



BUSINESS AND MANAGEMENT 2022

May 12-13, 2022, Vilnius, Lithuania

NEW PERSPECTIVES ON MANAGEMENT AND RESILIENCE OF BUSINESS ORGANISATIONS http://vilniustech.lt/bm

ORGANISATIONAL RESILIENCE: CREATING AMBIDEXTERITY IN STRATEGIC AND OPERATIONAL RESILIENCE

Tim COLBERG*

Department of Management, BA School of Business and Finance, Kr. Valdemara str. 161, Riga, Latvia

Received 05 March 2022; accepted 20 March 2022

Abstract. In the current unstable business environment, resilience in organisations might be an enabler to withstand this uncertainty. This study aims to separate strategic and operational resilience and discuss the simultaneous approachability to enhance the understanding of resilience. Therefore, this conceptual research applies a literature review of leading publications in organisational ambidexterity and organisational resilience. Achieving organisational resilience is possible by seeing resilience, not as a standalone function, but by sensing and seizing opportunities and threats and transforming the business model into a resilient state by pursuing an ambidextrous organisation by exploiting operational and exploring strategic resilience. Combining organisational resilience and ambidexterity into one framework can help organisations and management prepare for and deal with uncertainty by building resilience on the strategic and operational levels.

Keywords: resilience, organisational resilience, strategic resilience, organisational ambidexterity, uncertainty.

JEL Classification: M14.

Introduction

With the financial crisis, diseases, war, and disruptive technologies, companies must face several obstacles to overcome in recent years. Uncertainty and adversity in business can come from several hurdles (Hughes et al., 2020). Whether businesses thrive or suffer during these uncertain times might be essential for the employees, management and other stakeholders involved in these companies (Fathy El Dessouky & Al-Ghareeb, 2020). In academia, scientists discuss the idea of resilience to explain why some companies can handle uncertainty and adversity more successfully than others (Linnenluecke, 2017). Nevertheless, the concept of resilience is still fuzzy and defined differently in several scientific fields. From the business management perspective, organisational resilience is getting more traction to explain the process of renewal and survival before, during and after adversity (Hillmann & Guenther, 2020).

In the last years, the discussion to define resilience and organisational resilience to dissolve the fuzziness of this concept and further increase its general understanding is rapidly advancing. Linnenluecke (2017) shows an upward trend in published articles in this field. Recently Hillmann and Guenther (2020) display continued high interest in this concept. However, more attention and an increasing number of articles do not always help to create a shared understanding or definition of resilience. Researchers and practitioners use resilience increasingly as a buzzword and do not think about the implications of using resilience correctly. On the other hand, the amount of research for resilience dealing with resilience as an outcome or measuring resilience in companies is growing. From these publications, ideas of a conceptualisation for resilience can be drawn.

The concept of resilience is defined in mainly two ways in the business field. On the one hand, organisational resilience is a company's capability to bounce back from crisis or adversity and deal with survival and robustness (Iborra et al., 2020). On the other hand, research about viewing resilience as a capacity to renew itself before a crisis and creating competitive advantages by continuously reinventing itself (Morais-Storz et al., 2018) to forestall uncertainty is becoming more widespread. Nevertheless, both ideas are not contradicting each other but can be seen as two sides of a coin. Whereas one is dealing with more strategic ideals of resilience, the other follows a more operational point of view. However, simultaneously achieving both seems to be a pathway for creating a resilient company during uncertainty.

^{*} Corresponding author. E-mail: timcolberg@gmx.de

^{© 2022} The Authors. Published by Vilnius Gediminas Technical University. This is an open-access article distributed under the terms of the Creative Commons Attribution License (CC-BY 4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Therefore, following the idea of organisational ambidexterity to follow two ambivalent goals at once might be a research direction for organisational resilience.

However, research distinguishing organisational resilience into two streams using ambidexterity to combine them is underexplored in recent publications. Therefore, this paper aims to build and discuss a framework for an ambidextrous organisation for strategic and operational resilience based on recent publications in business management. This research is done by conducting a literature review of leading publications in organisational ambidexterity and organisational resilience and forging a framework for organisational resilience.

After this introduction, a section about the theoretical background of resilience and ambidexterity is given. Afterwards, the combination of both ideas by a framework is discussed in detail. The papers close with further research directions and conclusions.

1. Conceptual background

1.1. Resilience

Resilience stems originally from the Latin word "resilire", which can be translated with "bounce" or "jump" back (Cerè et al., 2017; Iborra et al., 2020). Resilience is used in several scientific fields in this original meaning with slight deviations. Whereas it is used in finance (Kyle, 1985), engineering (Hollnagel et al., 2007), psychology (Rutter, 1987), or socioecology (Holling, 2001), resilience explains how a research object or subject can return (bounce back) to their former state (Sutcliffe & Vogus, 2003). How this "bouncing-back" can be achieved is under discussion. Several researchers define resilience as an ability (Belalcázar et al., 2017; Hillmann & Guenther, 2020; Lampel et al., 2014; Appiah et al., 2020), capability (Annarelli & Nonino, 2016; Williams et al., 2017) or as an outcome (Teixeira & Werther, 2013). The impact of resilience is explored in business management topics like human resource management (Fathy El Dessouky & Al-Ghareeb, 2020), supply chain management (Shi & Mena, 2021) and cyber security (Belalcázar et al., 2017) to rather general research topics like power systems (Parise et al., 2021), urban planning (Fitzgibbons & Mitchell, 2021) or tourism (Romão, 2020).

Another crucial discussion area is if some disturbance or crisis must occur to trigger resilience or not. Researchers like Ibarrarán et al. (2009) reverse the idea of resilience and measure the vulnerability of an ecological system to shocks or crises. Sensitivity and adaptive capacity (Acuti et al., 2020) are needed to deal with disturbances, translating into a Vulnerability-Resilience Indicators Model (Cárdenas et al., 2016; Ibarrarán et al., 2009). They see resilience and vulnerability as opposites but influencing each other (Cárdenas et al., 2016).

In contrast to this, Morais-Storz et al. (2018) argue that no one-time disturbance or crisis is needed for resilience because the environment of many companies is constantly "turbulent, complex, and uncertain" (p. 1184). Within these conditions, resilience is needed continuously and not just to recover from a crisis. In the same direction is the analysis of Välikangas and Merlyn (2005) to view resilience as exploring strategic threats and opportunities for companies pre-emptively. This differentiation is further discussed in this paper in the upcoming chapters.

In general, resilience as a concept has surged in the number of publications in different research fields. One specific research field for resilience is the field of business management. For businesses, resilience research has been gaining a surge of interest in recent years (Linnenluecke, 2017; Hillmann & Guenther, 2020). Due to the focus on survival and thriving, the research in this field concludes the expression of organisational resilience to distinguish itself from the other existing research fields. The distinguishing factors from organisational resilience to resilience are discussed in the following chapter.

1.2. Organisational resilience

Resilience translates into the business field as the capability of companies to survive and how they can thrive during uncertain times (Linnenluecke, 2017). In history, some companies have shown to be more longevity, robust against changes, or even more flexible in dealing with those changing conditions. Therefore, organisational resilience is analysed as a distinguishing factor for companies, whether they fail or flourish.

Many researchers view organisational resilience as the concept that analyses how specifically companies deal with uncertainty or even drastic or sudden events like the outbreak of COVID-19 and the subsequent collapse of international supply chains or the financial crisis from 2008 (Iborra et al., 2020). Moreover, Linnenluecke (2017) extends the idea of organisational resilience to why some companies are better prepared for or successful during such adversity than others. Whereas organisational resilience might be like resilience in other research areas, in business management, resilience is not just to return to a previous state, but also to evolve and even transform their business (Morais-Storz & Nguyen, 2017).

Like resilience, organisational resilience is not yet undoubtedly defined and universally accepted. Similarities and differences stem from the general concepts of resilience, whether resilience is created or achieved (Hillmann, 2020), a capability (Battisti et al., 2019) or a characteristic (Välikangas, 2016) of companies. Furthermore, a second research stream in organisational resilience is gaining more popularity, which is about resilience interacting with maintaining a competitive advantage (Carvalho et al., 2016; Marshall & Ojiako, 2010) and exploring whether organisational resilience is a reactive (persist, regenerate, and recover) or proactive (anticipating and adaptive) instrument. Unfortunately, no clear definition has been found or agreed on until now. Nevertheless, some academics try to encompass the two streams into one definition. For future clarity, the definition of Lengnick-Hall et al. (2011) is adopted, which includes

several discussions and built one definition for "Organisational resilience is defined here as a firm's ability to absorb effectively, develop situation-specific responses to, and ultimately engage in transformative activities to capitalise on disruptive surprises that potentially threaten organisation survival." (p. 244).

This definition entails the capability to deal with adversity in a transformative way. Therefore, the idea of "bouncing back" is still included and further, gaining organisational resilience by creating an environment of innovation and transforming their activities is added. This ambiguity can be found in several definitions (Appiah et al., 2020; Iborra et al., 2020; Annarelli & Nonino, 2016). However, it is still unclear if different capabilities and skillsets are involved in these combined definitions. For example, Välikangas and Romme (2013) introduced the terms of organisational resilience as operational and strategic resilience. Operational resilience is recovery-based, including persisting and surviving threats and setbacks after a crisis. On the other hand, strategic resilience is renewal-based, by exploration and experimentation without a crisis to turn threats into opportunities (Välikangas & Romme, 2013). Other authors use the term' strategic resilience' as well, Morais-Storz and Nguyen (2017) summarises it as "proactive change instead of reactive change" (p. 94) or Vidal et al. (2014) definition of strategic resilience as "[...] to anticipate opportunities, respond and adapt to a crisis, renewal itself and thrive" (p. 1248).

Annarelli and Nonino (2016) define operational and strategic resilience as static and dynamic resilience, whereas static resilience is "linked to operational management of internal and external resources" (p. 21) to reduce impacts and therefore increase robustness. Zafari et al. (2020) similarly define a resilient system without distinguishing between strategic and operational resilience. However, the two ideas are deeply embedded in their definition of "A resilient system is a one that survives adverse events by anticipating, preparing, preventing, or mitigating risks before crisis events occur and respond to disruptions in a way that its function is maintained and/or improved rapidly after a disruption." (p. 279)

Besides research in strategic resilience, which, concluded by Iborra et al. (2020), is still rare, research on operational resilience is plentiful. However, the term "operational" is not used much in research. Mostly, operational resilience is just referred to as resilience in general (Mehravari, 2013; Caralli et al., 2010) due to the indifference of both ideas.

1.3. Organisational ambidexterity

Competitive advantages can be created in several ways: some companies seek to do the best they can with the resources at hand (cost leadership strategy), and others are as innovative as possible (differentiation strategy). For many years, these are seen as two sides of a coin with trade-offs between both (Raisch et al., 2009). However, this changed with introducing the concept of organisational ambidexterity in the late 90th of the last century. Tushman and O'Reilly (1996) introduce the notion that superior performance or sustained competitive advantage (Junni et al., 2013) can be expected when a company can achieve both goals simultaneously. More precise, "simultaneously exploiting existing competencies and exploring new opportunities." (Raisch et al., 2009, p. 685) describes ambidextrous organisations.

Raisch and Birkinshaw (2008) see this concept as an umbrella concept, spanning several research fields. Ambidexterity is about the need to be adaptive (Gibson & Birkinshaw, 2004; Raisch & Birkinshaw, 2008) or flexible (Park et al., 2020) for exploration and efficiency (Raisch & Birkinshaw, 2008; Park et al., 2020) or aligned (Gibson & Birkinshaw, 2004) for exploitation simultaneously at a business unit level (Gibson & Birkinshaw, 2004) or project-based (Petro et al., 2019) to achieve "organisational performance improvement, adaptation and survival" (Simsek, 2009, p. 597). O'Reilly and Tushman (2013) elaborate on their original theory by stating that ambidexterity is about survival and how a company can innovate to survive.

Nevertheless, O'Reilly and Tushman (2013) define that organisational ambidexterity is inefficient in the short term due to increased efforts, and not all innovations might be successful in the long term. This tension can be lifted by focusing on the top management team's contextual, mutual, dramatising, and focalising (Maclean et al., 2020) capabilities. Furthermore, Park et al. (2020) explore the connection between ambidexterity and digitalisation, expressing that digitalisation harms organisational ambidexterity on the interfirm but improves it on the intrafirm level.

In conclusion, companies can achieve organisational ambidexterity by allocating resources to exploiting and exploring (O'Reilly & Tushman, 2008) to thrive during uncertainty. The following two chapters will separate operational and strategic resilience ideas to explore the need for ambidexterity to realise organisational resilience.

2. Findings for organisational resilience

2.1. Operational resilience

Until recently, businesses in many countries have been suffering from the outbreak of COVID-19. Supply chains are disrupted (Shi & Mena, 2021), input material for production is missing, and staff is unavailable (Fathy El Dessouky & Al-Ghareeb, 2020). These adverse factors endanger the existence of a company and need to be dealt with immediately. Researchers use resilience to explain the robustness (Cook et al., 2016; Redman, 2014; Cerè et al., 2017; Pal et al., 2014; Norazam, 2018; Iborra et al., 2020) or the fragility (Nenonen & Storbacka, 2020) of companies to face adversity.

Inputs or assets for achieving operational resilience are abundant, and no shared understanding is available. For example, Pal et al. (2014) see resourcefulness, competitiveness, and learning and cultural aspects as essential, whereas other researchers focus on capabilities like recoverability (Välikangas & Romme, 2013; Mehravari, 2013), identification and mitigation of risks (Mehravari, 2013) and adaptability (Caralli et al., 2010).

Lengnick-Hall et al. (2011) separate resilience in a transformational and rebound view. Rebounding, in the historical meaning of resilience, is defined by Lengnick-Hall et al. (2011) as the "[...] ability to rebound from unexpected, stressful, adverse situations and to pick up where they left off" (p. 244), which encompasses the meaning of operational resilience. Zobel (2011) elaborates on this by describing resilience in disaster situations with a depiction of a resilience triangle. This triangle can be seen in Figure 1 and uses robustness and rapidity as the factors of resilience to return to the status quo.



Figure 1. Resilience triangle (source: Zobel, 2011, p. 396)

Zobel (2011) describes robustness as the ability to withstand adversity by resisting the impact or loss of functionality. Robustness loses its usefulness after the immediate impact of a disruption (Cerè et al., 2017) and is therefore mainly applicable at the start of a disruption. It is like the readiness to face disruption in a company. Robustness has further similarities with the concept of vulnerability (Romão, 2020). Vulnerability is a common topic in resilience research in other scientific fields (Cerè, 2017; Adger, 2006). Some researchers see vulnerability as the opposite of resilience (Adger, 2006; Cárdenas et al., 2016) because it can be seen as the likelihood of a system failure or being damaged, so it has a negative connotation (Cárdenas et al., 2016). Vulnerability can be reduced by enhancing resilience capacities (Cárdenas et al., 2016) and, therefore, can be transferred to robustness in organisational resilience. Robustness reaches its limits if the adversity has a too high impact and exceeds the threshold (Mehravari, 2013) of the recovery capability of the company.

The second input of the resilience triangle is rapidity. It represents the time to recover to the normal state (Zobel, 2011) after a crisis or disruptive event. Rapidity is exchangeably used in similar publications for recoverability (Shi & Mena, 2021; Välikangas & Romme, 2013) and restorative capacity (Cook et al., 2016; Cerè, 2017; Lampel et al., 2014).

Mathematically, a state of resilience can be achieved in different ways. For example, faster recovery with less robustness can lead to the same outcome as higher robustness with a slower recovery time. However, which of these two conditions is preferable cannot be extracted from the triangle. Therefore, triangulation might not be sufficient to measure operational resilience but can be a start for further research.

In conclusion, operational resilience is widely discussed in research but approached variously. A common understanding of operational resilience is posted by Välikangas (2016) as the "[...] response to adversity – that is, operational resilience – is to enhance the organisational defences [...]" (p. 2). Furthermore, the resilience triangle enhanced the shared understanding by incorporating robustness and rapidity (Zobel, 2011) to respond to adversity. Operational resilience can be summarised as survival in a world of uncertainty.

2.2. Strategic resilience

Portraying resilience from a strategic point of view, the research area of strategic management is essential. Strategic management is an ever-evolving field in science to find an answer to and assess companies' organisational performance. Rumelt et al. (1991) introduce this idea by focusing on the overall organisational performance as a dependent variable and how companies' management team influences and forms organisational performance. Makadok et al. (2018) see strategic management as the driver of performance, success, and failure factors, and managers' influence on these.

In a world of uncertainty, risks for the survival of businesses must be faced. However, just focusing on risks and adversity reduction (Trim & Lee, 2010; Caralli et al., 2010) is insufficient, but the foremost concern of urgency and dynamism to achieve strategic repositioning and innovation (Marshall & Ojiako, 2010) is needed for strategic resilience.

Resilience cannot be attained by just rebounding through operational resilience after an event, but by creating competitive advantages by "continuous self-reflection and challenging of the status quo" (Morais-Storz et al., 2018, p. 96) and "proactively and deliberately engendering change via innovation" (p. 96) to pursue strategic resilience and securing competitive advantages.

For strategic resilience, the company's environment is continuously viewed as turbulent, complex, and uncertain (Morais-Storz et al., 2018), or threats and opportunities must be constantly monitored (Välikangas, 2016), while the status quo can be felt as unsatisfying. However, this dissatisfaction can be reduced by innovation and bolstering strategic resilience in unison (Marshall & Ojiako, 2010).

Morais-Storz et al. (2018) discuss innovation and metamorphosis to gain strategic resilience by adaptive and absorptive capacity during uncertainty. In an uncertain world, they see the ability to reinvent themselves to create resilience. On the other hand, Välikangas (2016) sees no need for specific uncertainty but explores strategic resilience as a capability of exploration and experimentation. Consequently, this leads to management innovation for the company to be resilient by seizing market opportunities. As a result, the company can foresee unexpected challenges or changes and no crisis is needed to leverage valuable resources and capabilities to exploit opportunities (Lengnick-Hall et al., 2011).

Appiah et al. (2020) summarise the idea of strategic resilience, whereas he does not explicitly use the term, as "[...] a firms' ability to proactively scan their environment, identify looming and evolving threats, institute contingency measures to tackle known threats and prepare for unknowns." (p. 3) and encompasses the different research streams in strategic resilience elegantly. Strategic resilience can be summarised as thriving in a world of uncertainty and creating competitive advantages.

3. Results

After discussing the concept of organisational resilience, splitting it into operational and strategic resilience and organisational ambidexterity, combing both seem suitable. In summary, organisational ambidexterity is about "simultaneously exploiting existing competencies and exploring new opportunities." (Raisch et al., 2009, p. 685), and organisational resilience as "response to adversity – that is, operational resilience – is to enhance the organisational defences while the response to opportunity – in other words, strategic resilience – is to engage in exploration" (Välikangas, 2016, p. 2).

Both concepts aim to create a competitive advantage. Combining both concepts might lead to an increased understanding and usage of both. Especially in the diverse field of resilience, this linkage might be fruitful for future research avenues and strengthening and clarifying the concept.

Operational resilience is about robustness and rapidity in returning to a previous state during or after a crisis. Exploiting existing resources for the survival of a company during adversity from organisational ambidexterity links to the definition of operational resilience from Caralli et al. (2010) "[...] operational resilience includes four objectives: (1) prevent realisation of operational risk to a high-value service (through a protection strategy), (2) sustain a high-value service if risk is realised (through a sustainment strategy), (3) effectively address consequences to the organisation if risk is realised and return the organisation to a normal operating state, and (4) optimise the achievement of these objectives to maximise effectiveness at the lowest cost." (p. 1166). This correlates with the concept to be efficient (Raisch & Birkinshaw, 2008; Park et al., 2020) or aligned (Gibson & Birkinshaw, 2004) for exploitation in organisational ambidexterity.

On the other hand, strategic resilience is about exploring opportunities and threats. Lengnick-Hall et al. (2011) define organisational resilience as "[...] leverage its resources and capabilities not only to resolve current dilemmas but to exploit opportunities and build a successful future." (p. 244), specifically using the idea of strategic resilience from Välikangas (2016) without naming

it strategic resilience. Nevertheless, this definition is in line with exploring opportunities from organisational ambidexterity with the need to be adaptive (Gibson & Birkinshaw, 2004; Raisch & Birkinshaw, 2008) or flexible (Park et al., 2020) for exploration.

This connection of organisational resilience and ambidexterity can be summarised in two figures. First, Figure 2 shows the timely structure of organisational resilience.



Figure 2. Flow diagram of organisational resilience (source: own creation)

In the event of a crisis, operational resilience is needed for survival. Vulnerability (robustness) and rapidity are essential for a company's recovery after adversity. Vulnerability and rapidity do have subsections like resourcefulness and redundancy (Pal et al., 2014) to enhance the company's defence. On the other hand, strategic resilience consists of transformative and adaptive capability (Walker et al., 2004). Transform in the face of untenable situations where a total shift is needed and adapt to changes by continuously challenging the status quo and proactively envisioning threats and opportunities (Morais-Storz et al., 2018). Therefore, Figure 2 cannot be understood as a one-time commitment but a revolving activity within a company, especially in constant uncertain times with a high level of competition.

Strategic resilience can be used in a constant uncertain or turbulent environment without a crisis (Morais-Storz et al., 2018). Excluding the crisis event from Figure 2 shifts the concept closer to organisational ambidexterity. Arguing that strategic and operational resilience are needed, a simultaneous pursuit must be managed in the company. In summary, Figure 3 provide a general framework for organisational resilience.



Figure 3. Organisational resilience framework (source: own creation)

Figure 3 describes the process of organisational resilience by splitting it into operational and strategic resilience, incorporating organisational ambidexterity. No crisis event is evident due to the assumption of a constant environment of turbulence, uncertainty, and complexity following Morais-Storz et al. (2018). In conclusion, organisational resilience can be summarised as achieving organisational resilience by seeing resilience, not as a standalone function, but sensing and seizing opportunities and threats. Simultaneously exploring transformability and adaptability and exploiting vulnerability and rapidity to transform the business model into a resilient state by pursuing an ambidextrous organisation by exploiting operational and exploring strategic resilience to sustain or create a new competitive advantage.

4. Future research

The analysis of this paper reveals several main research avenues. First, the capabilities needed for strategic and operational resilience must be defined. Research about operational resilience is plentiful, whereas it is still confronted by many different positions in different scientific fields. Definition of resilience in urban areas (Davidson et al., 2019) differs from systematic (Walker et al., 2004), climate change (Cárdenas et al., 2016) or organisational (Linnenluecke, 2017; Hillmann & Guenther, 2020) research.

However, the input factors for strategic resilience are primarily fuzzy. Vidal et al. (2014) examine the factors promoting strategic resilience by exploring expert opinions using the Delphi technique. Teixeira and Werther (2013) and Carvalho et al. (2016) examine the impact of resilience on the financial outcome by maintaining above-average returns (Teixeira & Werther, 2013) and sustaining a superiority of financial performance in financial key figures (Carvalho et al., 2016). Both conclude that innovation is a crucial driver for resilience. Nevertheless, further research is needed in this field.

Measuring strategic and operational resilience is a further research avenue. Some researchers focus on finding measurements for resilience, but a general understanding is still missing. This lack might come from the obstacle that many publications (Lampel et al., 2014; Battisti et al., 2019) investigate the crisis first and analyse in retrospect which companies are resilient or might lack resilience. This approach is more in line with the operational part of resilience. However, from a strategic point of view, research into what enables resilience is needed and how these resilient capabilities can be measured. For example, Cook et al. (2016) attempts to find a measure for the cost of resilience and concluded that "three elements: (i) systemic impact (SI); (ii) total recovery effort, and; (iii) resilience-enhancing investments" (p. 3) must be considered.

Lastly, research in the combination of organisational ambidexterity and organisational resilience should be conducted to solidify the concept further. Several publications tackle the topic of ambidexterity, but then focus on one side and not combine both. For example, Morais-Storz et al. (2018) and Välikangas (2016) describe both topics and then focus heavily on one and discard the other. A combination should yield further input into resilience in general.

There are still many promising research avenues in combining organisational resilience and ambidexterity. Both concepts are connected undoubtedly, but research is missing. Especially currently in very uncertain times with war and the still omnipresent COVID-19 pandemic, research into the resilience of companies can increase the understanding of competitive advantages and survival of companies.

Conclusions

Dealing with uncertainty and turbulence might turn to the new status quo. Many companies face challenges due to COVID-19, war, and supply shortages. All these can lead to the failure of a business model or the dissolution of a company. Nevertheless, some companies seem to be more prepared to deal with such challenges, and others suffer immensely. One reason for this difference might be the organisational resilience of a company. This research reviewed the concepts of organisational resilience to deal with uncertainty, including organisational ambidexterity as a concept for creating competitive advantages. Splitting organisational resilience in operational and strategic resilience shines a better light on the concept and distinguishes the capabilities needed for both. This concept overlaps with organisational ambidexterity due to the goal of sustaining performance or creating competitive advantages. Combining both seems a prosperous future research direction by exploiting operational resilience and exploring strategic resilience.

A limiting factor for this research is the lack of field research with data from companies. Furthermore, the framework's testing is pending and must be further discussed and explored.

In conclusion, (1) an overview about the topic of organisational resilience and ambidexterity, (2) a comprehensive definition of creating ambidexterity in organisational resilience, (3) a general concept of an ambidextrous resilient organisation using dynamic capabilities, (4) a framework for ambidextrous organisational resilience and lastly, (5) a future research avenue with a research agenda could be given.

Disclosure statement

The author does not have any competing financial, professional, or personal interests from other parties.

References

Acuti, D., Bellucci, M., & Manetti, G. (2020). Company disclosures concerning the resilience of cities from the Sustainable Development Goals (SDGs) perspective. *Cities*, *99*, 102608. https://doi.org/10.1016/j.cities.2020.102608 Adger, W. N. (2006). Vulnerability. *Global Environmental Change*, 16(3), 268–281.

https://doi.org/10.1016/j.gloenvcha.2006.02.006

- Annarelli, A., & Nonino, F. (2016). Strategic and operational management of organisational resilience: Current state of research and future directions. *Omega*, 62, 1–18. https://doi.org/10.1016/j.omega.2015.08.004
- Appiah, G., Amankwah-Amoah, J., & Lui, Y. L. (2020). Organisational architecture, resilience, and cyberattacks. *IEEE Transactions on Engineering Management*, 1–16. https://doi.org/10.1109/TEM.2020.3004610
- Battisti, M., Beynon, M., Pickernell, D., & Deakins, D. (2019). Surviving or thriving: The role of learning for the resilient performance of small firms. *Journal of Business Research*, 100, 38–50. https://doi.org/10.1016/j.jbusres.2019.03.006
- Belalcázar, A., Ron, M., Diaz, J., & Molinari, L. (2017). Towards a strategic resilience of applications through the NIST cybersecurity framework and the Strategic Alignment Model (SAM). In 2017 International Conference on Information Systems and Computer Science (INCISCOS). IEEE. https://doi.org/10.1109/inciscos.2017.29
- Caralli, R. A., Allen, J. H., Curtis, P. D., White, D. W., & Young, L. R. (2010). Improving operational resilience processes: The CERT resilience management model. In 2010 IEEE Second International Conference on Social Computing. IEEE. https://doi.org/10.1109/SocialCom.2010.173
- Cárdenas, J. R. G., Nebot, À., & Mugica, F. (2016). A proposal for climate change resilience management through fuzzy controllers. In 6th International Conference on Simulation and Modeling Methodologies, Technologies and Applications (SIMULTECH) (pp. 1–7).

https://doi.org/10.5220/0006031703760382

- Carvalho, A. O. D., Ribeiro, I., Cirani, C. B. S., & Cintra, R. F. (2016). Organisational resilience: A comparative study between innovative and non-innovative companies based on the financial performance analysis. *International Journal of Innovation*, 4(1), 58–69. https://doi.org/10.5585/iji.v4i1.73
- Cerè, G., Rezgui, Y., & Zhao, W. (2017). Critical review of existing built environment resilience frameworks: Directions for future research. *International Journal of Disaster Risk Reduction*, 25, 173–189. https://doi.org/10.1016/j.ijdrr.2017.09.018
- Cook, A., Delgado, L., Tanner, G., & Cristóbal, S. (2016). Measuring the cost of resilience. *Journal of Air Transport Management*, 56, 38–47.

https://doi.org/10.1016/j.jairtraman.2016.02.007

- Davidson, K., Nguyen, T. M. P., Beilin, R., & Briggs, J. (2019). The emerging addition of resilience as a component of sustainability in urban policy. *Cities*, 92, 1–9. https://doi.org/10.1016/j.cities.2019.03.012
- Fathy El Dessouky, N., & Al-Ghareeb, A. (2020). Human resource management and organizational resilience in the era of COVID-19: Theoretical insights, challenges and implications. In 2020 Second International Sustainability and Resilience Conference: Technology and Innovation in Building Designs. IEEE.

https://doi.org/10.1109/ieeeconf51154.2020.9319967

Fitzgibbons, J., & Mitchell, C. L. (2021). Inclusive resilience: Examining a case study of equity-centred strategic planning in Toronto, Canada. *Cities*, *108*, 102997.

https://doi.org/10.1016/j.cities.2020.102997

Gibson, C. B., & Birkinshaw, J. (2004). The antecedents, consequences, and mediating role of organizational ambidexterity. Academy of Management Journal, 47(2), 209–226. https://doi.org/10.5465/20159573

- Hillmann, J., & Guenther, E. (2020). Organisational resilience: A valuable construct for management research? *International Journal of Management Reviews*, 23(1), 7–44. https://doi.org/10.1111/ijmr.12239
- Hillmann, J. (2020). Disciplines of organisational resilience: contributions, critiques, and future research avenues. *Review* of Managerial Science, 15(4), 879–936. https://doi.org/10.1007/s11846-020-00384-2
- Holling, C. S. (2001). Understanding the complexity of economic, ecological, and social systems. *Ecosystems*, 4(5), 390–405. https://doi.org/10.1007/s10021-001-0101-5
- Hollnagel, E., Woods, D. D., & Leveson, N. (2007). Resilience engineering: Concepts and precepts. Ashgate.
- Hughes, P., Morgan, R. E., Hodgkinson, I. R., Kouropalatis, Y., & Lindgreen, A. (2020). A diagnostic tool to determine a strategic improvisation Readiness Index Score (IRIS) to survive, adapt, and thrive in a crisis. *Industrial Marketing Management*, 88, 485–499.

https://doi.org/10.1016/j.indmarman.2020.05.020

Ibarrarán, M. E., Malone, E. L., & Brenkert, A. L. (2009). Climate change vulnerability and resilience: current status and trends for Mexico. *Environment, Development and Sustainability*, 12(3), 365–388.

https://doi.org/10.1007/s10668-009-9201-8

- Iborra, M., Safón, V., & Dolz, C. (2020). What explains the resilience of SMEs? Ambidexterity capability and strategic consistency. *Long Range Planning*, 53(6). https://doi.org/10.1016/j.lrp.2019.101947
- Junni, P., Sarala, R. M., Taras, V., & Tarba, S. Y. (2013). Organisational ambidexterity and performance: A meta-analysis. *Academy of Management Perspectives*, 27(4), 299–312. https://doi.org/10.5465/amp.2012.0015
- Kyle, A. S. (1985). Continuous auctions and insider trading. *Econometrica*, 53(6). https://doi.org/10.2307/1913210
- Lampel, J., Bhalla, A., & Jha, P. P. (2014). Does governance confer organisational resilience? Evidence from UK employee owned businesses. *European Management Journal*, 32(1), 66–72. https://doi.org/10.1016/j.emj.2013.06.009
- Lengnick-Hall, C. A., Beck, T. E., & Lengnick-Hall, M. L. (2011). Developing a capacity for organisational resilience through strategic human resource management. *Human Resource Management Review*, *21*(3), 243–255.

https://doi.org/10.1016/j.hrmr.2010.07.001

- Linnenluecke, M. K. (2017). Resilience in business and management research: A review of influential publications and a research agenda. *International Journal of Management Reviews*, 19(1), 4–30. https://doi.org/10.1111/ijmr.12076
- Maclean, M., Harvey, C., Golant, B. D., & Sillince, J. A. (2020). The role of innovation narratives in accomplishing organisational ambidexterity. *Strategic Organization*, *19*(4), 693–721. https://doi.org/10.1177/1476127019897234
- Makadok, R., Burton, R., & Barney, J. (2018). A practical guide for making theory contributions in strategic management. *Strategic Management Journal*, 39(6), 1530–1545. https://doi.org/10.1002/smj.2789
- Marshall, A. & Ojiako, U. (2010). From the myth of Prometheus to strategic resilience: Two cognitive paradigms linking risk and innovation. *Prometheus*, *28*(4), 343–360. https://doi.org/10.1080/08109028.2010.539018

- Mehravari, N. (2013). Resilience management through use of CERT-RMM & associated success stories. In 2013 IEEE International Conference on Technologies for Homeland Security (HST). IEEE. https://doi.org/10.1109/ths.2013.6698986
- Morais-Storz, M. & Nguyen, N. (2017). The role of unlearning in metamorphosis and strategic resilience. *The Learning Organization*, 24(2), 93–106.

https://doi.org/10.1108/tlo-12-2016-0091

Morais-Storz, M., Stoud Platou, R. & Berild Norheim, K. (2018). Innovation and metamorphosis towards strategic resilience. *International Journal of Entrepreneurial Behavior* & *Research*, 24(7), 1181–1199.

https://doi.org/10.1108/ijebr-11-2016-0369

- Nenonen, S., & Storbacka, K. (2020). Don't adapt, shape! Use the crisis to shape your minimum viable system – And the wider market. *Industrial Marketing Management*, 88, 265– 271. https://doi.org/10.1016/j.indmarman.2020.05.022
- Norazam, A. S. (2018). Resilient health infrastructure: strengthening hospitals' capacity to respond effectively during disasters and crises. *Procedia Engineering*, *212*, 262–269. https://doi.org/10.1016/j.proeng.2018.01.034
- O'Reilly, C. A., & Tushman, M. (2013). Organisational ambidexterity: Past, present and future. SSRN. https://doi.org/10.2139/ssrn.2285704
- O'Reilly, C. A., & Tushman, M. L. (2008). Ambidexterity as a dynamic capability: Resolving the innovator's dilemma. *Research in Organizational Behaviour*, *28*, 185–206. https://doi.org/10.1016/j.riob.2008.06.002
- Pal, R., Torstensson, H., & Mattila, H. (2014). Antecedents of organisational resilience in economic crises – an empirical study of Swedish textile and clothing SMEs. *International Journal of Production Economics*, 147, 410–428. https://doi.org/10.1016/j.ijpe.2013.02.031
- Parise, G., Parise, L., Allegri, M., Marco, A. D., & Anthony, M. A. (2021). Operational resilience of hospital power systems in the digital age. *IEEE Transactions on Industry Applications*, 57(1), 94–100.

https://doi.org/10.1109/tia.2020.3032941

- Park, Y., Pavlou, P. A., & Saraf, N. (2020). Configurations for achieving organizational ambidexterity with digitization. *Information Systems Research*, 31(4), 1376–1397. https://doi.org/10.1287/isre.2020.0950
- Petro, Y., Ojiako, U., Williams, T., & Marshall, A. (2019). Organisational ambidexterity: A critical review and development of a project-focused definition. *Journal of Management in Engineering*, *35*(3).

https://doi.org/10.1061/(asce)me.1943-5479.0000685

- Raisch, S., & Birkinshaw, J. (2008). Organisational ambidexterity: Antecedents, outcomes, and moderators. *Journal of Management*, 34(3), 375–409. https://doi.org/10.1177/0149206308316058
- Raisch, S., Birkinshaw, J., Probst, G., & Tushman, M. L. (2009). Organisational ambidexterity: Balancing exploitation and exploration for sustained performance. *Organization Sci*ence, 20(4), 685–695. https://doi.org/10.1287/orsc.1090.0428
- Redman, C. L. (2014). Should sustainability and resilience be combined or remain distinct pursuits? *Ecology and Society*, 19(2). https://doi.org/10.5751/ES-06390-190237
- Romão, J. (2020). Tourism, smart specialisation, growth, and resilience. *Annals of Tourism Research*, 84.

https://doi.org/10.1016/j.annals.2020.102995

Rumelt, R. P., Schendel, D., & Teece, D. J. (1991). Strategic management and economics. *Strategic Management Journal*, 12, 5–29. https://doi.org/10.1002/smj.4250121003

- Rutter, M. (1987). Psychosocial resilience and protective mechanisms. *American Journal of Orthopsychiatry*, 57(3), 316–331. https://doi.org/10.1111/j.1939-0025.1987.tb03541.x
- Shi, W., & Mena, C. (2021). Supply chain resilience assessment with financial considerations: A Bayesian Network-Based Method. *IEEE Transactions on Engineering Management*, 1–16. https://doi.org/10.1109/tem.2021.3066600
- Simsek, Z. (2009). Organisational ambidexterity: Towards a multilevel understanding. *Journal of Management Studies*, 46(4), 597–624.

https://doi.org/10.1111/j.1467-6486.2009.00828.x

- Sutcliffe, K. & Vogus, T. (2003) Organising for resilience. In K. S. Cameron, J. E. Dutton, & R. E. Quinn (Eds.), *Positive* organizational scholarship: Foundations of a new discipline (pp. 94–110). Berrett-Koehler, San Francisco.
- Teixeira, E. D. O., & Werther, W. B. (2013). Resilience: Continuous renewal of competitive advantages. *Business Horizons*, 56(3), 333–342. https://doi.org/10.1016/j.bushor.2013.01.009
- Trim, P. R., & Lee, Y. I. (2010). A security framework for protecting business, government and society from cyber attacks. In 2010 5th International Conference on System of Systems Engineering. IEEE.

https://doi.org/10.1109/sysose.2010.5544085

Tushman, M. L., & O'Reilly, C. A. (1996). Ambidextrous organisations: Managing evolutionary and revolutionary change. *California Management Review*, 38(4), 8–29. https://doi.org/10.2307/41165852

- Välikangas, L., & Merlyn, P. (2005). Strategic resilience: Staying ahead of a crisis. *Handbook of Business Strategy*, 6(1), 55–58. https://doi.org/10.1108/08944310510556964
- Välikangas, L., & Romme, G. (2013). How to design for strategic resilience: A case study in retailing. *Journal of Organization Design*, 2(2), 44. https://doi.org/10.7146/jod.7360
- Välikangas, L. (2016). Strategic resilience. In M. Augier & D. Teece (Eds.), *The Palgrave encyclopedia of strategic management*. Palgrave Macmillan.

https://doi.org/10.1057/978-1-349-94848-2_375-1

- Vidal, R., Carvalho, H., & Cruz-Machado, V. A. (2014). Strategic resilience development: A study using Delphi. In J. Xu, V. Cruz-Machado, B. Lev, & S.Nickel (Eds.), Proceedings of the Eighth International Conference on Management Science and Engineering Management. Advances in Intelligent Systems and Computing (Vol. 281. pp. 1245–1256). Springer, Berlin, Heidelberg. https://doi.org/10.1007/978-3-642-55122-2_107
- Walker, B., Holling, C. S., Carpenter, S. R., & Kinzig, A. P. (2004). Resilience, adaptability and transformability in social-ecological systems. *Ecology and Society*, 9(2). https://doi.org/10.5751/es-00650-090205
- Williams, T. A., Gruber, D. A., Sutcliffe, K. M., Shepherd, D. A., & Zhao, E. Y. (2017). Organisational response to adversity: Fusing crisis management and resilience research streams. *Academy of Management Annals*, 11(2), 733–769. https://doi.org/10.5465/annals.2015.0134
- Zafari, K., Biggemann, S., & Garry, T. (2020). Mindful management of relationships during periods of crises: A model of trust, doubt and relational adjustments. *Industrial Marketing Management*, 88, 278–286.

https://doi.org/10.1016/j.indmarman.2020.05.026

Zobel, C. W. (2011). Representing perceived tradeoffs in defining disaster resilience. *Decision Support Systems*, 50(2), 394–403. https://doi.org/10.1016/j.dss.2010.10.001