensive resources on the structure help companies respond to environmental signals, thereby overcoming inertia. It is thus necessary to integrate mechanisms that facilitate resource exchange between exploitation and exploration activities (Jansen et al., 2012). However, it has been demonstrated that firms operating in older industrial areas frequently encounter difficulties updating their resources due to preexisting regulations, which limit their adaptability (Tai et al., 2019). Consequently, resource alignment emerges as a crucial tool and a unique capability that facilitates a company's adjustment to its structural and strategic transformations. We thus propose the following:

H2b: There is a positive relationship between resource alignment and entrepreneurial ambidexterity.

Recent research shows that relying on strategic foresight benefits organizational ambidexterity. For instance, Van Der Duin et al. (2024) describe a framework that outlines how corporate foresight fosters better ambidexterity by anticipating emerging challenges, aligning long-term and short-term priorities, and encouraging cross-unit collaboration. Elsewhere, strategic planning cycles have been shown to support the promotion of innovation and the adaptation of strategy as part of entrepreneurial ambidexterity (Seo et al., 2025). Additionally, designs incorporating feedback loops and targets set at specific achievement milestones empower companies to adapt their plans in response to evolving circumstances. This dynamic orientation in planning and governance facilitates the transformation of overarching strategies into proactive and effective operational frameworks. However, numerous firms continue to employ conventional planning methodologies, thereby forfeiting the flexibility to engage in strategic reflection (Stjerne et al., 2024; Kim, 2019). Given the inherent volatility of contemporary circumstances, strategic frameworks should not only provide guidance but also demonstrate adaptability. We thus posit the following:

H2c: There is a positive relationship between strategic frameworks and entrepreneurial ambidexterity.

A resilient organization can withstand shocks, swiftly mobilize in response to disruptions, and sustain operations despite partial continuity (Steen et al., 2024). While reactive recovery was once the primary focus, contemporary literature emphasizes that resilience empowers companies to proactively prepare for disruptions, enhance their capabilities, and maintain their competitiveness in the face of uncertainty (Tahmasebi, 2024). A crucial characteristic that facilitates firms' proactive resilience is entrepreneurial ambidexterity, which enables them to identify novel opportunities and leverage their existing capabilities (Seo & Lee, 2019; Vial, 2024). By enabling both left- and right-handed actions, these organizations optimize operational efficiency and foster a culture of creative thinking. This adaptability enables them to swiftly modify their structures, processes, and approaches in response to pivotal factors such as technological advancements, unforeseen calamities, or global events (Buliga et al., 2016; Mathivathanan et al., 2017). Resilience is boosted by organizational ambidexterity, which involves adapting while maintaining stability. Businesses facing these challenges can adjust their resources, introduce innovations, and change their models to keep up with evolving market conditions (Al-Atwi et al., 2021; Bustinza et al., 2019; Lee et al., 2015). When a firm focuses on exploitation, it can keep costs low and remain efficient, while exploration helps it capitalize on new opportunities and mitigate future challenges. So, these firms can quickly adjust, allowing them to handle sudden and long-term changes. We propose the following:

H3: There is a positive relationship between entrepreneurial ambidexterity and organizational resilience.

Technological turbulence as a moderator

He and Wu (2024) argue that the positive effects of ambidexterity within an organization may begin to diminish. As companies face increased pressure to innovate, they may compromise short-term continuity by neglecting the effective use of available resources. Such a poor balance may result in "innovation-resource dislocation," where thinking too much about new ideas causes the organization to weaken and grow slowly. Folger et al. (2022) add that, in these cases, firms spread their human, financial, and mental resources unevenly, prioritizing new projects and leaving older aspects of the business underprepared. Yet, the literature is clear that ambidextrous organizations can manage these trade-offs by encouraging teamwork rather than conflict between exploring and exploiting opportunities. Strong resilience in challenging situations stems from integrating logic and emotion rather than opposing them (Bagheri et al., 2024).

Resilient firms frequently conduct self-assessments of their practices, technology, and skill sets by actively seeking feedback from their environment. This continuous learning enables them to introduce novel technologies while simultaneously reinforcing their existing ones. This strategic approach contributes to their stability, even amidst external uncertainties. With elastic ambidexterity, firms can flexibly adjust their focus between innovation and execution and do well when technology is constantly changing (Raffaelli et al., 2019). Essentially, the effects of technological

turbulence extend beyond ambidexterity and affect the core building blocks of an organization's resilience, including capabilities, how resources are used, and how strategies are implemented. For example, if companies' abilities, such as integrating knowledge, responding to processes, and absorbing new information, are not updated regularly in response to new technology, they may become ineffective (Shatila et al., 2026). Failure to periodically train workers and to rearrange systems can allow these advantages to become weaknesses. Pilav-Velic et al. (2024) agree, showing that organizations that do not use embedded learning tools struggle to be resilient in challenging situations.

Additionally, managing resources in unpredictable environments poses greater challenges due to rapid technological advancements, which typically signal the end of meticulously planned cycles. As organizational structures struggle to keep pace with emerging digital tools, the ability to use and relocate resources judiciously has become paramount for survival. YahiaMarzouk and Jin (2023) posit that resource alignment facilitates company resilience only when it enables the detection and realignment of resources as necessary. Durst et al. (2024) and Xie et al. (2022) unequivocally demonstrate that resilience originates from optimizing a firm's utilization of internal and external resources rather than adhering to fixed processes.

Ultimately, leaders must assess the adaptability of their strategic frameworks to emerging technologies. Strict, top-down planning techniques, lacking flexibility, are no longer effective in unpredictable environments. He and Wu (2024) underscore that firms relying on long-term, rigid planning are often ill-prepared for unforeseen changes and their management. Conversely, organizations that employ foresight, continuously update their plans in response to feedback, and conduct regular re-evaluations are better equipped to withstand significant disruptions. According to Lee et al. (2015), such adaptive strategic architectures enable firms to adjust their course and regularly employ various resilience approaches. The following hypotheses are developed:

H4: Technological turbulence moderates the relationship between (a) organizational capabilities, (b) resource alignment, and (c) strategic framework and organizational resilience.
H5: Technological turbulence moderates the relationship between entrepreneurial ambidexterity and organizational resilience.

Based on the above literature, the model in Fig. 1 is developed:

Methodology

This study investigates the relationships between OC, RA, and SF in building OR while considering the mediating role of EA and the moderating influence of TT. This study employs a quantitative research method to assess these linkages and the need for a comprehensive understanding of organizational behavior in dynamic and uncertain environments. A survey was developed and distributed via Google Forms to collect primary data. This digital platform ensured participants' easy access, thereby

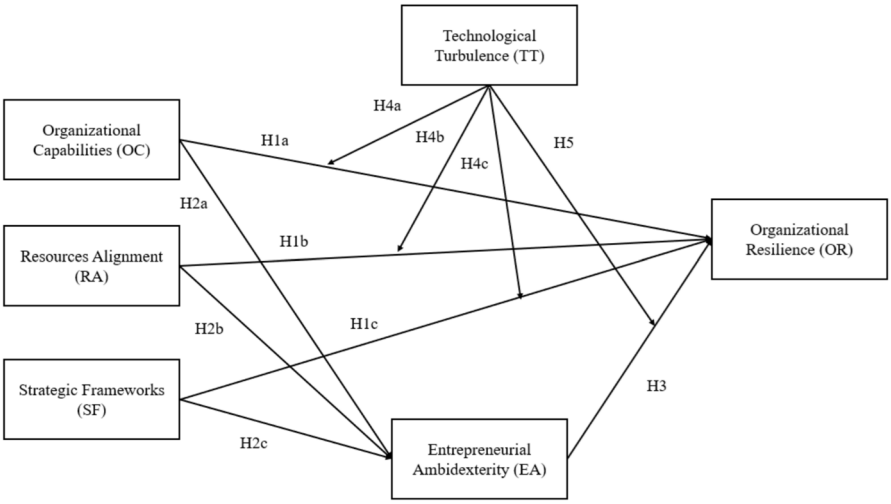


Fig. 1 Research model.Source: Authors' own work

enabling the rapid collection and distribution of responses. Informed consent from all participants was obtained, and no personal identifiers were stored. Data were collected from 588 respondents holding managerial and decision-making positions across firms operating in dynamic, technologically intensive environments. The relatively high proportion of respondents holding postgraduate degrees reflects the knowledge-intensive nature of these roles, where strategic capabilities, resource alignment, and entrepreneurial ambidexterity are commonly shaped by advanced professional expertise. While this sample composition strengthens the relevance of the findings for innovation-driven and professionalized organizational contexts, it may limit their generalizability to less formalized or lower-skill firm settings. To ensure measurement validity within the regional context, all scales were carefully adapted through expert review and pilot testing, with particular attention to conceptual equivalence, linguistic clarity, and contextual appropriateness before full-scale data collection.

The study employed validated multi-item measurement scales adapted from established sources in the strategic management and organizational behavior literature to examine the conceptual model empirically. All constructs were measured using a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree), to capture the intensity of agreement with each statement. This design ensured consistency, reliability, and comparability across constructs, enhancing the validity of SEM analysis. OC were measured using six items derived from the works of Jantunen et al. (2005), Wang and Ahmed (2007), and Garcia-Morales et al. (2012). These items reflect a firm's internal capacity to adapt, learn, and coordinate resources to respond to change. Sample items include: "Our organization regularly updates its routines to respond to market changes" and "We effectively learn from past experiences to enhance future performance." This scale captures dynamic elements such as absorptive capacity, process flexibility, and learning orientation, key enablers of ambidextrous behavior.

RA was assessed using five items adapted from Canhoto et al. (2021) and Majhi et al. (2022). These items focused on the organization's ability to reconfigure and deploy human, financial, and technological resources in alignment with evolving strategic priorities. For example, one item states: "We can reallocate our financial resources rapidly to respond to emerging needs." The scale operationalizes the firm's structural agility in terms of responsiveness and configurational flexibility. SF was measured using five items adapted from Eisenhardt and Martin (2017), Volberda et al. (2012), and Bustinza et al. (2019). These items capture the adaptability, foresight, and feedback mechanisms embedded within the organization's strategic planning processes. Sample items include: "Strategic plans are continuously updated based on environmental feedback," and "We apply feedback loops to monitor and revise strategic objectives regularly." This scale reflects a firm's cognitive infrastructure for managing uncertainty and aligning innovation with execution.

EA was measured using five items based on Gibson and Birkinshaw (2004) and Lubatkin et al. (2006). The scale assesses the simultaneous pursuit of exploration and exploitation. Sample statements include: "We exploit existing capabilities while exploring new opportunities simultaneously," and "Our structure supports stability and experimentation." This measure captures a firm's capacity to innovate while ensuring operational excellence. Technological Turbulence (TT) was evaluated using five items adapted from Jaworski and Kohli (1993), Lee et al. (2015), and Folger et al. (2022). This scale reflects the industry's volatility and the unpredictability of technological change. Items such as "Technology in our industry changes rapidly" and "The pace of technological change is highly unpredictable in our sector" highlight the external forces that moderate the efficacy of internal capabilities. OR was measured with five items grounded in Duchek (2020), and Kantur and Iseri-Say (2012). These items assess a firm's ability to absorb, adapt to, and recover from disruptions. Example items include: "Our internal systems allow for business continuity even during crises," and "We can adapt to market changes more effectively than competitors." All measurement items were pre-tested for clarity and content validity through expert reviews and a pilot study before final deployment. As reported in the results section, the scales demonstrated strong internal consistency and construct reliability.

This study drew a sample of 588 entrepreneurs from various backgrounds to compile diverse opinions and experiences regarding the parameters under examination. Convenience sampling was employed because of its viability and efficiency in quickly recruiting a substantial number of respondents. Before major data gathering, 30 pilot research participants pretested the survey instruments. This approach ensured clarity, relevance, and completeness of the questions. The final version incorporates comments from a pilot study to improve the questionnaire's accuracy and readability. Responses were rigorously reviewed and filtered for missing values, anomalies, and inconsistencies to ensure data quality and accuracy upon completion of data collection. SPSS and AMOS were used to analyze the data. Initially used for data purification, descriptive statistics, and exploratory factor analysis (EFA), SPSS was employed to examine factor loadings to assess construct validity and define the data structure.

Following the initial research, SEM was conducted in AMOS to examine relationships among variables and test the proposed hypotheses. Considerations were made

regarding the choice of the seminar. First, it is particularly relevant for studies that include mediating variables such as ambidexterity, as it enables the simultaneous assessment of direct and indirect effects within a single model. Second, SEM might include moderating factors such as the effect of technological turbulence on the interconnections among organizational capabilities, resource alignment, strategic frameworks, and resilience. Third, SEM analyzes relationships among latent constructs by estimating structural and measurement models. Confirmatory factor analysis (CFA) was used to evaluate the measurement model, thus ensuring that the observed variables reflected their latent constructs. Finally, SEM allows the use of fit indices, namely the Tucker-Lewis Index (TLI), Comparative Fit Index (CFI), and Root Mean Square Error of Approximation (RMSEA), which provide a comprehensive assessment of overall model fit. This capability ensured that the recommended model was relevant and statistically accurate.

Findings

Table 1 presents descriptive statistics for the sample of 588 respondents. The gender distribution revealed notable male dominance, with 470 males (80%) and 118 females (20%). Regarding age, most respondents were between 25 and 30 (323, or 55%), followed by those aged 31–40 (200, or 34%). The older age groups, 41–50 and over 50, represented only 10% (61 respondents) and less than 1% (4 respondents), respectively. Regarding education level, a significant portion of the respondents held advanced degrees: 317 individuals (54%) had a master's degree, and 211 (36%) held a doctorate. Only 60 respondents (10%) had a bachelor's degree.

Table 2 presents the principal component matrix for the six constructs: Organizational Capabilities, Resource Alignment, Strategic Framework, Entrepreneurial Ambidexterity, Technological Turbulence, and Resilience. Loadings represent the strength of the relationship between each item and its corresponding factor. Items with factor loadings below 0.5 were removed from the analysis, as they did not meet the minimum standard for meaningful contribution to the construct's reliability.

Table 1 Descriptive statistics

Gender	
Male	470
Female	118
Age	
25–30	323
31–40	200
41–50	61
Over 50	4
Education	
Bachelor	60
Master	317
Doctorate	211
Total	588

Source: Authors' own work

Table 2 Principal component matrix

Organizational capabilities	
OC1	0.873
OC2	0.785
OC3	0.719
OC4	0.745
OC5	0.763
OC6	**0.395**
Resource alignment	
RA1	.730
RA2	.705
RA3	.768
RA4	.628
RA5	.700
Strategic framework	
SF1	.699
SF2	.779
SF3	.791
SF4	.685
SF5	.755
Entrepreneurial ambidexterity	
EA1	.782
EA2	.847
EA3	.839
EA4	.796
EA5	.631
Technological turbulence	
TT1	.784
TT2	.772
TT3	.770
TT4	.821
TT5	.699
Resilience	
RES1	.655
RES2	.742
RES3	.779
RES4	.809
RES5	.593

Source: Authors' own work

For Organizational Capabilities, most items (OC1–OC5) exhibit strong loadings, ranging from 0.719 to 0.873, demonstrating good alignment with the construct. However, OC6, with a loading of 0.395, was excluded from the analysis. Resource Alignment showed acceptable loadings for all items, ranging from 0.628 to 0.768, whereas the Strategic Framework exhibited consistent loadings between 0.685 and 0.791, supporting its robustness.

Entrepreneurial Ambidexterity also exhibits high factor loadings, with values ranging from 0.631 to 0.847, indicating strong measurement. Technological Turbulence demonstrated strong loadings across all items, with loadings ranging from 0.699 to 0.821. Similarly, the construct resilience shows adequate loadings, ranging

Table 3 Robustness tests

	Cronbach alpha	CR	AVE	SQRT	KMO
OC	.731	0.866	0.505	0.710	0.854
RA	.727	0.833	0.511	0.714	
SF	.856	0.859	0.552	0.743	
EA	.879	0.886	0.612	0.782	
TT	.886	0.879	0.593	0.770	
RES	.710	0.841	0.518	0.720	

Source: Authors' own work

Table 4 Discriminant validity

Construct	OC	RA	SF	EA	TT	RES
OC	**0.710**					
RA	0.482	**0.714**				
SF	0.517	0.544	**0.743**			
EA	0.428	0.463	0.489	**0.782**		
TT	0.396	0.412	0.437	0.451	**0.770**	
RES	0.521	0.573	0.612	0.589	0.533	**0.720**

Source: Authors' own work

from 0.593 to 0.809, except for hypothetically excluded items with loadings below 0.5.

The results of the robustness tests presented in Table 3 indicate that the constructs were reliable and valid for further analysis. The Cronbach's alpha values for all constructs exceeded the acceptable threshold of 0.70, confirming good internal consistency. Specifically, OC had an alpha of 0.731, RA 0.727, and RES 0.710, demonstrating moderate reliability. Meanwhile, the SF at 0.856, EA at 0.879, and TT at 0.886 exhibited high reliability, indicating strong internal consistency across their respective items.

Composite Reliability (CR) values consistently exceeded 0.80, indicating strong construct reliability across all dimensions. CR ranged from 0.833 for RA to 0.886 for EA, confirming that the constructs reliably measured their intended attributes. Additionally, the Average Variance Extracted (AVE) values exceeded the critical threshold of 0.50, indicating adequate convergent validity. Constructs such as OC (0.505) and RES (0.518) are at the lower bound of acceptability, whereas EA (0.612) and SF (0.552) display more substantial convergence, highlighting the constructs' ability to capture sufficient variance from their associated items. The square root of AVE (SQRT) values further supported discriminant validity, with all constructs exhibiting SQRT values higher than the potential inter-construct correlations. For example, SQRT values ranged from 0.710 for RA to 0.782 for EA, indicating that the constructs are distinct. Moreover, the Kaiser–Meyer–Olkin (KMO) statistic exceeds 0.80, indicating the data are valid.

Table 4 presents the results of the Fornell–Larcker discriminant validity assessment. The square root of the Average Variance Extracted (AVE), reported on the diagonal, exceeds the corresponding inter-construct correlations in all cases. For example, Organizational Capabilities (0.71) is greater than its highest correlation with Strategic Framework (0.517) and Organizational Resilience (0.521). Similarly,

Entrepreneurial Ambidexterity (0.782) and Technological Turbulence (0.77) demonstrate stronger shared variance with their own indicators than with other constructs. Although moderate correlations exist between constructs such as Strategic Framework and Organizational Resilience (0.612), these remain below the respective square root of AVE values.

Table 5 reports the overall goodness-of-fit indices for the structural model. The Chi-square to degrees of freedom ratio (CMIN/DF = 2.298) falls well below the recommended threshold of 3, indicating a good model fit. The RMSEA value of 0.047 suggests an excellent fit, supported by a low confidence interval (0.042) and a high PCLOSE value (0.844), which confirms the model's closeness to the population covariance matrix. Incremental fit indices further support model adequacy, with CFI (0.933), TLI (0.922), and NFI (0.912) all exceeding the minimum acceptable threshold of 0.90. Although CFI and TLI remain slightly below the stricter 0.95 criterion for excellence, the collective evidence indicates that the model demonstrates a strong and acceptable overall fit to the data.

Figure 2 presents the conceptual model examining the relationships among the independent variables (OC, RA, and SF), the mediator (EA), the moderator (TT), and the dependent variable (OR). The hypotheses are denoted H1a through H5, with the path coefficients and significance levels reported for each relationship. The independent variables OC, RA, and SF were positively associated with the OR. Specifically, OC has a significantly positive relationship (H1a: $\beta = 0.237$, $p < 0.01$), indicating that firms with strong capabilities are better equipped to balance exploration and exploitation. RA (H1b: $\beta = 0.393$, $p < 0.01$) and SF (H1c: $\beta = 0.539$, $p < 0.01$) similarly exhibited positive effects, underscoring the importance of effectively aligning resources and having structured strategic guidelines to foster ambidexterity.

Table 5 Model fit

Fit index	Value	Threshold for good fit	Interpretation
CMIN/DF (Chi-Square/DF)	2.298	≤3	Indicates a good model fit
RMSEA (Root Mean Square Error of Approximation)	0.047	≤0.05 (excellent), ≤0.08 (acceptable)	Excellent model fit
RMSEA Confidence Interval	0.042	-	The confidence interval supports a good fit
PCLOSE (Probability Close Fit)	0.844	>0.05	Acceptable fit
CFI (Comparative Fit Index)	0.933	≥0.95 (excellent), ≥0.90 (acceptable)	Acceptable fit
TLI (Tucker-Lewis Index)	0.922	≥0.95 (excellent), ≥0.90 (acceptable)	Acceptable fit
NFI (Normed Fit Index)	0.912	≥0.90	Acceptable fit

Source: Authors' own work

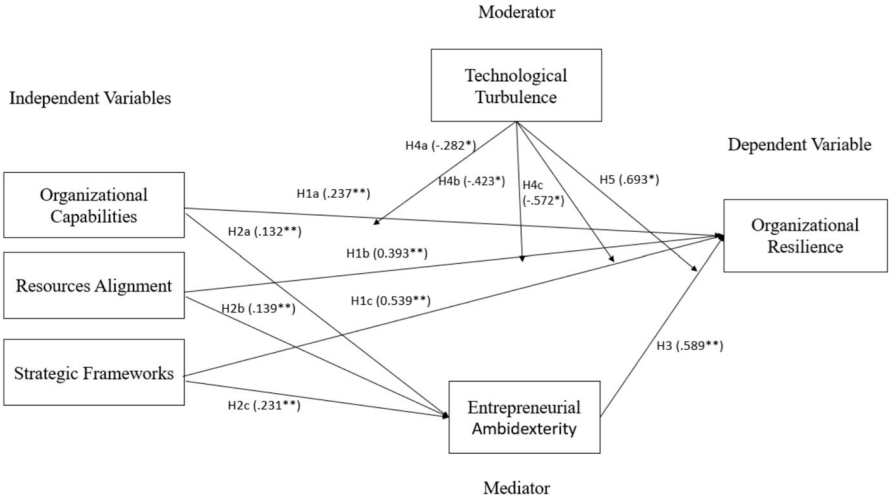


Fig. 2 Mediation-moderation model.Source: Author's own work

Hypotheses H2a, H2b, and H2c examined the relationships between the independent variables (OC, RA, and SF) and EA. The findings indicate that all three independent variables have a significant positive effect on Entrepreneurial Ambidexterity. H2a ($\beta = 0.132$, $p < 0.01$) highlighted OC's role in fostering Entrepreneurial Ambidexterity. H2b ($\beta = 0.139$, $p < 0.01$) underscores the importance of RA, indicating that effective resource management and allocation enhance a firm's ability to pursue innovation and optimize existing operations simultaneously. Finally, H2c ($\beta = 0.231$, $p < 0.01$) demonstrates that SF-structured, well-defined strategic planning and implementation processes are vital in enabling Entrepreneurial Ambidexterity.

EA played a significant mediating role in the relationship between the independent variables and OR. The direct relationship between EA and OR is strong (H3: $\beta = 0.589$, $p < 0.01$), highlighting the critical role of ambidexterity in helping organizations adapt to challenges and sustain their operations. TT moderated the relationship between independent variables and OR. The moderating effects were adverse and significant, as evidenced by H4a ($\beta = -0.282$, $p < 0.05$), H4b ($\beta = -0.423$, $p < 0.05$), and H4c ($\beta = -0.572$, $p < 0.05$). These findings imply that in environments characterized by rapid technological change, the positive effects of OC, RA, and SF on resilience are weakened. This underscores the disruptive nature of technological turbulence, which challenges firms to continuously adapt their strategies. TT also directly affected the relationship between EA and OR (H5: $\beta = 0.693$, $p < 0.05$). This indicates that firms operating in volatile technological environments can achieve resilience by effectively managing and responding to these changes, although this may require additional adaptive capabilities. A summary of the findings is presented in Table 6.

Table 6 Summary of findings

Hypothesis	Relationship tested	Type of effect	Direction	β coefficient	Significance	Supported
H1a	Organizational Capabilities → Organizational Resilience	Direct	Positive	0.237	$p<0.01$	Yes
H1b	Resource Alignment → Organizational Resilience	Direct	Positive	0.393	$p<0.01$	Yes
H1c	Strategic Framework → Organizational Resilience	Direct	Positive	0.539	$p<0.01$	Yes
H2a	Organizational Capabilities → Entrepreneurial Ambidexterity	Direct	Positive	0.132	$p<0.01$	Yes
H2b	Resource Alignment → Entrepreneurial Ambidexterity	Direct	Positive	0.139	$p<0.01$	Yes
H2c	Strategic Framework → Entrepreneurial Ambidexterity	Direct	Positive	0.231	$p<0.01$	Yes
H3	Entrepreneurial Ambidexterity → Organizational Resilience	Direct	Positive	0.589	$p<0.01$	Yes
H4a	Technological Turbulence × Organizational Capabilities → Organizational Resilience	Moderation	Negative	−0.282	$p<0.05$	Yes
H4b	Technological Turbulence × Resource Alignment → Organizational Resilience	Moderation	Negative	−0.423	$p<0.05$	Yes
H4c	Technological Turbulence × Strategic Framework → Organizational Resilience	Moderation	Negative	−0.572	$p<0.05$	Yes
H5a	Technological Turbulence × Entrepreneurial Ambidexterity → Organizational Resilience	Direct	Positive	0.693	$p<0.05$	Yes

Source: Author's own work

Discussions

The empirical results provide strong support for the model while offering deeper insight into how resilience is enacted under technological turbulence in emerging economies. Rather than treating resilience as a static outcome of organizational strength, the findings demonstrate that resilience emerges from the dynamic interaction between internal capabilities, entrepreneurial ambidexterity, and environmental velocity.

The positive effects of organizational capabilities, resource alignment, and strategic frameworks on organizational resilience (H1a–H1c) confirm that adaptive capacity depends on continuous reconfiguration rather than structural stability. Recent research emphasizes that digital orientation and dynamic resource recombination are central to resilience formation in volatile environments (Liu et al., 2024; Nair et al., 2024). Organizational capabilities enhance resilience because they enable firms to update routines and absorb new technological knowledge before misalignment becomes disruptive (Do et al., 2025). Resource alignment strengthens resilience by ensuring that financial and technological investments remain synchronized with evolving priorities, particularly under digital transformation pressures (Pelletier & Raymond, 2024). Strategic frameworks further contribute by embedding feedback loops and foresight mechanisms that allow continuous recalibration rather than episodic adjustment (Seo et al., 2025; Van Der Duin et al., 2024). In rapidly transforming economies, resilience therefore reflects systemic adaptability across cognitive, structural, and operational layers.

The findings supporting H2a–H2c extend this logic by demonstrating that organizational capabilities, resource alignment, and strategic frameworks positively influence entrepreneurial ambidexterity. Recent scholarship highlights that ambidexterity emerges when firms integrate digital literacy, innovation capability, and strategic flexibility (Shatila et al., 2025a, b; Wang et al., 2024). Capabilities provide the structural conditions for ambidexterity, but they do not automatically generate it. Instead, ambidexterity requires deliberate managerial orchestration of exploration and exploitation activities under uncertainty (He & Wu, 2024). The mediation result (H3) is therefore theoretically significant: entrepreneurial ambidexterity acts as the behavioral transmission mechanism through which structural capabilities are converted into resilience. This aligns with contemporary findings that resilience in emerging markets depends on entrepreneurial recombination rather than passive resource possession (Nair et al., 2024; Shatila et al., 2025a, b). Firms with strong capabilities but weak ambidextrous orientation may struggle to translate structural strengths into adaptive performance. Resilience is enacted through entrepreneurial behavior that balances innovation with operational continuity, particularly in sectors facing digital acceleration.

The moderation results provide the most theoretically important contribution. The negative moderation effects (H4a–H4c) reveal that technological turbulence weakens the positive relationships between organizational capabilities, resource alignment, strategic frameworks, and resilience. This finding challenges the assumption that turbulence uniformly amplifies the value of internal capabilities. Recent research indicates that high levels of technological volatility may create innovation–resource

dislocation, where rapid change outpaces firms' renewal capacity (Durst et al., 2024; Folger et al., 2022). When technological cycles accelerate continuously, learning processes may become overwhelmed and reconfiguration efforts may lag behind environmental shifts (Do et al., 2025). Under such conditions, even well-developed capabilities depreciate quickly, reducing their effectiveness in generating resilience.

At the same time, technological turbulence exhibits a positive direct effect on resilience. This dual pattern appears paradoxical but becomes coherent when turbulence is conceptualized as both an adaptive stimulus and a destabilizing force. Exposure to technological disruption compels firms to experiment, adopt digital tools, and innovate, which can enhance resilience through accelerated adaptation (Pratono, 2022; Shatila et al., 2026). However, when turbulence becomes persistent and extreme, it compresses strategic response cycles and increases the cognitive and financial burden associated with ambidextrous behavior. The moderation of entrepreneurial ambidexterity (H5 interaction effect) demonstrates that under high turbulence, balancing exploration and exploitation becomes more difficult. As He and Wu (2024) suggest, technological volatility can intensify managerial tension and reduce coordination efficiency. Exploration initiatives may crowd out exploitation stability, generating overstretching rather than synergy.

This clarifies that technological turbulence operates through a threshold dynamic. Moderate turbulence stimulates renewal and enhances resilience by forcing firms to adapt. Excessive turbulence, however, erodes the effectiveness of structural capabilities and weakens the stabilizing impact of ambidexterity. In emerging economies where digital infrastructure and institutional support vary significantly, this erosion effect may be amplified (YahiaMarzouk & Jin, 2023). Firms must therefore synchronize capability renewal speed with environmental velocity. When renewal capacity lags behind technological change, turbulence transforms from a catalyst of resilience into a destabilizing stressor.

These findings advance international entrepreneurship research by demonstrating that resilience in emerging markets is not merely crisis recovery capacity but an outcome of entrepreneurial recombination under technological acceleration. Recent studies on entrepreneurial resilience in the Middle East emphasize the importance of digital literacy, networking, and innovation ecosystems (Shatila et al., 2025a, b, 2026). The present results complement this literature by showing that ambidextrous behavior mediates the translation of capabilities into resilience, while technological turbulence shapes the strength of this translation. In digitally transforming economies, firms must continuously recalibrate capabilities, resource configurations, and strategic frameworks to avoid capability erosion. Resilience thus becomes a dynamic entrepreneurial achievement rather than a structural attribute.

Theoretical implications

This study makes three focused and interrelated contributions to the literature on organizational resilience and dynamic capabilities. First, it reconceptualizes organizational resilience as an entrepreneurial outcome rather than a static organizational attribute. By demonstrating that resilience is enacted through entrepreneurial ambi-

dexterity, the study moves beyond capability-centric explanations. It shows how firms actively translate sensing, seizing, and reconfiguring processes into adaptive responses under uncertainty. These advances in reframing resilience theory emphasize action and behavioral mechanisms over structural endowments. Second, the study refines DCT by identifying technological turbulence as a critical boundary condition. Contrary to assumptions that dynamic capabilities are universally effective across contexts, the findings reveal that persistent technological volatility can weaken rather than amplify the effectiveness of organizational capabilities, resource alignment, and strategic frameworks. This insight extends DCT by demonstrating that its explanatory power is contingent on firms' ability to continuously renew capabilities at a pace commensurate with environmental change, particularly in emerging economies. Third, the study positions entrepreneurial ambidexterity as the central mechanism linking dynamic capabilities to resilience. Rather than treating ambidexterity as an outcome of capabilities, the findings show that it operationalizes how firms balance exploration and exploitation under sustained uncertainty. This contribution integrates entrepreneurship and strategic management research by clarifying the behavioral pathway through which firms in turbulent environments convert internal strengths into resilience.

Beyond theory, the study offers contextually grounded insights into resilience-building in emerging markets, particularly in the Middle East, where economic diversification and digital transformation initiatives intensify technological and institutional pressures. The findings suggest that resilience in such settings depends less on adopting technology per se and more on firms' ability to continually recalibrate capabilities, resources, and strategic frameworks in response to persistent turbulence. Methodologically, the study employs a mediation–moderation SEM framework to capture the dynamic interplay between capabilities, ambidexterity, and environmental conditions. While this approach provides robust explanatory power, future research could extend these insights by using complementary methods, such as Necessary Condition Analysis or configurational approaches (e.g., fsQCA), to identify threshold conditions and alternative resilience pathways across organizational and national contexts.

Practical implications

The research presents actionable ideas that can influence governmental actions. Given the paramount importance of resilience in developing regions and its alignment with innovative approaches, the findings suggest that resilience, particularly in economies such as the Middle East, is achieved through systemic frameworks rather than relying solely on individual organizations' capabilities. Government officials can help improve the situation by fostering environments that encourage companies to explore new avenues and leverage their existing accomplishments. The implementation of robust legal frameworks, government support through accelerators, and user-friendly technological platforms can further enhance firms' capacity to develop and sustain dynamic capabilities.

This study underscores the significance of integrating macro- and micro-level policies in public policy. Governments must facilitate knowledge sharing, provide training and skill-development opportunities for organizations, and foster an environment conducive to companies' effective implementation of national strategies. Consequently, resilience emerges as an indispensable aspect for both businesses and nations. Government-led initiatives play a pivotal role in developing strategies, promoting collaboration among economic sectors, and incorporating resilience measures to help the economy navigate external challenges.

Limitations

Although this study yielded valuable findings, it is essential to acknowledge certain limitations. The study focuses solely on the Middle East, providing a unique perspective on this region. However, its applicability to regions with significantly different economic, cultural, and technological backgrounds may be limited. Each global region faces distinct challenges, necessitating tailored resilience-building strategies. Another limitation of the study is its cross-sectional nature. Data collection at a single location hinders the ability to observe the temporal evolution of resilience. To address this, researchers could conduct repeated observations to track changes in organizational resilience over time. Additionally, convenience sampling may have influenced the results. While suitable for rapid data collection, this approach may not capture all businesses in the Middle East, potentially leading to biased outcomes. It is also challenging to measure the extent to which technology is changing. Managing this variable is difficult, as how it is perceived and used varies widely across industries and within organizations. Although this study explains how technological turbulence influences resilience, it may not capture all key factors.

While this study identifies technological turbulence as a critical boundary condition that weakens the effectiveness of internal capabilities, it does not fully disentangle the micro-level mechanisms through which such erosion occurs. Future research could examine how specific forms of technological change interact with organizational learning, leadership cognition, and employee skill renewal to shape resilience outcomes over time. Longitudinal or qualitative designs may provide deeper insight into how and when turbulence transforms capabilities from assets into liabilities.

Conclusion

Through the analytical lens of DCT, the study demonstrates that ambidexterity enables organizations to retain their core competencies while simultaneously developing new skills, thereby bolstering their ability to thrive in uncertain environments. This observation is highly relevant to organizations in the Middle East, as it enables them to adapt to current challenges and proactively prepare for future transformations, thereby increasing their chances of survival and success.

Furthermore, the study elucidates the role of technological turbulence, revealing that companies adept at adapting and employing modular structures effectively

manage challenges and transform them into opportunities. The research underscores the efficacy of using available resources, including financial, human, and technological assets, to navigate change by fostering collaboration among branches. By aligning organizational objectives with flexible and structured frameworks, companies enhance their ability to respond effectively to industry-specific shifts. Through these strategic interventions, Middle Eastern firms gain the requisite guidance during industry transformations and harness the potential of emerging technologies.

Appendix

Survey

1. Gender

   A Male
   B Female

2. Age

   A 25–30 years
   B 31–40 years
   C 41–50 years
   D Over 50 years

3. Highest Level of Education

   A Bachelor's degree
   B Master's degree
   C Doctorate degree

Section B: Survey Statements

Please indicate how much you agree or disagree with the following statements by selecting a number from 1 (Strongly Disagree) to 5 (Strongly Agree).

Organizational Capabilities (OC)

1. Our organization regularly updates its routines to respond to market changes.
2. We effectively learn from past experiences to enhance future performance.
3. Our internal systems support rapid decision-making under uncertainty.
4. We foster continuous learning and improvement across all levels.
5. Our employees are empowered to adapt their roles and responsibilities as needed.

6. We are capable of coordinating cross-functional activities efficiently.

Resource alignment (RA)

7. We can reallocate our financial resources rapidly to respond to emerging needs.
8. Our technological infrastructure aligns well with our strategic priorities.
9. Human resources are reassigned efficiently to support changing goals.
10. We adjust our resource configurations proactively when disruptions occur.
11. Our firm maintains the flexibility to redirect investments toward innovation or efficiency.

Strategic frameworks (SF)

12. Our strategy integrates long-term vision with short-term adaptability.
13. Strategic plans are continuously updated based on environmental feedback.
14. We use foresight techniques to anticipate future market developments.
15. Our strategic framework allows for reallocation of priorities during crises.
16. We apply feedback loops to monitor and revise strategic objectives regularly.

Entrepreneurial ambidexterity (EA)

17. We emphasize both innovation and continuous improvement in our operations.
18. Our employees are encouraged to balance efficiency and creativity.
19. We exploit existing capabilities while exploring new opportunities simultaneously.
20. Innovation and operational excellence are pursued equally across teams.
21. Our structure supports both stability and experimentation.

Technological turbulence (TT)

22. Technology in our industry changes rapidly.
23. New technologies frequently make our current practices obsolete.
24. The pace of technological change is highly unpredictable in our sector.
25. Our firm faces constant pressure to upgrade its technological capabilities.
26. Technological changes significantly impact our strategic planning process.

Organizational resilience (OR)

27. Our organization recovers quickly after major disruptions.
28. We actively learn from crises to improve our future preparedness.
29. We can reconfigure our operations in response to unexpected challenges.
30. Our internal systems allow for business continuity even during crises.

31. We adapt to market changes more effectively than our competitors.

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References

Abazeed, R., & Ahmad, R. (2020). Impact of strategic capabilities on organizational ambidexterity in the commercial banks in Jordan: The mediating role of knowledge management. *Management Science Letters, 10*(7), 1445–1456.

Al-Atwi, A. A., Amankwah-Amoah, J., & Khan, Z. (2021). Micro-foundations of organizational design and sustainability: The mediating role of learning ambidexterity. *International Business Review, 30*(1), 101656.

Bagheri, A., Javadian, G., Zakeri, P., & Arasti, Z. (2024). Bearing the unbearable: Exploring women entrepreneurs resilience building in times of crises. *Journal of Business Ethics, 193*(3), 715–738.

Bocken, N. M., & Geradts, T. H. (2020). Barriers and drivers to sustainable business model innovation: Organization design and dynamic capabilities. *Long Range Planning, 53*(4), 101950.

Buliga, O., Scheiner, C. W., & Voigt, K. I. (2016). Business model innovation and organizational resilience: Towards an integrated conceptual framework. *Journal of Business Economics, 86*(6), 647–670.

Bustinza, O. F., Vendrell-Herrero, F., Perez-Arostegui, M., & Parry, G. (2019). Technological capabilities, resilience capabilities and organizational effectiveness. *International Journal of Human Resource Management, 30*(8), 1370–1392.

Canhoto, A. I., Quinton, S., Pera, R., Molinillo, S., & Simkin, L. (2021). Digital strategy aligning in SMEs: A dynamic capabilities perspective. *The Journal of Strategic Information Systems, 30*(3), 101682.

Chiva, R., Ghauri, P., & Alegre, J. (2014). Organizational learning, innovation and internationalization: A complex system model. *British Journal of Management, 25*(4), 687–705.

Chowdhury, M. M. H., & Quaddus, M. (2017). Supply chain resilience: Conceptualization and scale development using dynamic capability theory. *International Journal of Production Economics, 188*, 185–204.

Do, H., Budhwar, P. S., & Patel, C. (2018). Relationship between innovation-led HR policy, strategy, and firm performance: A serial mediation investigation. *Human Resource Management, 57*(5), 1271–1284.

Do, H., Budhwar, P., Shipton, H., Nguyen, H. D., & Nguyen, B. (2022). Building organizational resilience, innovation through resource-based management initiatives, organizational learning and environmental dynamism. *Journal of Business Research, 141*, 808–821.

Do, H. N., Do, N. B., Nguyen, T. K., & Nguyen, T. M. (2025). Unveiling the impact of technological innovation and SMEs resilience: The moderating role of firms' social sustainability orientation. *European Journal of Innovation Management, 28*(8), 3938–3965.

Duchek, S. (2020). Organizational resilience: A capability-based conceptualization. *Business Research, 13*(1), 215–246.

Durst, S., Hinteregger, C., & Zieba, M. (2024). The effect of environmental turbulence on cyber security risk management and organizational resilience. *Computers & Security, 137*, 103591.

Edler, J., Blind, K., Kroll, H., & Schubert, T. (2023). Technology sovereignty as an emerging frame for innovation policy. Defining rationales, ends and means. *Research Policy, 52*(6), 104765.

Eisenhardt, K. M., & Martin, J. A. (2017). Dynamic capabilities: what are they?. *The SMS Blackwell handbook of organizational capabilities*, pp. 341–363.

Fawcett, L. (2021). The Middle East and COVID-19: Time for collective action. *Globalization and Health, 17*(1), 133.

Folger, N., Brosi, P., & Stumpf-Wollersheim, J. (2022). Perceived technological turbulence and individual ambidexterity–The moderating role of formalization. *European Management Journal, 40*(5), 718–728.

García-Morales, V. J., Jiménez-Barrionuevo, M. M., & Gutiérrez-Gutiérrez, L. (2012). Transformational leadership influence on organizational performance through organizational learning and innovation. *Journal of Business Research, 65*(7), 1040–1050.

Gibson, C. B., & Birkinshaw, J. (2004). The antecedents, consequences, and mediating role of organizational ambidexterity. *Academy of Management Journal, 47*(2), 209–226.

Grego, M., Magnani, G., & Denicolai, S. (2024). Transform to adapt or resilient by design? How organizations can foster resilience through business model transformation. *Journal of Business Research, 171*, 114359.

Guo, Y., Huang, P. W., Ciu, C., Fang, S. C., & Tsai, F. S. (2022). Entrepreneur hubris, organizational ambidexterity, and dynamic capability construction. *Frontiers in Psychology, 12*, 717245.

Haarhaus, T., & Liening, A. (2020). Building dynamic capabilities to cope with environmental uncertainty: The role of strategic foresight. *Technological Forecasting and Social Change, 155*, 120033.

He, X., & Wu, X. (2024). Social networks and ambidextrous innovation in SMEs: The mediating role of dynamic capabilities and the moderating role of technological turbulence. *Technology Analysis and Strategic ManagemeNt, 36*(10), 2662–2675.

Iborra, M., Safón, V., & Dolz, C. (2020). What explains the resilience of SMEs? Ambidexterity capability and strategic consistency. *Long Range Planning, 53*(6), 101947.

Jansen, J. J., Simsek, Z., & Cao, Q. (2012). Ambidexterity and performance in multiunit contexts: Cross-level moderating effects of structural and resource attributes. *Strategic Management Journal, 33*(11), 1286–1303.

Jantunen, A., Puumalainen, K., Saarenketo, S., & Kyläheiko, K. (2005). Entrepreneurial orientation, dynamic capabilities and international performance. *Journal of International Entrepreneurship, 3*(3), 223–243.

Jaworski, B. J., & Kohli, A. K. (1993). Market orientation: Antecedents and consequences. *Journal of Marketing, 57*(3), 53–70.

Kafetzopoulos, D. (2021). Organizational ambidexterity: Antecedents, performance and environmental uncertainty. *Business Process Management Journal, 27*(3), 922–940.

Kantur, D., & İşeri-Say, A. (2012). Organizational resilience: A conceptual integrative framework. *Journal of Management & Organization, 18*(6), 762–773.

Kantur, D., & Say, A. I. (2015). Measuring organizational resilience: A scale development. *Journal of Business Economics and Finance*, *4*(3).

Kim, A. (2019). Human resource strategies for organizational ambidexterity. *Employee Relations, 41*(4), 678–693.

Kitapci, H., & Çelik, V. (2014). The relationship between ambidexterity, organizational learning capacity and firm quality performance: An empirical study. *Procedia - Social and Behavioral Sciences, 109*, 827–836.

Lee, O. K., Sambamurthy, V., Lim, K. H., & Wei, K. K. (2015). How does IT ambidexterity impact organizational agility? *Information Systems Research, 26*(2), 398–417.

Lengnick-Hall, C. A., Beck, T. E., & Lengnick-Hall, M. L. (2011). Developing a capacity for organizational resilience through strategic human resource management. *Human Resource Management Review, 21*(3), 243–255.

Liu, Y., Guo, M., Han, Z., Gavurova, B., Bresciani, S., & Wang, T. (2024). Effects of digital orientation on organizational resilience: A dynamic capabilities perspective. *Journal of Manufacturing Technology Management, 35*(2), 268–290.

Lubatkin, M. H., Simsek, Z., Ling, Y., & Veiga, J. F. (2006). Ambidexterity and performance in small-to medium-sized firms: The pivotal role of top management team behavioral integration. *Journal of Management, 32*(5), 646–672.

Majhi, S. G., Anand, A., Mukherjee, A., & Rana, N. P. (2022). The optimal configuration of IT-enabled dynamic capabilities in a firm's capabilities portfolio: A strategic alignment perspective. *Information Systems Frontiers, 24*(5), 1435–1450.

Mathivathanan, D., Govindan, K., & Haq, A. N. (2017). Exploring the impact of dynamic capabilities on sustainable supply chain firm's performance using Grey-Analytical Hierarchy Process. *Journal of Cleaner Production, 147*, 637–653.

Mostaghel, R., Oghazi, P., Parida, V., & Sohrabpour, V. (2022). Digitalization driven retail business model innovation: Evaluation of past and avenues for future research trends. *Journal of Business Research, 146*, 134–145.

Nair, A., Manohar, S., & Mittal, A. (2024). Reconfiguration and transformation for resilience: Building service organizations towards sustainability. *Journal of Services Marketing, 38*(4), 404–425.

Nigam, N., & Shatila, K. (2024). Entrepreneurial intention among women entrepreneurs and the mediating effect of dynamic capabilities: Empirical evidence from Lebanon. *International Journal of Entrepreneurial Behavior & Research, 30*(4), 916–937.

Pelletier, C., & Raymond, L. (2024). Investigating the strategic IT alignment process with a dynamic capabilities view: A multiple case study. *Information & Management, 61*(4), 103819.

Pilav-Velic, A., Jahic, H., & Krndzija, L. (2024). Firm resilience as a moderating force for SMEs' innovation performance: Evidence from an emerging economy perspective. *Regional Science Policy & Practice, 16*(8), 100033.

Pratono, A. H. (2022). The strategic innovation under information technological turbulence: The role of organisational resilience in competitive advantage. *Competitiveness Review : An International Business Journal, 32*(3), 475–491.

Raffaelli, R., Glynn, M. A., & Tushman, M. (2019). Frame flexibility: The role of cognitive and emotional framing in innovation adoption by incumbent firms. *Strategic Management Journal, 40*(7), 1013–1039.

Rahman, M. M., & Al-Azm, A. (2023). Social change and transformation in the Gulf region. In *Social change in the Gulf region: Multidisciplinary perspectives* (pp. 1–14). Springer Nature Singapore.

Riaz, S., Morgan, D., & Kimberley, N. (2023). Managing organizational transformation (OT) using complex adaptive system (CAS) framework: Future lines of inquiry. *Journal of Organizational Change Management, 36*(3), 493–513.

Sarwar, Z., Gao, J., & Khan, A. (2024). Nexus of digital platforms, innovation capability, and strategic alignment to enhance innovation performance in the Asia Pacific region: A dynamic capability perspective. *Asia Pacific Journal of Management, 41*(2), 867–901.

Seo, Y. W., & Lee, Y. H. (2019). Effects of internal and external factors on business performance of start-ups in South Korea: The engine of new market dynamics. *International Journal of Engineering Business Management, 11*, 1847979018824231.

Seo, D., Bryson, J. M., & Williams, M. (2025). Nonprofit sector ambidexterity: A framework for understanding innovation and strategy change in nonprofit organizations. *Public Management Review*(3). https://doi.org/10.1080/14719037.2025.2452880

Shatila, K., Nigam, N., & Mbarek, S. (2024). Seeds of change: Nurturing entrepreneurial ecosystems for sustainable enterprises in Lebanon and Jordan. *The Journal of Entrepreneurship, 33*(4), 897–924.

Shatila, K., Aranega, A. Y., Soga, L. R., & Hernández-Lara, A. B. (2025a). Digital literacy, digital accessibility, human capital, and entrepreneurial resilience: A case for dynamic business ecosystems. *Journal of Innovation & Knowledge, 10*(3), Article 100709.

Shatila, K., Nigam, N., & Mbarek, S. (2025b). Entrepreneurial resilience in turbulent times: The role of entrepreneurial orientation and innovation in the Middle East. *Journal of Enterprising Communities: People and Places in the Global Economy, 19*(5), 1255–1280.

Shatila, K., Hernández-Lara, A. B., & Gburová, J. (2026). Digital literacy, entrepreneurial networking, and sustainable innovation: Economic and cultural determinants of entrepreneurial success in the Middle East. *Sustainable Technology and Entrepreneurship*. https://doi.org/10.1016/j.stae.2026.100129

Shin, H. W., Picken, J. C., & Dess, G. G. (2017). Revisiting the learning organization: How to create it. *Organizational Dynamics, 46*(1), 46–56.

Steen, R., Haug, O. J., & Patriarca, R. (2024). Business continuity and resilience management: A conceptual framework. *Journal of Contingencies and Crisis Management, 32*(1), e12501.

Stjerne, I., Geraldi, J., & Wenzel, M. (2024). Strategic practice drift: How open strategy infiltrates the strategy process. *Journal of Management Studies, 61*(3), 820–856.

Tahmasebi, M. (2024). Beyond defense: Proactive approaches to disaster recovery and threat intelligence in modern enterprises. *Journal of Information Security, 15*(2), 106–133.

Tai, J. C., Wang, E. T., & Yeh, H. Y. (2019). A study of IS assets, IS ambidexterity, and IS alignment: The dynamic managerial capability perspective. *Information & Management, 56*(1), 55–69.

Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal, 18*(7), 509–533.

Teece, D., Peteraf, M., & Leih, S. (2016). Dynamic capabilities and organizational agility: Risk, uncertainty, and strategy in the innovation economy. *California Management Review, 58*(4), 13–35.

Van Der Duin, P., Trott, P., & Marzi, G. (2024). Tomorrow is already here: Exploring how corporate foresight can contribute to ambidexterity. *Strategic Change, 33*(3), 187–200.
Vial, G. (2021). Understanding digital transformation: A review and a research agenda. *Managing digital transformation*, 13–66.
Volberda, H. W., Van Der Weerdt, N., Verwaal, E., Stienstra, M., & Verdu, A. J. (2012). Contingency fit, institutional fit, and firm performance: A metafit approach to organization–environment relationships. *Organization Science, 23*(4), 1040–1054.
Wang, C. L., & Ahmed, P. K. (2007). Dynamic capabilities: A review and research agenda. *International Journal of Management Reviews, 9*(1), 31–51.
Wang, S. L., Luo, Y., Maksimov, V., Sun, J., & Celly, N. (2019). Achieving temporal ambidexterity in new ventures. *Journal of Management Studies, 56*(4), 788–822.
Wang, C., Zhang, M., & Ma, H. (2024). The more ambidexterity the better? The moderating effect of organizational learning between high-performance HR practices and organizational performance. *Frontiers in Psychology, 14*, 1283637.
Xie, X., Wu, Y., Palacios-Marqués, D., & Ribeiro-Navarrete, S. (2022). Business networks and organizational resilience capacity in the digital age during COVID-19: A perspective utilizing organizational information processing theory. *Technological Forecasting and Social Change, 177*, 121548.
YahiaMarzouk, Y., & Jin, J. (2023). Linking environmental scanning and organizational learning with organizational resilience of Egyptian SMEs: The moderating role of environmental uncertainty. *International Journal of Organizational Analysis, 31*(6), 2753–2792.

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