
The mediating effect of organisational resilience and internal preparedness on the relationship between external vulnerabilities and performance

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Abstract: The performance of an organisation is contingent on external and internal business environments. A resilient business process strengthens the stability of the organisation. The underlying study focused on the effect of organisational resilience on business performance under the influence of external vulnerabilities. A survey was conducted and data were collected from 144 organisations in the UAE. Structural equation modelling was used to test the hypotheses. The findings showed that organisational performance was positively and significantly related to external and internal factors with resilient characteristics and capacities. The relationships between resilient characteristics, resilient capacities, and firm performance were also positive and significant. The mediation results showed an indirect relationship between resilient characteristics and firm performance, and resilient capacities fully mediated this association. The research has contributed to resilience theories, and has also provided a framework to managers and decision makers to achieve greater resilience for better business performance.

Keywords: organisational resilience; business performance; organisational factors; UAE organisations; resilience characteristics; structural equation modelling; mediation analysis.

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1 Introduction

Organisations are expected to maintain continuous performance despite the volatile and uncertain global environment, which brings with it unexpected disruptions and vulnerabilities (Morales et al., 2019; Duchek, 2020). To control the effects of vulnerable organisational factors, frameworks have been developed through internal preparedness, enhancing organisational characteristics and organisational capabilities (Dormady et al., 2018; Tasic et al., 2020). These organisational factors affecting business performance have their internal and external challenges and can be disrupted with sudden environmental jolts, which can be managed with organisational resilience (Shepherd and Williams, 2022). For example, as reported by Hu and Zhang (2021), firm performance deteriorated during the COVID-19 pandemic due to sudden disruptions across the world. Some of the external vulnerabilities affecting the business environment, among others, can be competitors, price changes, economic, political, legal, and technological factors (Adegboyega, 2020; Sadiku, 2022). Organisational resilience strategies can help different industrial sector processes identify vulnerabilities and improve their performance (Tasic et al., 2020). However, there is a paucity of literature within the Middle Eastern context on the extent to which industrial organisations are facing these challenges, and whether they are prepared to cope with external vulnerabilities. Therefore, the current study has investigated the mediating role of organisational resilience by studying the relationship between external vulnerabilities and firm performance to manage uncertainties.

Factors such as internal preparedness, resilient characteristics, and resilient capacities play a crucial role in enhancing organisational performance. Internal preparedness refers to an organisation's ability to anticipate and prepare for disruptions through the creation of contingency plans and readiness procedures (Alderson et al., 2014). Resilient characteristics include flexibility, adaptability, and agility, which enable organisations to adjust to changing circumstances and recover quickly from disruptions (Patriarca et al., 2018). Resilient capacities refer to an organisation's ability to build resilience through developing its resources, knowledge, and skills (Bosetti et al., 2016). Research has shown that internal preparedness, resilient characteristics, and resilient capacities building up organisation performance can enhance organisational resilience and improve business

performance. For instance, Morales et al. (2019) found that developing resilient capabilities such as flexibility and adaptability helped organisations to manage disruptions and maintain their performance. Similarly, Duchek (2020) emphasised the importance of internal preparedness in helping organisations to anticipate and manage disruptions effectively.

The studies reported by Guo et al. (2022) have also established that resilient strategies such as internal preparedness, resilient characteristics, and resilient capacities can help organisations to identify vulnerabilities, adapt to changing circumstances, and recover quickly from disruptions. While several studies have investigated the importance of organisational resilience, further research is needed to explore the links between these constructs (Branicki et al., 2018). By building resilient capacities, organisations can enhance their ability to withstand unexpected challenges and disruptions, improving their overall performance and sustainability.

Due to its economic stability and strong growth, the United Arab Emirates, notably Dubai, is a highly desirable location for companies seeking growth prospects (Ibrahim and Al Nuaimi, 2021). Nevertheless, despite the nation's advantages, its industrial sectors are still susceptible to external forces that could hinder their development and performance. The International Monetary Fund (IMF) has also highlighted that external variables such as shifts in global demand, fluctuations in oil prices, and conflicts in international trade could potentially impact the nation's economic performance in the future (IMF, 2020). Thus, it is crucial to comprehend how well Dubai's industrial sectors are prepared to protect themselves from external threats. This study is important because it contributes to the limited literature on organisational resilience in the UAE, specifically in Dubai's industrial sectors, and identifies strategies to improve their performance and sustainability. The study also provides valuable insights into how Dubai's industrial sectors can better prepare for and manage external vulnerabilities by examining the components of organisational resilience, such as internal readiness, resilient features, and resilient capacity.

2 Literature review

Research on the resilience of firms, including bibliometric studies by Conz and Magnani (2020), has highlighted the need for further investigation into a more comprehensive definition and conceptualisation of a firm's resilience. That study has put out a model that distinguishes between two primary explanations for organisational resilience: adaptive and absorptive resilience pathways. Additionally, it identified a set of critical capabilities required for resilience at each of the two paths. In a similar analysis, Iftikhar et al. (2021) examined the connection between resilience, its precursors, and business performance using a meta-analysis of the available empirical research. It was discovered that resilience has a substantial overall influence on company performance. Furthermore, Bento et al. (2021) carried out a scoping assessment to pinpoint areas in which more research is needed to advance the field of organisational resilience studies.

According to Lengnick-Hall et al (2011), organisation resilience can be seen in two dimensions. The first dimension is derived from physical science, and it is focused more on understanding the key characteristic that allows the organisation to go back in shape after a shock. The second goes beyond understanding its new capabilities that influence new opportunities. It is essential to mention that organisational resilience has been

investigated in different fields from business, sociology, psychology, and decision-making to economics. In all fields, resilience has been seen as the mantle of an ecosystem that allows flexibility, agility, and positioning to the future. Therefore, resilience is a concept that makes any system adaptable to a potential unexpected event and flexible to a potential change in direction. In other words, resilience allows the organisation to understand the impact, learn, and create new paths. So, the organisation's response to disruption can be seen as managing threats or exploring new opportunities. Thus, resilience aligns with the Enterprise Risk Management concept in the organisational context.

By investigating the different constructs, it can be observed that performance drives is the internal ecosystem organisation, which is further protected by a 'resilience mantle' and external vulnerabilities influence both. The thin layer between the external and internal environment is the main element for absorbing any disruption's impacts and increasing the organisation's defense and future survival. In addition, any organisation's response to external vulnerabilities influences the performance and internal preparedness for further understanding the inner ecosystem and its primary constructs. A deeper understanding of resilience and its main characteristics revealed that robustness, redundancy, resourcefulness, and rapid recovery are the main factors that describe its different dimensions (Annarelli et al., 2020; Sambowo and Hidayatno, 2021). Also, factors such as absorptive or adoptive capacity influence the organisational ability to react, create value, and transform its future.

This study utilises bibliometric analysis to understand current trends in the literature for this field. The authors focused on Scopus, one of the most popular databases, including articles from peer-reviewed journals, books, and conference proceedings. The researchers developed inclusion and exclusion criteria for the data extraction from the Scopus platform. Sources were limited to the period from 2018 to 2024, and those included only articles, books, chapters, and conference papers in business management and accounting.

The following query was used for investigating output from Scopus: (TITLE-ABS-KEY (resilience) AND TITLE-ABS-KEY (organisation) OR TITLE-ABS-KEY (firm) OR TITLE-ABS-KEY (capabilities) OR TITLE-ABS-KEY (vulnerabilities) OR TITLE-ABS-KEY (preparedness) OR TITLE-ABS-KEY (recovery) OR TITLE-ABS-KEY (capacity) OR TITLE-ABS-KEY (characteristics) OR TITLE-ABS-KEY (adaptive) OR TITLE-ABS-KEY (absorptive) OR TITLE-ABS-KEY (leadership) OR TITLE-ABS-KEY (performance)) AND PUBYEAR > 2018 AND PUBYEAR < 2025 AND (LIMIT-TO (SUBJAREA , 'BUSI')) AND (LIMIT-TO (DOCTYPE , 'ar') OR LIMIT-TO (DOCTYPE , 'ch') OR LIMIT-TO (DOCTYPE , 'cp')).

Keywords were defined from the initial literature research and used to explore relations and co-dependencies further. Further data in a CSV format were input into the VOS-viewer software for bibliometric analysis. Before the final analysis, the authors decided to clear the keywords and possible duplications from the content. Based on the selection criteria, a total of 5,182 documents were selected of which 1057 were book chapters, 547 conference papers, and 3,958 articles. In Figure 1, we can see the close relationship of the author's keywords. The research revealed 68 items in 7 clusters with 810 links and 3243 total link strength. Table 1 provides the occurrences of keywords and the strength of their relationship with the key construct.

As it can be observed resilience is looked closed with COVID-19 pandemic, climate change, sustainability and innovation. It is also important to mention that resilience is a

Table 2 represents the ten most cited authors from the literature. Most of the cited papers seem to be from the 2019 pandemic outbreak when most of the organisations were impacted. Tourism and global supply chains were seen to be at the centre of attention, while technology also seemed to be investigated to a large extent.

Table 2 Most cited authors

<i>No.</i>	<i>Authors</i>	<i>Title</i>	<i>Year</i>	<i>Citations</i>
1	Gössling, S., Scott, D. and Hall, C.M.	Pandemics, tourism and global change: a rapid assessment of COVID-19	2020	2637
2	Ivanov, D.	Predicting the impacts of epidemic outbreaks on global supply chains	2020	1262
3	Sigala, M.	Tourism and COVID-19: Impacts and implications for advancing and resetting industry and research	2020	1217
4	Ivanov, D. and Dolgui, A.	Viability of intertwined supply networks: extending the supply chain resilience angles towards survivability.	2020	923
5	Flanagan, B.E., Gregory, E.W., Hallisey, E.J., Heitgerd J.L. and Lewis, B.	A Social Vulnerability Index for Disaster Management	2020	873
6	Hall, C.M., Scott, D. and Gössling, S.	Pandemics, transformations and tourism: be careful what you wish for	2020	737
7	Hosseini, S., Ivanov, D. and Dolgui, A.	Review of quantitative methods for supply chain resilience analysis	2019	622
8	Chowdhury, P., Paul, S.K., Kaiser, S. and Moktadir, M.A.	COVID-19 pandemic related supply chain studies: A systematic review	2021	512
9	Ivanov, D. and Dolgui, A.	A digital supply chain twin for managing the disruption risks and resilience in the era of Industry 4.0	2021	486
10	Remko, V.H.	Research opportunities for a more resilient post-COVID-19 supply chain – closing the gap between research findings and industry practice	2020	482

3 Hypotheses development

3.1 *Relationship between organisational performance and external vulnerability*

Organisational performance can be defined as the overall success of an organisation in achieving its goals. It encompasses various aspects, including financial performance, productivity, efficiency, quality, customer satisfaction, innovation, and employee performance (Weeks et al., 2018). Past studies have explored organisational performance from different perspectives, these include financial performance (Okafor et al., 2021), productivity performance, investment, employee development (Katić et al., 2020), and consumer loyalty (Krajcsák, 2019). The vulnerability concept is studied across various field and disciplines that have been more difficult to define than resilience. However, Maguire and Cartwright (2008) have categorised ‘vulnerability to a hazard’,

‘vulnerability as a state’, and ‘vulnerabilities as components of a community’. Assessing the company’s vulnerability is the key to managing any kind of disruption that can occur in the operations of the manufacturing industry. These vulnerabilities of assessments vary in each company based on the disruption probability and consequences of disruption. There is a combination of high probability and low consequences for normal daily operations management. However, if there is a combination of low probability and high consequences, then it calls for the immediate response of actions apart from the normal activities.

Cai et al. (2018) have argued that different metrics are used in resilience across different fields and have proposed metrics based on performance- and time-related properties. The factors that are involved under the performance-related properties are robustness, adaptability, redundancy, flexibility, and survivability. The diverse impact of external vulnerabilities on organisational performance has also been the subject of several other studies. Notably, Chowdhury et al. (2019) and Nguema et al. 2022 provided compelling evidence that firms confronted with higher levels of external uncertainty were plagued with lower levels of performance and firms with higher level of preparedness proved to have better and sustainable performance. Therefore, based on the above findings and discussion, we can establish the following hypothesis:

H1 External vulnerabilities have a negative relationship with organisational performance.

3.2 Relationship between organisational performance and internal preparedness

Internal preparedness, unlike external influencers, is within the control of the management of any organisation. Factors such as business resources, workers, competencies, marketing, production and other internal strategic choices are very effective to the operation of any business (Shiamwama et al., 2014; Sadiku, 2022). The organisation should be responsible enough to maintain and employ each resource, whether tangible or unimportant to the business’s success. The resources such as machinery, tools, equipment, and other acquisitions should be maintained and repaired as these could impact the operational cost, and proper use can translate into good profits to the business.

According to Chikán et al. (2022), production is a major internal factor vital to business operations. Distribution is another essential internal factor for the success of the business. Both the production and distribution can be affected by the disruptions that can hamper the operation of the business (Bravo et al., 2022). Human resources are also one of the prime determinants of internal preparedness as described by Hanggraeni et al. (2019). The workers’ role in the organisation is extremely important as they paint the organisation’s image to the public. The resource-based view incorporates an internal view of the firm. It combines inimitable, non-substitutable, and valuable resources and capabilities to provide sources for firms’ competitive benefits. The firms use their unique stakeholder engagement competencies and capabilities to innovate products, services, and processes (Guo et al., 2022). Other internal factors that prepare firms to deal with external disruptive events include innovation, technology, marketing, operational activities, human resources reinforcing, research and development, which have been used in earlier studies. These internal factors, as noted by Hanggraeni et al. (2019), are very

significant in offering a competitive advantage and boosting business performance and it provide the high quality products required for the market with high returns.

The relationship between internal preparedness and organisational performance has been subject to several scholarly studies. According to the available literature, internal readiness is crucial in reducing the adverse effects of external vulnerabilities on organisational performance. For instance, Sammut-Bonnici and Galea (2015) revealed that the level of organisational preparedness assumes a pivotal role in determining the efficacy with which a company can navigate the treacherous terrain of external risks, such as economic downturns, changes in market conditions, and disruptions to supply chains. Similarly, the empirical evidence given by Fazli and Zainuddin (2018) demonstrated that the level of preparedness in terms of disaster risk reduction measures and contingency planning exerted a momentous influence on the ability of organisations to persistently cope with and swiftly recover from such events, ultimately accentuating their overall performance. Furthermore, Zou et al.'s (2018) explored the role of internal preparedness in mediating the relationship between external market competition and firm performance and discovered that firms with higher levels of internal preparedness were more exquisitely equipped to dexterously respond to the potent threat posed by external competition, which in turn imparted a salubrious effect on their overall performance. By fortifying their internal preparedness through careful investment in risk management, contingency planning, and disaster preparedness, organisations can adequately weather external shocks and achieve performance excellence. Consequently, based on the above-stated evidence, our study posits the following hypothesis:

H2 Internal preparedness mediates the relationship between external vulnerabilities and organisational performance.

3.3 Relationship between organisational performance and resilient characteristics

Resilience is becoming increasingly important for companies as they face a range of disruptive events, such as natural disasters, catastrophes, and economic collapse. Resilience strategies are part of organisational planning to resolve issues in uncertain situations. Holling (1973) first developed the concept of resilience in ecological science, which he defined as the time required for a system to return to equilibrium after a disturbance event. Later, other definitions of resilience were developed, including returning to the original state, static and dynamic, driven by strategies, and enthusiastic reactions to the event. Based on a review of existing definitions of engineering, safety, and organisational resilience, the author of this research has developed a new definition of resilience. In the context of major industrial organisations, “resilience refers to their ability to adapt with robustness and resourcefulness, respond effectively to internal and external events, and return to normal function using their resilient capacity”. In the context of major industrial organisations, resilience refers to their ability to adapt with robustness and resourcefulness, respond effectively to internal and external events, and return to normal function using their resilient capacity (Swaminathan, 2022).

The characteristics or factors that contribute to building resilient organisations have been mainly studied both empirically and theoretically, these factors are summarised systematically by Ruiz-martin et al. (2017). The characteristics of resilience include the aspects that are embedded within resilience and play an essential part in the operation of

resilience. Understanding these characteristics is the key to applying a resilient environment (Gligor et al., 2019).

Four dimensions of resilience are discussed in this study: robustness, redundancy, resourcefulness, and rapidity of recovery (Annarelli et al., 2020; Sambowo and Hidayatno, 2021). The robustness signifies the strength or the ability of the element that is capable enough to withstand turbulence without losing its function. Redundancy refers to the substitutable aspects or systems that are capable sufficient to satisfy the requirement to function if needed when faced with the disruption. Resourcefulness is the capacity to identify the problems, form prioritise and then allocate resources to cope with the situations where it disrupts certain elements or systems. Rapidity is the stage of capacity where the system's recovery is made by meeting priorities and achieving goals in a specified time so that enough losses are contained and future disruptions are prevented (Pahwa and Jaller, 2023).

Lee and Koh (2018) explored the impact of resilient characteristics on organisational performance in the context of small and medium-sized enterprises (SMEs) in the service sector. It was found that resilient characteristics positively influenced organisational performance. Specifically, SMEs with higher levels of resilient characteristics had better financial performance, higher levels of customer satisfaction, and higher levels of employee satisfaction. Another study by Tsai and Hsieh (2016) examined the impact of resilient leadership on organisational performance in the context of a hospital in Taiwan. It found that resilient leadership positively impacted organisational performance. These findings suggest that resilient characteristics can positively impact organisational performance in various contexts. Therefore, it is plausible to hypothesise that resilient characteristics mediate the relationship between external vulnerabilities and organisational performance. Specifically, organisations with higher levels of resilient characteristics may be better equipped to cope with and recover from external vulnerabilities, leading to better organisational performance. Hence, we can establish the following hypothesis:

H3 Resilient characteristics mediate the relationship between external vulnerabilities and organisational performance.

3.4 Relationship between organisational performance and resilient capacities

One of the essential resilience strategies is adaptive behaviour which is mainly applied in the business environment and balances stability and change (Hillmann and Guenther, 2021). Adaption is also linked to the organisation's competitiveness, which Duchek discusses (2020). Adaptive capacity is defined as the ability of the system to react to disturbances in the external environment and to recover from damage to internal structures embedded in the system that impacts the ability to achieve its purpose (Madani and Parast, 2021). Adaptive capacity, in a way, builds up the culture of working in an organisation, especially dealing with disruptions, and the employee's appetite towards the risk increases. Employees adapt to various situations by trying out different roles within the organisation. The sense of teamwork and togetherness increases adaptability and removes any barriers that prevent them from working as a team.

Absorptive capacity is the dynamic capacity of a firm that allows it to create value and to benefit much with continuous advantage through the management of external knowledge (Yan et al., 2023). Absorptive capacity can help the organisation to respond

rapidly to the actual disruptions by quickly organising all the resources. Also, it can help detect the disruptions' root causes and eliminate them as they arise. With the absorptive capacity in place, the organisation absorbs new knowledge and prepares them to use whenever it is necessary for the future. On the other hand, the transformative capacity, as defined by Ziervogel et al. (2016), is the capacity of individuals and organisations to transform themselves and their communities thoughtfully and consciously. Castán Broto et al. (2019) observed transformative capacity as the sustainability transformations focussing on institutions and processual aspects. Hwang and Lee (2018) asserted that resilient capacities, including adoptive, absorptive, and transformative, can help organisations maintain their operations, limit the impact of external vulnerabilities, and sustain their performance over time.

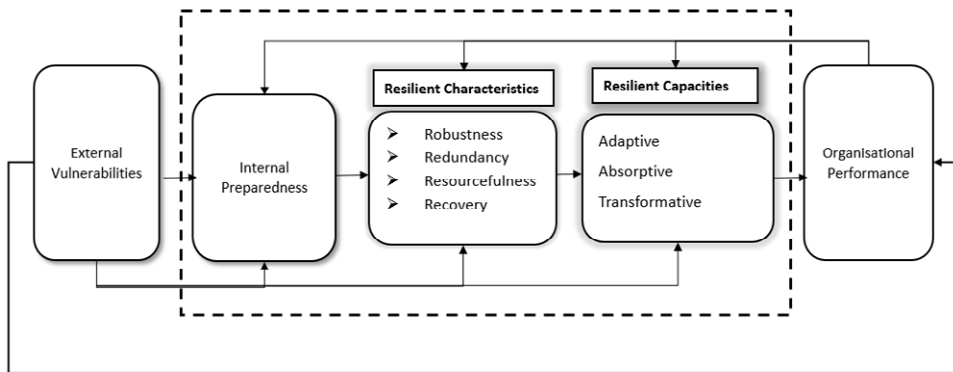
The resilient capacities are essential in environments characterised by high turbulence and uncertainty (He et al., 2018). These environments require organisations to be flexible and adaptable to changing circumstances to remain competitive and maintain performance. Yang and Wu's (2019) established how resilient capacities, such as resource redundancy and contingency planning, are vital in the face of natural disasters. Such disasters can have catastrophic consequences for unprepared organisations, but resilient capacities can help them quickly recover and resume operations following such events. These studies underscore the importance of building and maintaining resilient capacities in the face of external vulnerabilities. Organisations that develop and maintain such capacities can enhance their ability to withstand disruptions and sustain their performance over time, even in the face of unexpected challenges. Therefore, it is reasonable to hypothesise that resilient capacities mediate the relationship between external vulnerabilities and organisational performance. Organisations with higher levels of resilient capacities may be better equipped to cope with and recover from external vulnerabilities, leading to better organisational performance. Hence, the following hypothesis was established:

H4 Resilient capabilities mediate the relationship between external vulnerabilities and organisational performance.

4 Conceptual framework

Based on the resilience theory and dynamic capability theory and the above discussion, the conceptual framework given below identifies the main concepts of the research. External disruption is the effect that can be triggered by external factors (e.g. political, economic, social etc.). For this reason, awareness of external vulnerabilities of different areas is important for the effective response to such disruptions. The internal preparedness is the ability of an organisation to respond proactively to external disruptions. The internal preparedness is influenced by number of internal factors (such as management, resources, etc.), which can have a positive result on the organisational performance if managed appropriately. In addition, resilience is the ability of the manufacturing entity or organisation to adapt with robustness and resourcefulness and then respond effectively to external and internal events by returning to its normal functionality using resilient capacity. Figure 2 provides the organisational resilient strategy framework used in the present study.

Figure 2 Organisational resilience strategy framework



5 Methodology

The study used a cross-sectional quantitative research design to test the relationships between the constructs. This approach was adopted for two main reasons. Firstly, the framework used in this study has previously been tested using quantitative rather than mixed or qualitative methods. Secondly, resilience and performance are better measured using statistical data developed through quantitative methods, as shown from the previous studies. We employed the partial least squares structural equation modelling (PLS-SEM) technique for data analysis using SmartPLS 4.0 software. PLS-SEM was suitable for this study for three reasons:

- 1 PLS-SEM does not require the data to be normally distributed (Hair et al., 2017) and is, therefore, better suited to social science studies where the data is not normally distributed (Nunez-Barriopedro et al., 2021)
- 2 PLS-SEM is more appropriate for finding relationships among constructs, including their directions and strengths
- 3 PLS-SEM provides a flexible method for testing complex model where mediating and moderating variables are included.

5.1 Population and sampling

The population consisted of 5,200 industrial entities that operate in the five industrial sectors including primary sector (raw material industry), secondary sector (manufacturing and construction), tertiary sector (service industry), quaternary sector (information services), and quinary sector (human services) in Dubai, United Arab Emirates. The sampling strategy used for this study was systematic random sampling (Krejcie and Morgan, 1970) since the sampling frame was accurate, accessible, and did not include a periodic pattern. An informed consent letter was attached to the survey form. The rationale behind selecting these industries was that they were developed based on the international standards of infrastructure, services, equipment and operational procedures.

Hence, the researcher believes resilience practices and characteristics could be embedded within the organisation's goal and performance.

5.2 *Measures*

The items and their measurement scales were external vulnerabilities and internal preparedness, as cited by Lee et al. (2013) and Menguc et al. (2010). The resilient characteristics were robustness, redundancy, resourcefulness, and recovery, as Akrofi (2017) and Campos (2016) cited. The resilient capacities were adaptive, absorptive, and transformative, as Park (2011) cited. The organisational performance measures included profitability, return on assets, return on equity, return on investment, client retention, and growth, market share growth, return on sales, innovation proposals, management's active search for innovative ideas, responsiveness to market demands, development of new channels, high employee productivity, engaged employees, and learning ability and adaptability. Each performance measure had corresponding indicators and references, as cited by authors such as Dyer and Ross (2008), and Aydiner et al. (2019). A seven-point Likert scale from 'strongly agree' (1) to 'strongly disagree' (7) was used to measure respondents' degree of agreement or disagreement with the statements on organisational preparedness.

6 **Results**

6.1 *Respondents profile*

The respondents' profile suggested a broad range of perspectives and experiences from a mix of roles and organisation sizes. The response rate was 68%, which was a reasonable rate for a survey. The responses were received from a variety of roles within the organisations, with the highest number of responses coming from senior managers (15.4%), followed by managers at 13.5%. The lowest number of responses came from general managers at 4.7%. The majority of respondents, at 43.8%, were from organisations with 1,000 or more employees. The next highest number of responses, at 26.4%, came from organisations with 100–499 employees, 23.6% of respondents were from organisations with 1–99 employees, and the final 6.3% of respondents came from organisations with 500–999 employees.

6.2 *Assessment of the measurement model*

First of all, exploratory factor analysis (EFA) was conducted to ensure high indicator reliability, internal consistency, convergent validity and discriminant validity. EFA results showed that all factor loadings were loaded on separate constructs and were higher than 0.70, above the recommended value of 0.708 (Hair and Alamer, 2022). We used Cronbach's alpha to test the reliability of the constructs as shown in Table 3. The Cronbach's alpha value ranged from 0.880 to 0.981, which exceeds the required value of 0.70 (Fornell and Larcker, 1981), indicating good reliability. Table 3 shows that the average variance extracted (AVE) for each construct was well above 0.50 (Hair et al., 1998); convergent validity was met. Convergent validity and composite reliability are also reported in Table 3. The HTMT ratio of the correlations was below the threshold of

0.85 (Henseler et al., 2015). The threshold values for various model fit indices are shown in Table 4. All computed values are within the prescribed limits.

Further to this, we tested the discriminant validity by using HTMT ratio and Fornell and Larcker criterion as recommended by Henseler et al. (2015), discriminant validity was assessed through the heterotrait-monotrait ratio (HTMT) of the correlations (see Table 6).

In addition, bootstrapping with 10,000 subsamples and percentile method was performed. The parameters were set on one-tailed testing and 0.05 significance level. The results of the bootstrapping analysis (reported in Table 7) demonstrated that the HTMT statistic was significantly below the threshold value of 0.85. Therefore, discriminant validity was used to assess the convergent validity. Additionally, this study followed approaches recommended by Fornell and Larcker (1981), confirming a good convergent validity (see Table 5).

Table 3 Convergent validity, composite reliability, and average variance extracted

<i>Variable</i>	<i>Cronbach's alpha</i>	<i>CR (rho_a)</i>	<i>CR (rho_c)</i>	<i>AVE</i>
External vulnerabilities	0.880	0.882	0.906	0.581
Internal preparedness	0.900	0.902	0.917	0.526
Resilient capabilities	0.969	0.970	0.971	0.528
Resilient characteristics	0.981	0.981	0.982	0.566
Organisational performance	0.942	0.942	0.949	0.569

Table 4 Model fit

	<i>Saturated model</i>	<i>Estimated model</i>
SRMR	0.038	0.099
d_ULS	7.77	51.919
d_G	4.013	4.127
Chi-square	6858.281	6969.142
NFI	0.774	0.77

Table 5 Heterotrait-Monotrait ratio (HTMT)

	<i>External vulnerabilities</i>	<i>Internal preparedness</i>	<i>Resilient characteristics</i>	<i>Resilient capacities</i>	<i>Organisational performance</i>
External vulnerabilities					
Internal preparedness	0.617				
Resilient characteristics	0.640	0.617			
Resilient capacities	0.583	0.605	0.615		
Organisational performance	0.670	0.610	0.620	0.616	

Table 6 Fornell-Larcker criterion for discriminant validity

	<i>External vulnerabilities</i>	<i>Internal preparedness</i>	<i>Resilient characteristics</i>	<i>Resilient capacities</i>	<i>Organisational performance</i>
External vulnerabilities	0.762				
Internal preparedness	-0.555	0.725			
Resilient characteristics	-0.600	0.584	0.752		
Resilient capacities	-0.543	0.569	0.601	0.727	
Organisational performance	-0.613	0.567	0.600	0.592	0.754

6.3 Common method variance (CMV) and endogeneity

Harman's single-factor test was used (Li et al., 2009) to test the common method variance, in which all the factors of independent and dependent variables were extracted, with the first factor explaining 26.123% of the total variance. This is lower than 50%, which clearly shows that the instrument did not cause variations in the responses but rather the predisposition caused by the respondents alone. The eigenvalue scores were not greater than 1, also confirming that there was no instrument bias. To address the causes of indigeneity, the researcher relied upon external vulnerabilities (independent variable), internal preparedness, resilient characteristics, resilient capacities (mediators), and then organisational performance (dependent variable).

6.4 Analysis of the structural model

Figure 3 shows the structural model, and Table 7 presents the regression results for each construct, including external vulnerability, internal preparedness, resilient characteristics, resilient capacities, and performance. The standardised total effects and two-tailed significance values are presented in this table. The table indicates that external vulnerabilities significantly negatively affect organisational performance, internal preparedness, and resilient capacities. In addition, internal preparedness, resilient characteristics, and resilient capabilities significantly positively affect organisational performance.

Table 8 presents the results of hypothesis testing using mediation analysis. The table shows the mediation results for the relationships between resilient characteristics, capabilities, external vulnerability, internal preparedness, and organisational performance. The findings reveal that resilient capacities partially mediated the relationship between external vulnerability and internal preparedness and the relationship between internal preparedness and organisational performance. Resilient characteristics fully mediated the relationship between external vulnerability and internal preparedness and the relationship between internal preparedness and organisational performance. In addition, the results confirmed that resilient capacities and resilient characteristics had a mediation effect on the relationship between external vulnerability and organisational performance.

Figure 3 Structural model results (see online version for colours)

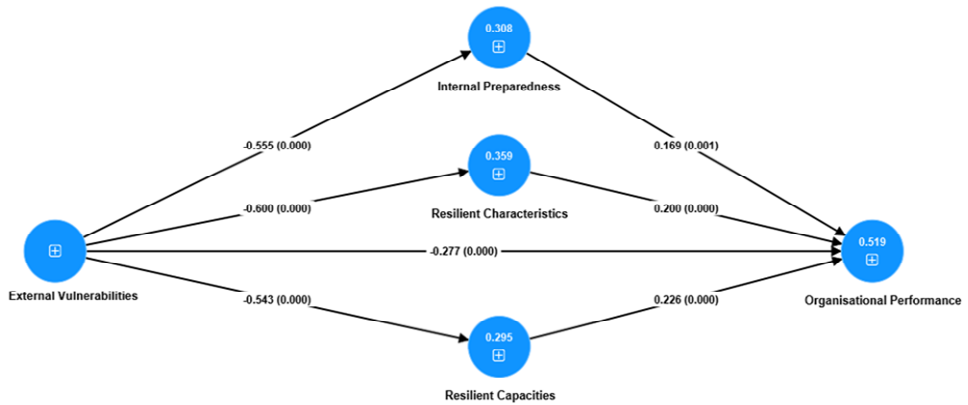


Table 7 Standardised total effects – two tailed significance (BC)

	<i>B</i>	<i>STDEV</i>	<i>T-stat</i>	<i>P values</i>	<i>R-square</i>	<i>Hypothesis</i>
Ext Vul -> Org Per	-0.277	0.055	5.055	0.000		H1 Accepted
Ext Vul -> Int Pre	-0.555	0.039	14.245	0.000	0.308	
Ext Vul -> Res Char	-0.600	0.032	18.868	0.000	0.359	
Ext Vul -> Res Cap	-0.543	0.036	15.002	0.000	0.295	
Int Pre -> Org Per	0.169	0.051	3.324	0.001	0.519	
Res Char -> Org Per	0.200	0.052	3.810	0.000		
Res Cap -> Org Per	0.226	0.052	4.345	0.000		

Notes: Ext Vul = External vulnerabilities; Int Pre = Internal preparedness;
 Org Per = Organisational performance; Res Char = Resilient characteristics;
 Res Cap = Resilient capacities

In summary, the results of the hypothesis testing indicated that resilient characteristics and capacities have a positive effect on organisational performance. The study provided evidence of the mediation effects of resilient characteristics and capacities on the relationship between external vulnerability, internal preparedness, and organisational performance.

Table 8 Mediation relationships between the variables

	<i>β</i>	<i>STDEV</i>	<i>T-stat</i>	<i>P values</i>	<i>Hypothesis</i>
Ext Vul -> Int Pre -> Org Per	-0.093	0.031	3.052	0.002	H2 Accepted
Ext Vul -> Res Char -> Org Per	-0.120	0.032	3.761	0.000	H3 Accepted
Ext Vul -> Res Cap -> Org Per	-0.123	0.029	4.181	0.000	H4 Accepted

Notes: Ext Vul = External vulnerabilities; Int Pre = Internal preparedness;
 Org Per = Organisational performance; Res Char = Resilient characteristics;
 Res Cap = Resilient capacities

7 Discussion

The research discusses the concepts of external vulnerabilities, internal preparedness, resilient organisational characteristics, and capacities, and their effect on business performance. The literature review identified that external environmental factors, such as political, economic, social, and technological factors, as well as internal factors, such as factors of production, human resources, innovation, technology, and marketing activities, can cause disruptions to organisations, affecting their performance. The study also highlights the importance of identifying market vulnerabilities and mitigating them through organisational characteristics to influence organisational performance positively.

The discussion on resilient characteristics highlights the importance of having resilient characteristics in an organisation to handle disruptions and recover from them. These resilient characteristics include robustness, resourcefulness, redundancy, and recovery. On the other hand, resilient capacities, including adaptive, absorptive, and transformative, are critical in an organisation's ability to cope with the unpredictable behaviours of properties between the environment and the systems.

The research identified research gaps in the link between resilient characteristics and resilient capacities and their impact on business performance, resilient characteristics as a mediator for the relationship between external vulnerabilities/disruption and business performance, and a model that demonstrates the effect of external vulnerabilities on business performance with the mediation effect of resilient characteristics and internal preparedness.

Overall, the research emphasises the importance of understanding the external and internal factors that affect organisational performance and the need to develop resilient characteristics and capacities that will enable organisations to withstand turbulence and recover from disruptions. The research also suggests the need for further research to understand the relationship between these factors and their impact on business performance.

The study aimed to investigate the impact of internal preparedness, resilience characteristics, and external vulnerabilities on the performance of an organisation in a disruptive situation. The study results supported all the hypotheses developed for the relationships between the variables. The findings showed that the internal preparedness of the organisation was positively associated with its performance and mediated the relationship between external vulnerabilities and performance. The external vulnerabilities had a negative impact on performance. Additionally, the study found that the resilience characteristics of the organisation were associated with the external vulnerabilities but were not directly related to performance.

Furthermore, the study found that the organisation's internal preparedness and resilience characteristics mediated the relationship between external vulnerabilities and performance in a serial manner. The study results confirmed the theoretical perspectives of various studies that stressed the importance of internal preparedness, resilience characteristics, and external vulnerabilities on the performance of an organisation. Organisations can use the study's findings to develop and implement effective strategies to deal with disruptions and improve their performance.

8 Theoretical and managerial implications

The theoretical research implications of this study are numerous and significant. Firstly, the paper makes a theoretical contribution to the literature on organisational resilience, by introducing the concepts of resilience characteristics, capacities, and internal preparedness, and their effects on organisational performance during disruptions. This contributes to the broader field of resilience and dynamic capabilities theory, a framework for empirical studies on organisations' performance in global business sectors. Secondly, the study contributes to the stream of research investigating the factors affecting organisational performance under different external vulnerabilities by identifying the level of disruption that affects performance and the mediating role of resilience characteristics, capacities, and internal preparedness in this relationship. Thirdly, this study provides important practical implications for organisations in enhancing their resilience and preparedness for disruptions by identifying reliable and valid measurements of resilient characteristics, capacities, and internal preparedness. The study also confirms the positive influence of external vulnerabilities with resilient characteristics in serial on organisational performance, which can help organisations to improve their performance during disruptions.

Overall, this study adds to the body of knowledge on organisational resilience and disruptions by providing a more integrative view of the role of resilient characteristics and capacities as mediator variables for the relationship between external vulnerabilities and organisational performance. These findings have important implications for both theory and practice and can help organisations better understand and prepare for future disruptions.

Similarly, the managerial implications are significant for major industrial sector organisations in the UAE and can help them prepare well against external vulnerabilities. The study highlights the importance of building resilient characteristics and capacities to enhance organisational performance during disruptions. This implies that organisations should build their internal preparedness to withstand and bounce back from uncertainties.

The results of this study suggest that organisations should design and develop a process to assess their preparedness and resilience characteristics, which will help them to identify areas of strength and weaknesses. This will enable managers to take reasonable, innovative actions to ensure business continuity. Additionally, the study provides a more integrative view of resilient characteristics and capacities as mediator variables for the relationship between external vulnerabilities and organisational performance. Organisations should focus on key elements of resilience. They can build up their sense of control, financial capital, and decision-making ability in the face of uncertainties. This study is significant in helping organisations prepare well against external vulnerabilities, enhancing sustainability, and contributing to the country's overall economic development.

9 Limitations of the research

Even though this study makes significant contributions to the current research, a few limitations must be recognised, first, the amount of limited data may affect the validity of the findings. Second, this study has adopted a non-probability sampling strategy because of access problems. This has limited the researcher from applying probability methods to

select the respondents from a sample of all UAE major industrial sector organisations, which could have allowed the researcher to create generalised research outcomes and produce a general inference for the UAE industrial sector. Third, using a cross-sectional quantitative research design to evaluate the proposed mediation framework instead of a longitudinal or qualitative methodology may have produced slightly different results.

10 Conclusions

The study concluded that the UAE's external vulnerabilities are low compared to other countries, which is a positive finding for the UAE's business environment. It showed that external vulnerabilities had a negative impact on an organisation's performance, and the UAE's low level of external vulnerabilities suggests that the business environment is less disruptive and more stable, which can positively affect the performance of organisations operating in the country. The study also highlights the importance of internal preparedness and resilience characteristics for organisations to deal effectively with disruptions or unexpected events. An organisation's internal preparedness positively influences its performance and mediates the relationship between external vulnerabilities and performance. This suggests that having a well-prepared and proactive approach to managing risks and disruptions can help organisations in the UAE to overcome any challenges they might face due to external factors.

Additionally, the study found that an organisation's resilience characteristics were associated with external vulnerabilities but not directly related to performance. This suggests that while having resilient characteristics is important for an organisation to handle disruptions and recover from them, it is not enough to improve performance. However, the study found that an organisation's internal preparedness and resilience characteristics acted as mediators in the relationship between external vulnerabilities and performance in a serial manner, indicating that both factors can work together to positively impact an organisation's performance. In summary, the study's findings suggest that the UAE's low external vulnerabilities, combined with effective internal preparedness and resilient characteristics, positively impact the performance of organisations operating in the country.

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