

Organizational Resilience: A Paradox-Based Conceptualization

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Abstract

The concept of resilience has recently gained significant popularity in organizational research. It is considered to be a very promising concept for explaining how businesses can survive and develop in the face of adversity or instability. Past literature focuses on various perspectives of organizational resilience and frameworks mainly based on processes, resources and capabilities. However, a significant amount of these studies have focused on polarized attributes resulting in contradiction of studies which blurs the conceptualization of organizational resilience. The purpose of this study is to address this gap by critically evaluating the phases or dimensions of the organizational resilience process and its contradictions in order to improve the understanding of this complex and embedded construct. Findings in the study reveal that the contradictions which are encountered in different phases of the organizational resilience process are paradoxical tensions. Paradoxical thinking refers to opposite demands that are contradictory or polarized but are interconnected and such tensions should be managed by both/and approach instead of either/or approach. The anticipation phase consists of opposite tensions of opportunities or threats, the concurrent phase consists of tensions of stability or adaptability, and finally, the reactive phase consists of tensions of growth or performance. Therefore the new framework conceptualizes organizational resilience dimensions to be managed as a paradox to enhance the understanding of the concept of organizational resilience and thereby facilitate its operationalization. The proposed conceptual framework configuration can add to the business and management literature by enhancing the comprehensive conceptualization of organizational resilience.

Keywords: *Conceptualization, Dynamic capabilities, Organizational resilience, Paradoxical thinking, Resilience process*

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Introduction

Today often organizations globally are surprised or shocked by unexpected drastic or incremental changes. These include extreme climatic conditions, terrorist attacks, international forces, political unrest, globalization, global pandemics, change or shift in consumer preferences, which includes a broad spectrum of threats and sometimes opportunities for organizations. Organizational resilience studies in the Sri Lankan context is only a handful which is puzzling as the island was named second most affected nation on climate related extreme events in 2019 by the Global Climate Risk Index (Eckstein, Hutfils, & Winges, 2019). Purchasing Managers Index (PMI) of the Central Bank of Sri Lanka which is the indicator used worldwide to show the economic health for the manufacturing and service sectors, indicates a sharp contraction in time periods of the first, second and third waves of the pandemic COVID-19 due to drop in performance implying low organizational resilience (Central Bank of Sri Lanka, 2021). However the increase of high risk events globally in the past few decades such as pandemics, economic recessions, financial crises, terrorist attacks, and extreme climatic changes has motivated the management of adversary as a key topic for both practitioners and academics.

A popular question on review of resilience literature is why do some organizations succeed and some fail if the organization is attacked by adverse internal or external environment? (Xiao & Cao, 2017; Linnenluecke, 2017). In contemporary management practices, organizational resilience seems to be the buzzword to answer the above question. The concept of resilience is new to organizational science and has been gaining momentum recently (Hillmann & Guenther, 2020).

At the organizational level, the term "resilience" has been used to characterize the fundamental features of those firms that are able to adapt faster, recover faster, or invent more unconventional ways of conducting business under strain than others. Organizations must be able to handle all of these aspects of the unexpected in order to survive in uncertain environments and drive future success. Firms must have a resilience capability that allows them to respond appropriately to unexpected occurrences and capitalize on opportunities that could jeopardize their survival.

Previous research on organizational resilience

The concept of resilience is not new; it originated from the field of material science in 1800, thereafter diffused to multiple disciplines such as ecology, psychology resulting in lack of an agreement of the concept (Banahene, Anvuur & Dainty, 2014). Engineering and psychology perspective of resilience is the capacity to absorb or withstand shock and maintain functions while ecology perspective is the capacity for renewal, re-organisation or change which is more dynamic compared to engineering.

Ruiz-Martin, López-Paredes and Wainer (2018) extends the diversification of resilience to supply chain resilience, community, organizational management and admits the amphibious nature of the concept but explains the relationship to organizations' resilience despite the plethora of fields. For example resilient organizations will require resilient individuals and supply chains while resilient communities require resilient organizations. However the core principle of resilience is the ability of the system to cope with change due to the dynamic unpredictable environment.

The concept was soon absorbed to the organization context as the business world is inherited with incremental change and sudden disruptions (Annarelli, & Nonino, 2016). Researchers and practitioners have looked into how to protect businesses from disruptive events through the field of enterprise risk management, business continuity management, emergency management, crisis management (Ruiz-Martin et al., 2018). However Carden et al., (2018) state some adverse events such as negative consumer response on fast foods to an industry that appears to be never-ending and is not limited to an event and also threatens the firm's viability. Some crisis events can be repetitive as COVID-19 which shocked the world in waves. Therefore resilience organizations are required for organizations to be able to cope with any event which can be incremental, continuous, repetitive or extraordinary as organizations cannot predict all the risk in future and to face never ending type of risk and also due to the possibility of failure of emergency response or crisis management systems.

Linnenluecke (2017) states that in the recent past resilience in business and management has increased dramatically and has continued to develop in the following fields.

1. Organizational responses to external threats
2. Organizational reliability

3. Employee strengths
4. The adaptability of business models
5. Design principles that reduce supply chain vulnerabilities

Duchek (2020) states the above streams have given their own understanding, conceptualization and measurements, as a result the concept has been fragmented. In literature organizational resilience is defined in a variety of ways, including as a capability, capacity, characteristic, outcome, process, behavior, strategy or approach, performance type, or a combination of these (Hillmann & Guenther, 2020). Different dimensions of resilience are also used by some authors in their definitions (Ruiz-Martin, et al., 2018). These studies imply that the various views are all part of resilience, and that only when they are combined can they contribute to growth in the face of a disaster. Duchek (2020) emphasises that organizational resilience is a major source of competitive advantage despite such confusion of the construct and array of definitions.

Problem Domain

The concept resilience is relatively new in the organization context where it is fragmented and heterogeneous and there is little consensus on its conceptualization and operationalization (Hillmann & Guenther, 2020; Linnenluecke, 2017; Ruiz-Martin, et al., 2018).

Hillmann and Guenther's (2020) review of literature to summarize the conceptual definition and achieve more clarity of organizational resilience have given rise to six conceptual domains. The domain reflects the substance of the concept and determines which qualities and variables are included in the definition and which are excluded. The six domains include awareness and sense-making domain, change domain, stability domain, behavior domain, performance domain and growth domain. A critical analysis of the conceptual domains reflects contradictions of the domains which can generate confusion of the operationalization of the concept. The stability vs. change domain and performance vs. growth domain are essentially dipolar in nature and at opposite ends. However a clear definition is required for the operationalization of the concept.

As Linnenluecke (2017) pointed out "the literature offers at times contradictory recommendations for how organizations should build resilience. Tensions

between the need for organizational stability on the one hand (habits, routines, consistency, control, and low deviation) and organizational change on the other hand (search, mindfulness, redundancy, openness, preoccupation with failure, imagination, experimentation and variety) have not yet been resolved and require future work". Therefore, the main objective of this paper is to address this gap of contradiction by identifying the causes for such contradictory and attempt to provide a framework to narrow this conceptual gap. Giustinian, Clegg, Cunh & Rego (2018) also reveals that resilience is not a process free of tensions or contradictions. Ducheck (2014) describes developing organizational resilience has largely remained a "black box". Existing literature inadequately address the amphibious nature of the concept.

Methods

The following characteristics distinguish the review work: (1) Its focus on organizational level resilience literature; (2) Sources of research from multiple databases (Dimensions, Taylor & Francis Online, Emerald insight databases and google and google scholar); (3) A manual study of extra material that may have gone outside of the first search, reference and citation checking by focusing on widely cited publications to make the review more complete. (4) Scholarly papers in English were considered including journal articles, conference papers, systematic review articles, PhD dissertations and mega articles. Special focus was on conceptual and empirical articles based on meta-analysis. (5) Time constraints were not utilized in the search and included papers that were published up to July 31 2021. (6) The term "resilience" appears frequently in studies relating to management and organizational science, it is typically the case that the concept of "organizational resilience" is not being investigated. So, in order to keep the number of scientific articles under control, the search was limited to abstracts and titles. (7) Articles that address resilience as a major subject in the relevant study and discussed resilience` at the organization level and not in the individual, or articles that mention organizational resilience only as a side concept.

The structure of the approach used for searching (Search terms "Organizational Resilience" OR "Business Resilience" OR "Resilience in Business" OR "Resilience Management"), screening, categorizing, and synthesizing journal articles was designed to reduce bias and increase the validity of findings (Tukamuhabwa, Stevenson, Busby & Zorzini, 2015).

Results

Conceptualization of organizational resilience

The word "resilience" derives from the Latin word "resilire" meaning "to withstand" (which means to leap or jump back). In the academic community there is a plethora of definitions and there is no clear definition of organizational resilience at the moment (Linnenluecke, 2017). The concept has been criticized by researchers as being ambiguous and, as a result, the lack of a consistent definition, the concept's importance for practice and research is diminished (Burnard & Bhamra, 2011). Hillmann (2020) states the amphibious nature of the concept is due to the different applications of the concept in deferent fields and researchers extract some ideas from few or all the disciplines without challenging each other.

Organizational resilience is described in a variety of ways, but they all focus on the organization's survival or dealing with jolts, risks, or changes, and they all have the same core meaning even if they use different words to describe the volatile environment such as shocks, crisis, uncertainty, turbulence etc. The definitions of the concept differ in organizations' response against these uncertainties. As mega articles and systematic reviews attempt to categorize these definitions against various perspectives, this paper does not attempt to immerse in such a review of definitions as it is abundant in literature (Ruiz-Martin, et al., 2018; Hillmann and Guenther, 2020 ; Linnenluecke, 2017). However this paper will critically evaluate the contradicting nature of the concept as the gap is evident in literature.

Organizational resilience is a complex, multifaceted, and multidimensional construct, according to recent research. The many facets model developed by Madni and Jackson (2009) can be applied to view organizational resilience which is one of the most comprehensive perspectives of the concept. Anticipation is required to avoid interruptions, which is made possible by predictive or look-ahead capabilities. As a result, a system that avoids disruption must be able to predict events and take proactive action to avoid the incidence or repercussions of disruption. The system must be strong to withstand disturbances. Shock absorbers, such as resource buffers, enable the system to tolerate a disruption without having to restructure itself to response to the disruption, which is how robustness is achieved. The ability to reconfigure form (i.e., structure) or available capacity is required to adapt to unforeseen change.

Finally, recovering from disruptions entails is being able to restore the system as closely as feasible to its pre-disruption state.

Rahi (2019) summarizes the empirical literature on actions that organizations can take when exposed to a deviation.

1. Event survival
2. Productively responding to the event
3. Thriving after its occurrence
4. Recover from the event
5. Change management strategy after it occurs
6. Organizational operation maintenance
7. Organization function adaptation
8. Winding back to previous status

It can be synthesized that 1, 2, 4, 6, 8 points focus on stability of the organization and the rest focus on the change of the organizations against the turbulence. Denyer (2017) defines organizational resilience as “the ability of an organization to anticipate, prepare for, respond and adapt to incremental change and sudden disruptions in order to survive and prosper”. This definition includes the fact that organizational resilience is not only related to sudden events but also it is applicable to day to day operation.

The majority of available research examines organizational resilience from the perspectives of capability, process, function, and outcome (Chen, Xie and Liu, 2021). Duchek (2020) states that to achieve resilience in practice is unknown and the author integrates that the resilience as a unique blend of capabilities with process perspective of resilience.

Therefore he proposes three stages in the resilience process claiming that resilient businesses respond not just to the past (reactive action) or current challenges (concurrent action), but also to the future (anticipatory action). Supardi and Hadi (2020) illustrate the three phases in his conceptual framework for business resilience as proactive phase, responsive & adaptive phase and reactive phase. It can be concluded that the resilience process consists of three stages as pre, current and post in relation to the turbulent event. Process approach enables to understand the interaction and dynamic nature of its elements of the complex concept in order to foster conceptualization of organizational resilience.

Organizations need to build capabilities to manage processes to overcome adversity (Carden, et al, 2018). Scholars specify capabilities required such as predictive capability, survival capability, adaptive capability, coping capability, and learning capability for each individual phase and synthesis dynamic capability perspective. The theory of dynamic capabilities (DCs) is an extension of the Resource-Based View (RBV), which claims that organizations with VRIN (valuable, rare, imperfectly imitable, non-substitutable) resources can achieve competitiveness (Karman & Savanevičienė, 2020).

This study synthesized and illustrates the phases of organizational resilience process and capabilities and also other contemporary crisis related fields such as Risk Management (RM), Business Continuity Management (BCM). Proactive phase deals with much of the risk management field before the event has occurred while recovery phase is based much on BCM which includes crisis management/ emergency management which mainly deals with after the disruption has occurred (Figure 2).

Phases of organizational resilience

Proactive phase

Anticipatory ability is described as a company's ability to recognize and anticipate threats and opportunities in unstable situations by frequently monitoring, sensing, and using data from multiple sources. In the proactive phase the organization requires the ability to predict, which is concerned with foreseeing threats and potential future developments in order to raise awareness and minimize their vulnerabilities. A resilient organization must be able to predict future events that are beyond the scope of its current operations.

It must be able to assess future events, conditions, or state changes that may have a favorable or negative impact on the organization's ability to function, such as technology innovation, changes in customer needs, new legislation, and so on. However this capability does not mean the organization can anticipate every change which will impact it, but some companies are better at spotting the unexpected and reacting quickly than others (Duchek, 2020). Anticipation is also required to avoid disruption by looking down the line (Madni & Jackson, 2009).

Concurrent phase

Stability capabilities

The stability capabilities means in respect to internal and external changes or disruptions maintaining business stability. It is the organization attempt to be defensive and consistent. Several abilities are summarized in literature to attain stability such as ability to resist, ability to cope, ability to withstand etc. (Linnenluecke, 2017). All of these concepts clearly pertain to the appropriate management of unforeseen events in order to avoid destruction of the system. These qualities reflect immediate or short-term response in the face of unforeseen situations (Madni & Jackson, 2009).

Adaptation capabilities

No company can remain fully static over time without making changes or adaptations to its functioning business model. Technology, organizational structure, and business processes all require ongoing adaptation in the dynamic nature of the environment. Although resilience is about establishing stability, a resilient organization can also deal with internal change brought on by external pressure (Linnenluecke, 2017). This is about adjusting resources, interpersonal processes, and organizational procedures to deal with the consequences of a disaster.

The concurrent or the ongoing phase which included stability and adaptive elements together represents a contradiction for the organization which gives rise to tension since two demands are at opposite ends and therefore their capabilities are also opposed. The above mention contradiction of demands has been explored scarcely in organizational resilience. Denyer (2017) sates managing the underlying conflicts between these opposing viewpoints necessitates paradoxical thinking - shifting away from "either/or" outcomes and toward "both/and" solutions. Groenendaal and Helsloot (2020) also mention of the tensions between the elements of organizational resilience and elaborates further that adaptability and efficiency are contrary since increased efficiency eliminates sources of variation and idle capacity. Lewis (2000) sates researchers frequently use the word paradox to represent contradictory requests, opposing viewpoints, or seemingly irrational discoveries but emphasis naming a paradox does not always lead to understanding. In organizational resilience literature the contradiction domain has not conceptualized except for few insights and this paper will explore this virgin area.

Reactive phase

Finally, recovering from disruptions entails being able to restore the system as closely as feasible to its pre-disruption state. Because the restoration may not be perfect, the latter may result in some performance degradation (Madni & Jackson, 2009). Stabilization and revitalization procedures are carried out to restore company equilibrium, respond to changes, and maintain or restructure business operations after an event occurs. After overcoming a crisis or adverse event the organization may focus on growth or performance, which are also opposites.

Paradoxical Thinking

"We cannot solve our problems with the same thinking we used when we created them"
-Albert Einstein-

Contradictory demands are increasingly prevalent as organizations become more global, dynamic and competitive today unlike a few decades ago. Managerial life is full of competing demands. Managers, for example, are expected to boost efficiency while also encouraging innovation, form individualistic teams, and think internationally while acting locally. Companies must be innovative, flexible, and responsive to change while functioning consistently and reliably to succeed and capitalize (Farjoun, 2010).

There is now a plethora of conceptualizations of competing demands, which might be puzzling and these include dilemmas, Trade-offs, dialectics, dualities and paradoxes (Gaim et al., 2018). However this paper will be focusing on the contradiction demands related to paradoxes. When managers perceive tensions between competing demands, they may find themselves divided between two poles of action when attempting to meet both demands at the same time. Tensions develop over resource allocation and prioritization when conflicting demands are regarded to be of equivalent importance for managers and decision-makers.

Organizations must reconcile stability, predictability, and exploitation with change, innovation, and exploration in order to survive and thrive. These imperatives, as well as the practices, processes or systems that sustain them, are widely regarded as mutually exclusive and irreconcilable (Farjoun, 2010). This has been emphasised in many organizational theories including organizational resilience studies except a few insights.

Lewis (2000) states "Paradox" refers to demands that are contradictory but interconnected, items that appear logical when seen separately but ludicrous and irrational when seen together. Further, he argues that organizations fail to identify these relationships as tensions are perceptual. That is, polarities that are cognitively or socially manufactured to hide the simultaneity of contradictory truths and organizations tend to focus on polarization. Over the last 25 years, the study of paradox in strategy and organizational studies has exploded (Cunha and Putnam, 2017).

Organizational theories are basically incomplete since they attempt to represent a multidimensional reality with a finite, internally coherent assertion (Poole & Van de Ven, 1989). To achieve greater holistic impacts, the paradoxical view supports building a virtuous loop between contradicting demands such as stability and change.

The change and stability elements addressed in organizational resilience are in opposite poles and are simultaneously required when organizations experience an impact. Traditional dualism views stability and change as opposites and separate, two essential but largely incompatible and mutually exclusive elements in an organization, and advocates contingency theories to deal with the paradox tensions. However more recent research has adopted the paradoxical lens to highlight both the contradiction and the interdependence between the two elements (Lin, Qu, Li & Tian, 2020). Smith and Lewis (2011) support this duality viewpoint and propose the paradox theory as an alternative to the contingency theory for explaining tension.

The relationship between stability and change is divided into four categories by Farjoun (2010): exploitation (stability), exploration (change), change enables stability, and stability enables change. Stability is considered as a product of change or its medium in the "change enables stability" and "stability enables change" interactions, indicating the interdependence of stability and change. Elaborating on the above stability facilitates change by providing security and consistency, reserving knowledge and skills, and facilitating commitment and resource allocation for a better implementation of the change. Through various mechanisms such as trial-and-error and exploratory operations, change allows a company to establish a new state of stability. In the real world, firms such as MacDonalds, well known stable organizations change to adjust local trends relating paradoxical coexistence and on the other side of the coin, firms such as

Toyota which revolutionized change also rely on institutions, rules and processes for stability (Lin et al., 2020).

Biloslavo, Bagnoli & RusjanFigelj (2013) in their empirical study on paradox reveals the ability to constructively confront the tensions between opposing dualities, rather than choosing one over the other, generating a creative solution to the tensions in the form of a new dynamic model that recognizes dualities as complements rather than forces opposing each other. These findings demonstrate that stability and change are interdependent rather than independent and opposing organizational aspects, and they provide managers with a fresh viewpoint on the interaction between the two and thereby to increase effectiveness and efficiency of organizations.

Therefore it can be argued both stability and change are required against external impacts and firms should pay attention to change and stability by embracing, comprehending, and utilizing this contradictory relationship in order to achieve their synergistic effect. Lewis (2000) develops a paradox framework in order to demonstrate the generation and management of paradox. However he also explains the danger in paradox as organizations tend to get trapped within reinforcing cycles of contradiction and will inhibit changes as there is tendency to cling to the past understanding to avoid recognizing their cognitive and social foibles. Therefore paradox management is essential to capture its potential by revolutionarily rethinking past perceptions and practices.

Lewis (2000) states eastern philosophies emphasize to avoid simple distinctions and as example he illustrates the symbol of Yin and Yang in his paradoxical framework to communicate the message of tensions which leads to reinforcing cycles. The yin-yang symbol represents the interconnectedness and interdependence of paradoxes. The external boundary promotes synergy by forming a coherent whole and the internal boundary distinguishes and emphasizes opposition. No matter how extreme one force gets it retains a portion of the opposite force (Figure 3).

A new conceptualization of organizational resilience

Fundamentals of the new framework

The paradoxical tensions as describe above are most focused internally and ignores the paradox of tensions between opportunities and threats. Many scholars state resilience to be a quality associated with occurrences that may

have a detrimental influence on businesses and only some consider these events as opportunities and thereby on the resilient organization to capitalize on such opportunities (Ruiz-Martin, et al., 2018). Therefore in an external turbulence organizations polarized their attention more towards the threat by increasing their defenses and putting more controls and thereby hinder the requirement to explore the opportunities. Gaim et al. (2018) state not all opposites are not paradoxes and specify seven essential characteristics which includes existence of a dyad, contradiction, interrelatedness, complementarity, compatibility, simultaneity, and push pull forces to categorize as paradox. This paper therefore argues opportunities and threats are essentially paradox and should be managed accordingly.

This study proposes a new framework for organizational resilience by integrating a paradox framework to the organizational resilience process (Figure 3). The framework illustrates the process orient perspective of organizational resilience studies that lead to the dynamic nature of resilience as a result of the organization's engagement with the environment. The three successive stages of resilience process with organization respond to the present, past and future is based on organizational capabilities and is shaped by paradoxical tensions. Wójcik (2020) also highlights the paradoxical nature of dynamic capabilities on content analysis of literature review of over 80 papers. The paradox perspective of organizational resilience enables to understand why resilience conceptualization and operationalization is fuzzy and contradictory.

Management of paradox

Managing paradox of organizational reliance process entails recognizing and utilizing its enlightening potential. The idea is to break out from self-reinforcing cycles by drastically revising previous perceptions and practices. However, harnessing the power of paradox is challenging because breaking free from self-reinforcing cycles necessitates seemingly counterintuitive responses. Lewis (2000) states organizations tend solve paradox by polarization due to formal logic or reasoning, traditional scientific investigations and inclination to polarize is aided by language. He provides three interrelated methods to manage paradoxes.

1. Acceptance of paradox tensions – This offers a sense of freedom and to learn to live with paradox thereby eliminate, debate and avoid vicious cycles. The main obstacle against such management is if the perception of one polar is efficient and effective over the other.

2. Confrontation of paradox tensions - discussing their conflicts in order to develop a more socially acceptable view or practice. Organization members may be able to break out from paralysis if they can recognize and communicate their underlying logic of the opposites.
3. Transcendence - implies the ability to think in a contradictory manner or paradoxically. This method highlights first order thinking results as part of the problem instead of a solution. Second order thinking, on the other hand, requires critically evaluating underlying assumptions in order to develop a more accommodating perspective of opposites or a holistic approach.

Discussion

In paradox management, tensions are stimulated from the changes in the environment as opportunities and threats and the organization's response must not be polarized and the management of tensions are replaced from either/or to both/and approach of management of paradoxes throughout organizational resilience process which includes concurrent and reactive phases (Figure 3). In a dynamic environment to create a more resilient organization, perception of external and internal contradictions and their management should be through a paradoxical lens in all three phases of organizational resilience. As an example organizational resilience empirical evidence reveals corporate social responsibility promotes organizational resilience (Huang, Chen & Nguyen, 2020). Corporate sustainability challenges polarization or trade-offs and enables paradoxical lens in order to manage contradictory demands simultaneously (Ivory & Brooks, 2018). Carden, et al. (2018) identifies the continuous threat of negative consumer perception on the fast food chain due to health risk but demonstrates the resilience model of McDonald's where corporate social responsibility aided the company to identify threat related to childhood obesity thereby to introduce more healthy foods.

Conclusion

The study was designed to address the much debated and unclear conceptualization of organizational resilience. Although past research consistently emphasized the importance of application of paradox lens to understand and manage contradictions in organizational resilience studies it is seldom. This study develops a new conceptual framework by integration of

paradox theory to organizational resilience process to address the research gap of the contradicting nature of the concept thereby to reduce the amphibious nature of the concept.

Paradoxical thinking refers to opposite demands that are contradictory or polarized but are interconnected and such tensions should be managed by both/and approach instead of either/or approach. The anticipation phase consists of opposite tensions of opportunities or threats, the concurrent phase consists of tensions of stability or adaptability, and finally, the reactive phase consists of tensions of growth or performance. Therefore, the new framework conceptualizes organizational resilience dimensions to be managed as a paradox to enhance the understanding of the concept of organizational resilience and thereby facilitate its operationalization. Therefore this study can be considered as an initial step towards narrowing the gap found in literature.

The current analysis gives information on future research directions that could be pursued. Future empirical studies can be built on this framework and focus on less-explored aspects of the resilience process such as the integration of paradoxical thinking thereby to better understand organizational resilience in the real world. Future research could, for example, shed light on the critical role of organizational knowledge, structure, and culture in the development of an organization's ability with paradoxical lens to deal with unexpected and potentially dangerous situations.

Declaration of Conflicting Interests

The author declared no potential conflicts of interest with respect to the research, authorship, and publication of this article.

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APPENDIX

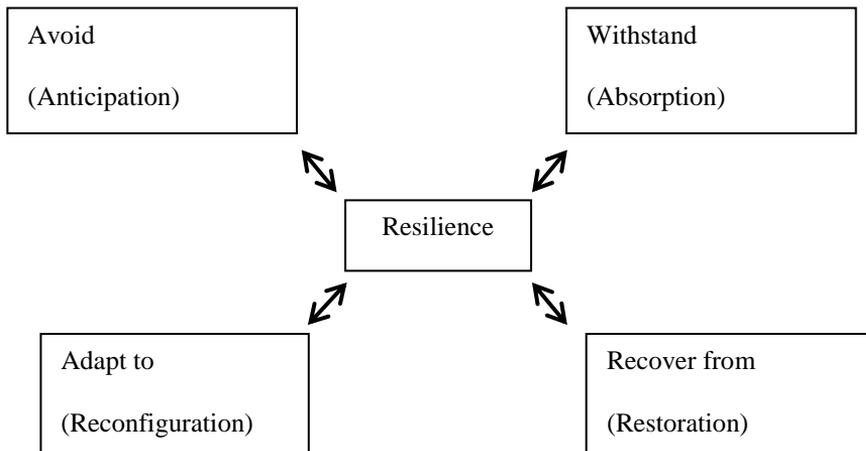


Figure 1: The main facets of resilience

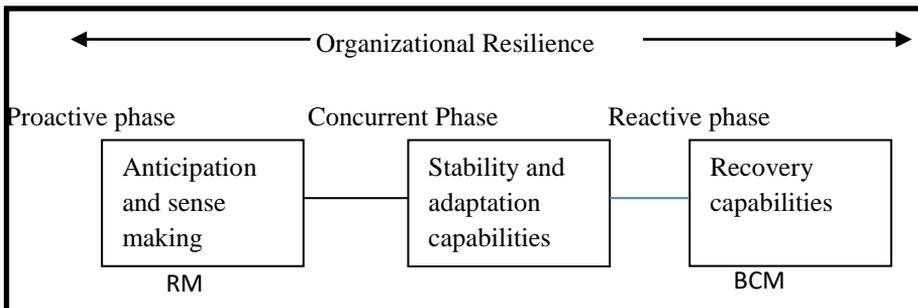


Figure 2 : A Process-capability based approach for organizational resilience

1Note. From “Towards a Conceptual Framework for Resilience Engineering” by, A. M. Madni & S. Jackson. 2009, IEEE Systems Journal, 3(2), p. 188

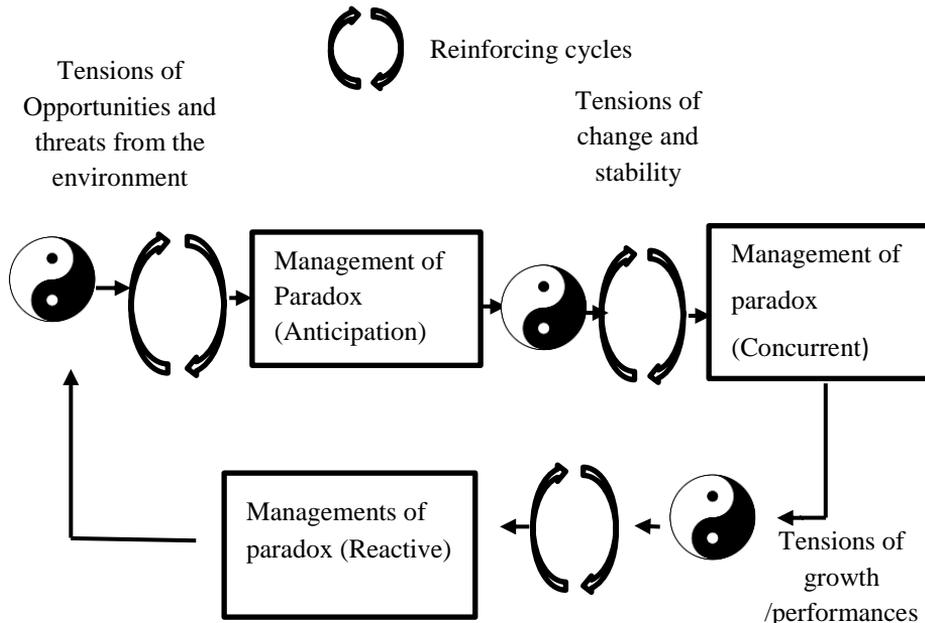


Figure 3: A Paradox-based conceptualization of organizational resilience