

ORGANISATIONAL RESILIENCE BUILDING IN SMALL AND MICRO ENTERPRISES UNDER THE VUCA ENVIRONMENT

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Abstract: *Small and micro enterprises (SMEs) encounter big blows while operating in VUCA (Volatility, Uncertainty, Complexity, Ambiguity) environment as a result of their resource constrains and external dependencies. This study build a conceptual model that links organized performance to the elements of external environmental factors, internal resources, resilience capabilities, and the contribution of resilience building to SMEs. From systematically reviewing literature on VUCA and organisational resilience theories, the model specifies the pathways of how SMEs adapt and thrive in continuously changing (VUCA) conditions.*

Keywords: *Organizational Resilience; Small and Micro Enterprises (SMEs); VUCA Environment*

Introduction

Global entrepreneurship has witnessed a paradigm shift on account of the emergence of the VUCA (Volatility, Uncertainty, Complexity, Ambiguity) environment. The term was originally designated by the U.S. military to describe situations in post-Cold War periods (Bennett & Lemoine, 2014), but has since been taken up broadly to explain fast transformation of business environments. Small and micro enterprises (SMEs) are small and have limited resources, and weak external networks are very prone to this trend of VUCA environment, and in a manner of speaking they are the victims of their environment. For instance, disruptions to the economy due to the COVID 19 pandemic revealed the fragility of many SMEs, as data shows, over 60% of small businesses across the globe faced very difficult operational conditions during the pandemic (OECD, 2020). However, technological advancements and market globalisation have exacerbated the levels of complexity and uncertainty in these businesses, causing them to build greater levels of adaptability and organizational resilience (Settembre-Blundo et al., 2021). An important topic in both academia and practice is organisational resilience, or the ability to anticipate, absorb, and adapt to disruption (Bhamra et al., 2011). Nevertheless, the research on the mechanisms of resilience built up by SMEs in the VUCA environment is still insufficient.

SMEs play a vital role in the global economy and innovation systems, acting as drivers of economic growth, employment creation, and innovation. They are considered the backbone of most economies. In OECD countries, SMEs contribute over 50% of GDP, with some estimates suggesting this figure rises to as much as 70% globally (ILO, 2023). Due to their small size and flexible decision-making processes, SMEs are often catalysts for technological innovation and business model transformation. For instance, SMEs excel in green technology, the internet economy, and the service sector, where their innovative capacity is particularly pronounced (Audretsch, 2022). SMEs are not only the cornerstone of urban economies but also provide critical economic opportunities in rural and underdeveloped areas, helping to reduce regional economic disparities (ILO, 2023).

Existing studies on organisational resilience primarily focus on large corporations or specific industries. Research on SME resilience highlights the importance of resource strategies, social networks, and leadership adaptability. Yet, these studies disregard the compounded problems of SMEs in VUCA environment, like resource scarcity and systemic uncertainty. Moreover, the majority of studied neglect the combined effect of VUCA dimensions on the processes of building their resilience. For example, although there is a wide body of literature about "how to react to "volatility" or "complexity," there is no corresponding research on the joint impact of all four VUCA dimensions on resilience. Moreover, empirical studies commonly focus on a particular region or industry, which makes it difficult to generalize their results.

First point, what are the individual impacts of VUCA dimensions on organizational resilience in SMEs? Second point, the key elements, and mechanisms of resilience building within SMEs. Third point, what unique characteristics of SMEs (such as flexibility, flexibility and close customer relationships), can SMEs leverage to enhance their resilience? This research addresses these questions in order to build a conceptual model for understanding and improving SME resilience in the VUCA environment.

Literature Review

Theoretical Development of Organisational Resilience Research

Organisational resilience is the ability to recover from adversity and adapt to change. Having more than one dimension, which includes leadership, culture, and communication strategies, it is capable of contributing towards making organisations thrive in turbulences (Mhlanga and Dzingirai, 2024; Pradana and Ekowati, 2024). Recently, organisational resilience has been an important area of study in academia and practice. Increasing external uncertainties have led to an increase in the requirement of resilience, as resilience is now one of the crucial competencies for organizational survival and growth particularly under conditions of VUCA (Duchek et al., 2020).

The origins of organisational resilience research in the context of organisational behaviour and management studies are found in the adaptability theory of ecological systems. A notable contribution is Hamel and Välikangas (2003), which proposed the concept of strategic resilience through the lens that the resilience or ability to innovate for organisations also applies in response to crises. Fiksel (2015) defined resilience as the ability to absorb shocks and revert quickly, stating the following model of adaptability, flexibility, and risk mitigation. Organisational resilience capability related to organisations' predictive, responsive, and adaptive capacities was developed by Duchek (2020).

In recent studies, organisational resilience is recognized as being the means to cope with challenges, such as market volatility and crises. For example, leadership and communication have been indicated as decisive factors to promote responsiveness during such a change phase (Calipah et al., 2024) and a strong adaptive culture can greatly contribute to resilient (Muadzah & Suryanto, 2024).

Classification of Prior Research

While organisational resilience research is diverse, the capability-driven, resource-dependent, and complex adaptive system approaches are frequently highlighted due to their central role in explaining resilience mechanisms.

Capability-Driven Research focuses on the core capabilities of organisations, such as dynamic capabilities, innovation, and learning. This stream of research looks at how organisations develop these capabilities to adapt to changing, uncertain environments. For example, according to Teece et al. (2016), dynamic capabilities played a key role in enabling firms to reconfigure their resources and to adapt their strategies in chaotic contexts. Lengnick-Hall et al. (2011), for example, concurred with this view, asserting that organizational learning and flexibility are critical to maintain resilience. Linnenluecke (2017) also underlined the role of cultural and structural innovation which he argued that a robust culture of adaptability and innovative structures lead to the fulfillment of organisational resilience.

Resource-Dependent Research is grounded in the Resource Dependency Theory (RDT), The organization can address external uncertainties by utilizing the external networks to secure sparse resources, as postulated in the view. It views strategic alliances and partnerships as avenues for building resilience. Hamel & Välikangas (2003) talked about the ways that organisations can become more resilient through nurturing of collaborative relationships and

the continued availability of critical resources during and post crises. However, Branicki et al. (2018) expanded these notions by emphasizing the relevance of social capital and collaboration of local networks (mainly for SMEs). In volatile times, these networks play an important role in ensuring that smaller firms have access to the resources needed to survive and adapt to new external disturbances.

Complex Adaptive Systems Research takes a systems-oriented approach, Organisations are considered to be dynamic, embedded within complex and unfolding environments. This perspective is about the way that organisations are continuously learning and collaborating within their ecosystems. Holling (2001) suggests that organisational resilience is a key defining term in complex adaptive systems. Fiksel (2015) applies this theory to organisational management and suggests that dynamic networks and continuous learning should be applied to organisations to increase their resilience. Almeida et al. (2021) apply this approach to SEMs and show that cultural change and collaborative networks play an important role in the ability of SEMs to adapt to complex systems. This study demonstrates how organisations can sustain themselves in turbulent environments by leveraging adaptive and systemic behaviours.

Characteristics and Resilience Needs of Small and Micro Enterprises

Research on organisational resilience in SEMs in the context of VUCA focuses on themes related to resilience strategies, digital transformation and organisational learning.

With regard to resilience strategies, SEMs often employ strategies such as diversification of financial resources, co-operative networks and green development. According to recent research, having multiple sources of funding is essential to reduce financial risk and maintain stable operations, especially in digital businesses (Kumar et al., 2024). Partnerships and resource sharing provide additional help to SEMs to enhance organisational resilience, thus collaborative networks are important for organisational resilience during a crisis (Zutshi et al., 2021). In addition, a green-focused operating model enhances a firm's social image (Zahro et al., 2024), thus enabling organisations to grow in the long term.

Digital transformation acts as a key element in refining the organisational resilience of SMEs in the current context. Adopting digital tools is shown by studies to help enterprises optimize allocation of resources and improve operational efficiency which strongly sharpens their resistance to external shocks (Manser Payne et al., 2021). Development of dynamic capabilities is especially critical during the digital transformation process. For the enterprises to maximise the use of digital marketing and e-commerce platforms in expanding business and fostering innovation, the enterprises need to nurture adaptive dynamic capabilities (Hokmabadi et al., 2024). Despite that, research on the long term impacts of digital transformation on resilience is thus far inadequate, especially when it applies and varies across different industries. Therefore, this gap points for further investigation (Prabowo et al., 2021). So digital transformation is not only a main strategy to increase SME resilience, but it is also a promising future research field.

The building of resilience for SMEs is inextricably linked to organisational learning. According to research, many organizations learn resilience experientially by incorporating previous challenges into their adjustments (Rodríguez Sánchez et al., 2021). Organisational learning – the effectiveness in all phases of resilience building, able to develop predictive, responsive as

well as adaptive capacities (Lombardi et al., 2021). In addition, adaption by systematic learning management is crucial. To keep up with changing environments, enterprises have to adapt structured learning methodologies instead of old legacy practices (Evenseth et al., 2022). Learning processes assume a central role in helping SMEs survive in an uncertain environment.

Research Gaps

It is known that VUCA environment and organisational resilience have been well supported by existing studies with substantial theoretical support; however, the area of SMEs' research is still in its infancy and limited in focus. First of all, a lot of literature focuses on the medium and large enterprises skipping the challenges of SMEs caused by resource constraints and dependency on external environment (Duchek et al., 2020). For instance the dependent on resource limitations and external reliance of SMEs implies their respective resilience building efforts are more context dependent. Yet, many existing complex theoretical models of complexity dynamics are not very practical, providing little direct guidance to SMEs, inhibiting their practical utility. Secondly, there are only a handful of global studies on SMEs as well as severe regional gaps in research.

While most studies concentrate on pathways for building resilience for medium and large enterprises in the developed countries, there are also, relatively, fewer studies for SMEs in the development economies or in specific economies such as the Gulf economies. The policy, cultural and market environmental differences have badly influenced the aspects of the SMEs in these regions as they navigate the VUCA environment. However, there are not enough relevant studies to make generalisations and use relative theory. As a result, the question of resilience building mechanism for SMEs in different regions, and from different economic contexts has become an important research need. This study brings VUCA environmental theory and organisational resilience models together to focus on SMEs as they provide theoretical guidance on improving their resilience within highly uncertain environments.

Research Methodology

Conceptual Modelling Approach

This study adopts a conceptual modelling approach to explore how SMEs build resilience under VUCA (Volatility, Uncertainty, Complexity, Ambiguity) conditions. The selection of theories links external environmental factors, internal resources, and resilience-building strategies to organisational performance, focusing on identifying key resilience dimensions relevant to dynamic and uncertain environments.

Systematic Literature Review

A systematic literature review provided the theoretical foundation for the model. Searches were conducted on Web of Science and CNKI using keywords "VUCA," "organisational resilience," "SME performance," and "resilience-building." Inclusion criteria focused on studies published after 2000 that addressed resilience capabilities in SMEs or VUCA-related challenges, while non-peer-reviewed articles and irrelevant studies were excluded.

Thematic Analysis for Model Development

The selected articles were analyzed thematically to identify recurring patterns and emerging themes. Resilience dimensions such as adaptability, resource flexibility, and cultural resilience

were mapped to VUCA dynamics: adaptability addressed volatility, resource flexibility mitigated uncertainty, leadership strategies handled complexity, and cultural resilience countered ambiguity. These dimensions formed the basis of the conceptual framework.



Figure 1: Research Roadmap

Source: Developed By The Author

Construction of the Conceptual Model

Theoretical Basis for Model Construction

Based on the VUCA environmental theory, the resource dependency theory and the dynamic capabilities theory, the conceptual model for this study is presented. Firstly, the VUCA environmental theory provides an analytical framework for understanding the external pressures targeted by the model. It describes the external environment of firms (Bennett & Lemoine, 2014), which poses several new challenges for firms' strategic decision-making and resource management, especially more pronounced for SMEs with limited resources. Uncertainty requires strategies such as resource redundancy and efficient information management to reduce decision-making risk, volatility requires rapid adaptation and flexible resource allocation, and ambiguity and complexity highlight the value of cultural resilience and cross-functional collaboration, respectively.

Second, dynamic capabilities theory emphasises the importance of internal resources (Teece et al., 2016). SMEs, based on their flexibility, can foster innovation and streamline internal processes even with limited resources, thus enhancing organisational resilience. SMEs can take advantage of changes in the external environment by rationalising the allocation of internal resources to improve their capacity to innovate and adapt. Dynamic capabilities theory explains in this study how internal resources support the construction of organisational resilience through flexibility and adaptability.

Thirdly, resource dependence theory emphasises the importance of external networks (Wang et al., 2022). With limited resources, firms need to rely on social capital or external networks to obtain necessary resources. Collaboration with external partners can interoperate resources, promote information sharing, and improve risk-taking capacity. External networks are an important source of resource support and are even more important in a VUCA environment. The conceptual model in this study integrates internal resources (dynamic capabilities), external networks (resource dependence) and the external environment (VUCA environment). Through the synergy between the elements, SMEs can improve their resilience, market efficiency and innovation outcomes in a rapidly changing environment, thus achieving long-term stable survival and development.

Key Elements and Pathway Design of the Conceptual Model

First point, about the conceptual model's main components. Consisting of the external environment (VUCA characteristics) and internal resources by the input variables. The VUCA

characteristics are the main challenges that firms face when operating in an environment of market volatility, lack of information, and the interaction of multiple influences (Bennett & Lemoine, 2014). The support that can be provided by enterprises in planning environmental change Zoom can be implemented through the internal resources, such as the financial capital, social capital, and employee capabilities (Zahro et al., 2024). A system of adaptability, responsiveness, and recovery.

In its dimensions, these encompass the organisation's capacity to appropriate strategies, handle crises and to reestablish its installation, respectively (Duchek et al., 2020). Market performance, innovation achievements, and sustainable development are the multifaceted performance outcomes represented by output variables of the resilience building efforts. The ultimate impact of organisational resilience to enterprise effectiveness and growth has been yielded (Holing, 2001).

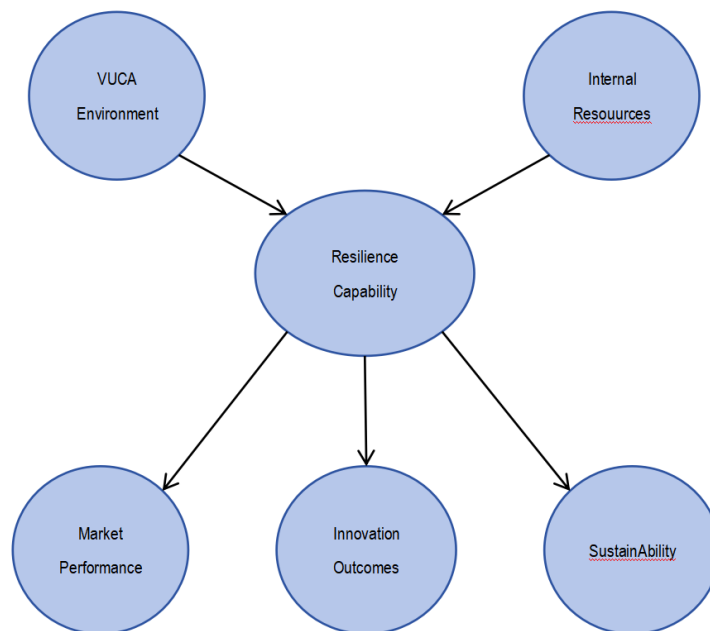


Figure 2: Conceptual Model Pathway

Source: Developed By The Author

Second point, about pathway design of the conceptual model. In turn the conceptual model shows the causal relationships among input variables, mediating mechanisms, and output variables through a pathway design, which demonstrates the logical flow of resilience building in enterprises. The organisational resilience capabilities are directly influenced by VUCA attributes of external environment. For example, in complexity, orchestrating adaptability is required, and in uncertainty, efficiency of decision making is optimised (Teece et al 2016). They indirectly impact organisational performance by enabling the development of organisational resilience capabilities, mainly along four dimensions.

For example, financial resources help critical funding of crisis response, social capital bridges collaborative networks for adaptability and employee capabilities ensure the efficiency of strategic adjustment (Chowdhury et al., 2019). Organisational performance is realised through

market performance, innovation outcomes and sustainable development, and further through resilience capabilities acting as mediating mechanisms (Duchek et al., 2020).

Discussion and Analysis

Theoretical Contributions of the Model

An integrated conceptual model based on VUCA theory and organisational resilience theories is proposed in this study, including theories proposed on enterprise strategies to navigate dynamic environments. While previous research tends to concentrate on medium or large enterprises, this model is specifically focused on building resilience mechanisms in resource stressed small and micro enterprises (SME) (Duchek et al., 2020). The model is developed to combine external environmental factors (VUCA attributes) and internal resources (financial capital, social capital, and employee capabilities) to systematically explain how the variables affect enterprise performance through the mediating role of resilience capabilities. Not only does this integration deepen our understanding of resilience drivers, it reveals the importance of dynamic capabilities and network collaboration, broadening the relevance of resource dependency theory. Furthermore, the model investigates both the universal and the specific resilience building aspects of SMEs. Bhamra et al. (2011) propose that universally, adaptability, responsiveness and recovery are central dimensions for building resilience construction for all enterprises.

Practical Implications of the Model

Based upon the model, actionable guidance is provided to SMEs in their attempt towards building resilience in VUCA environments. The first way for enterprises to become more resilient is via resource integration. For instance, diverse sources of funding provide more financial stability; whilst building social capital permits SMEs to draw from collaborative networks to share resources in times of crisis (Zahro et al., 2024). Second, innovation strategy is the other critical pathway in resilience. Advancing product and service innovation helps give SMEs a competitive advantage in the market so that they can respond more effectively to uncertainty. While this model has practical utility as seen from many SMEs moving quickly to e commerce platforms to help offset lost offline sales during the COVID 19 pandemic.

Policy Recommendations

This study provides policy recommendations for governments and policymakers to support SMEs in increasing resilience under VUCA conditions. Firstly, financial support should be given priority to overcome the funding challenges faced by SMEs which are very small in scale. Governments have the ability to design loan programmes, tax deductions and subsidies tailored to lessen SMEs' financial pressures and to guarantee stable funding. Second, the policy environment needs to foster an innovation friendly policy. Measures including creating innovation funds, specific taxation on R&D, and gathering innovation resources sharing platforms, can make SMEs participate in the development of technology and business model innovation to improve their technological capabilities and market competitive ability.

In addition, SME digital capabilities need to strengthen to build resilience. On the other hand, governments can enable the development of these businesses through offering digital skills training, technical support and infrastructure development to SME businesses to utilise digital tools and electronic commerce platforms more efficiently in navigating complex market

environments (Hokmabadi et al., 2024). These measures enable governments to fully support the development, resilience and sustainability of SMEs.

Conclusion and Future Directions

Research Summary

One of the proposals of this study is a conceptual model of building organisational resilience of SMEs in VUCA environment. The research systematically reviews relevant theories that explain how the four dimensions of the VUCA environment volatility, uncertainty, complexity, and ambiguity influence strategic decision making process in enterprises.

Furthermore, in doing so, the study advances the theoretical applicability of organisational resilience theory to SMEs and integrates multiple theoretical perspectives to contribute both theoretical grounding and practical insights for improving SME resilience. This research contributes to academic discussions on SME survival and growth in dynamic environments, and provides important references for policymaking and managerial practices.

Research Limitations

This study presents a theoretically significant conceptual model despite several limitations:

First point, lack of Model Validation: In this study, we rely primarily on literature review and theoretical construction to support the model without empirical data to demonstrate the effectiveness of the model. This limits the applicability of the findings in real-world scenarios.

Second point, insufficient Data: The absence of field data collection leaves the relationships among model variables untested. Future empirical studies are needed to further examine these relationships, particularly across various industries and regional contexts.

Third point, temporal and Regional Constraints: The study draws from recent literature and global theoretical discussions but may not fully capture the specific needs of SMEs in particular regions or industries at different stages of development.

Future Research Directions

Building on these limitations, future research can proceed along the following directions:

First point, Data Validation and Model Refinement: Future studies should collect empirical data from SMEs across diverse industries and regions to validate the causal relationships among input variables (VUCA attributes and internal resources), mediating mechanisms (resilience capabilities), and output variables (organisational performance). This will enhance the model's practical relevance and scientific rigour.

Second point, Cross-Cultural and Cross-Industry Comparisons: Resilience-building mechanisms in SMEs may vary significantly across cultural and industrial contexts. Comparative analyses can explore how factors such as regional culture, policy environments, and industry characteristics modulate the model's components, thereby broadening its applicability.

Third point, Exploration of Dynamic Perspectives: Future research could employ longitudinal studies to investigate the evolutionary pathways of SME resilience at different stages of development. Additionally, examining the long-term effects of the VUCA environment on SMEs' dynamic capabilities will provide deeper theoretical insights into enterprise management strategies.

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