

# ORGANIZATIONAL RESILIENCE – PARADIGM FOR CORPORATE SUSTAINABILITY DURING COVID-19 IN THE PRIVATE SECTOR OF NORTH MACEDONIA

Kate Trajkova<sup>1</sup>   
Nikola Sterjovski<sup>2</sup>   
Marko Andonov<sup>3</sup> 

DOI: <https://doi.org/10.31410/EMAN.2021.253>

---

**Abstract:** *The archetype for optimal functionality of modern organizations in unstable and disruptive conditions, known as the new normality, since the outbreak of Covid-19 has become one of the latest paradigms for contemporary management. The challenge arises in the process of creating organizational competences for effective responses to the influences of Covid-19 and securing sustainability reflected as organizational resilience.*

*This paper aims to present the theoretical contours and conceptualization of organizational resilience. The analysis of the theoretical background describes affective, cognitive, relational, and structural mechanisms which are distinct constitutive dimensions of the concept. The research agenda provides answers to the questions regarding the strength of the antecedents through a frame that covers three dimensions: Situational awareness, Adaptive Capability, Individual participation and Engagement.*

**Methods:** *based on the structural dimensions, for the purposes of this paper, quantitative research was conducted, with a questionnaire on a sample of 138 respondents from companies with domestic and foreign capital located in North Macedonia. The statistical analysis of the data is presented through a resilience analysis grid (RAG).*

**Results:** *The paper displays an approach to defining the corporative resilient capacities; a framework for identification of a resilient profile in different levels of conceptualization (RAG); an identification of the strength of the potential determinants.*

**Conclusion:** *The appliance of the determinant model provides answers to the research questions for the potential strengths of resilience capacity determinants in the companies in North Macedonia. The resilience analysis grid (RAG) visualizes the strength of the potential determinants and secures directions for safety management, especially in continuous conditions of long lasting economic shocks.*

**Keywords:** *Organizational resilience, Resilience dimensions, Adaptive capacity, Resilience analysis grid (RAG).*

---

## 1. INTRODUCTION

Until the emergence of the Covid-19 virus, the business world operated in dynamically changing circumstances that emphasized the competitive power of companies. After one year of the functioning of humanity in conditions of the so-called new normal, for the business world it means operating in extremely turbulent conditions and fighting for its own sustainability in the market. Hence, the interest of researchers and practitioners in the resilience of com-

---

<sup>1</sup> University American College Skopje, Treta Makedonska Brigada Str. No 60 Skopje, North Macedonia

<sup>2</sup> City College, University of York Europe Campus, Leontos Sofou 3 Thessaloniki, 546 26 Greece

<sup>3</sup> University American College Skopje, Treta Makedonska Brigada Str. No 60 Skopje, North Macedonia

panies is becoming more relevant (Baggio, Brown, & Hellebrandt, 2015; Carmeli & Markman, 2011; Everly, 2011; Mamouni Limnios, Mazzarol, Ghadouani, & Schilizzi, 2014; Woods, 2015; Conz & Magnani, 2020)

Resilience is required for businesses to respond to disruptions as well as positively adapt in the face of challenging conditions, leveraging opportunities and delivering sustainable performance improvement (Deneyer, 2017). Having in mind the mechanism by which the individual develops his adaptability, the organizations learn and develop their resilience in facing and overcoming the challenges. According to Everly (2011) organizational resilience can be thought of as “a ‘culture of resilience’, which manifests itself as a form of ‘psychological immunity’ to incremental and transformational changes.

## **2. CONCEPT AND DEFINITION OF ORGANIZATIONAL RESILIENCE**

Series of retrospective studies in the literature (Weick and Sutcliffe, 2001; Sutcliffe and Vogus, 2003; Rudolph and Reppenning, 2002; Vogus and Sutcliffe, 2007) try to explain the sustainability of organizations, especially when faced with internal or external interactive complexity, unexpected change, crisis, barrier, risk or “challenging conditions” (mistakes, stressful situations, scandals, accumulated small changes/interruptions and changes in the established operating system). In this regard, they identify resilience as a component of organizational immunity.

In the literature review for the conceptualization of the construct, according to Conz & Magnani, (2020), three research lines are identified that define resilience as: i) a firm attribute that evolves in time, ii) a dynamic process consisting of two resilience paths i.e. adaptive and absorptive; iii) the identification of a set of firm-based capabilities required to be successfully resilient at the different stages of the two resilience paths.

In addition to the organizational attribute are the studies of Yao Hu et al., 2008; Lengnick-Hall et al., 2011; Sheffi & Rice Jr., 2005; Hollnagel, 2010; Linnenluecke & Griffiths, 2010; Mamouni Limnios et al., 2014; Tillement et al., 2009; Bhamidipaty et al., 2007; Dewald & Bowen, 2010, that consider organizational resilience as survival or adaptation to disruptions, disturbances, disasters or catastrophic events; threats or changes; response to opportunities for survival, arising from the change (Ates & Bititci, 2011; Bhamidipaty et al., 2007; Dewald & Bowen, 2010); organizational capacity to “bounce back” to a prior point of stability (Freeman et al., 2003; Sheffi, 2007); ability to return to the same point or achieve another state of stability (i.e., it changes, while minimizing the effects due to changes and hazards) (Acquaah et al., 2011; Burnard & Bhamra, 2011; Demmer et al., 2011); bounce forward, grow or become stronger (Bell, 2002; Fiksel, 2006; Vogus & Sutcliffe, 2007).

Based on the perspectives of positive organizational psychology, resilience is a stable trajectory of healthy functioning after a highly adverse event (Bonanno et al., 2004; Bonanno et al., 2011) or “...the capacity of a dynamic system to adapt successfully” (Masten, 2014; Southwick, 2014).

Vagus and Sutcliffe (2007) defined resilience as the maintenance of positive adjustment under challenging conditions such that the organization emerges from those conditions strengthened and more resourceful. In other words, for them, resilience is the ability to activate, combine or recombine latent resources in newly created circumstances. In that direction is the proposed concept of McManus et al. (2008; p. 82) as “...a function of an organization’s overall situation

awareness, management of keystone vulnerabilities and adaptive capacity in a complex, dynamic and interconnected environment.”

From the perspective of resilience engineering, resilience means anticipation of unforeseen events and changes and leads to the four skills for achieving resilient performance such as: responding, monitoring, learning and anticipating (Patricia et al., 2017).

The contemporary framework proposed by Weick & Sutcliff (2007) and Hollnagel (2011) determined resilience as a dynamic process made of absorption- and adaptation-related capabilities.

According to the Critical Infrastructure (CI) concept and ISO standards (2018), Rehak (2020) lists resilience as a critical factor for risk management and critical infrastructure, a cyclical process that enables restoration and continuous strengthening of the critical infrastructure element’s resilience through prevention, absorption, recovery and adaptation. Therefore, based on the previous studies of Seville et al. (2008); Gonçalves et al. (2019); Denyer (2017), he pointed out that resilience may be perceived as a management process leading to the increased adaptability of critical infrastructure elements to the recurring impact of past, disruptive events.

Scientific thought in that direction leaves scientific space to understand organizational resilience as a multidimensional, sociotechnical phenomenon that allows positive adaptation to challenging conditions by stretching the adaptive capacity of the organization or by the ability to create an appropriate response to change, activation, recombination of resources to take advantage of opportunities arising from change and sustainable performance improvement.

### **3. FACTORS DETERMINING ORGANIZATIONAL RESILIENCE**

Academic interest in organizational resilience has been growing in recent years. Despite the interest in the concept and its nature, is steadily expanding interest in models for the identification of potential framework of antecedents. The heterogeneity of theorists indicates a different set of determinants depending on how the concept is viewed, as an attribute or process, as offensive response to unexpected events (adaptation) (e.g., Weick et al. 1999; Lengnick-Hall et al. 2011; Limnios et al.2014) instead of a defensive response (resistance and/or recovery). Thereby, it is important to note the categorization of the infrastructure elements proposed by Kalowski, 2015; Boylanand Turner, 2017; NIAC, 2009; McManus et al., 2008) that refers to the following three basic processes: risk management, innovation and employees.

Hence, McManus (2008) in his study of relative overall resilience (ROR) model proposes three dominant determinants: situation awareness, management of keystone vulnerabilities, and adaptive capacity. Duchek (2020) considers organizational resilience as a process that develops in three successive stages as reaction to past events (reactive actions), to current problems (concurrent actions) and future events (anticipatory action), takes proactive capabilities (resilience potential) and reactive capabilities (resilience realization) as key determinants for organizational resilience. In this sense, he also pointed out as determinants the possession of cognitive as well as behavioral resilience capabilities, a firm’s prior knowledge base, resource availability, social resources, power and responsibility. According to Ismail et al. (2011) resilience is the result of equal development of operational and strategic capabilities. Resilient capacities contain cognitive, behavioral, and contextual elements and results from using different organizational routines in dealing with uncertainty and complexity (Lengnick-Hall and Beck 2005;

Lengnick-Hall et al., 2011). Xiao & Cao (2017) highlighted cognitive resilience in terms of a conceptual orientation that enables an organization to notice, interpret, analyze, and formulate responses in ways that go beyond simply surviving an ordeal. Behavioral resilience is the engine that moves an organization forward. In direction of organizational settings, this property enables a firm to learn more about the situation and to fully use its own resources and capabilities through collaborative actions. Contextual resilience provides the setting for integrating and using cognitive resilience and behavioral resilience. Contextual resilience is composed of connections and resources.

#### **4. RESILIENCE AND RELATED CONCEPTS: FRAGILE, ROBUST AND ANTIFRAGILE**

There are many concepts related to resilience that require to be analyzed when it comes to understanding divergences. Those concepts are fragility, robustness, and antifragility.

When it comes to fragility, it is the reflection of unexpected occurrences in systems in cases of variations (Taleb, 2012; Taleb & Douady, 2013) which are weaknesses that arise from problems.

Robustness as a characteristic is the ability of systems to absorb disturbances, or in other words the ability to undergo such changes while adaptation is not required, meaning that it does not always recover from those disruptions. (Woods, 2015)

Antifragility is a characteristic of a system that enables it to improve during situations of failures or volatilities.

According to Taleb (2012), all these concepts are represented as separate entities but sees robustness and resilience as two distinct concepts. Alike, Woods (2015), shares the same ideals, that there are differences between robust and resilient, but this separation commonly causes confusion when it comes to studying resilience.

A great way to understand these concepts and their differences is Read's (2005) tree example. As an example, he takes the palm tree and the sycamore, explaining that in cases of wind both trees will move, but the difference is that if both trees are blown by the same power of wind, the sycamore tree movements are much smaller. This means that the sycamore tree is more robust, and the palm tree is more resilient due to the fact that it is able to recover a lot easier after such disturbances due to its elasticity, meaning that the sycamore could break if the wind has a higher intensity. The goal of survivability of resilient organizations should be based both on known and unknown variables. Robust organizations tend to rely mostly on known variables, making resilient organizations more prepared when it comes to surviving when compared to robust organizations.

Resilience is a characteristic of an organization that is not only able to recover to stability after disruptions, but also a characteristic of achieving a better, more desirable point of stability. If an organization reaches this new desirable point of stability and it is stronger than it previously was, it is said that it is both resilient and antifragile. This distinction between the two concepts clarifies the questions about the response towards opportunities and threats of resilient organizations. If the organization can only survive it is resilient. But, if the same organization can take an advantage of such situations, considering the threats and opportunities in order to achieve a better point of stability, it is stronger and both resilient and antifragile.

## 5. METHODOLOGY

The study was conducted in the Republic of North Macedonia, in 3 manufacturing companies, with foreign capital investments. Companies exist in the Macedonian business market since 2012. According to the numbers of employees (over 100 employees), those are considered as large corporate entities. The research was conducted on a purposeful sample of respondents, 85% employees and 15% managers.

The instrument contains three dimensions measured on a 5 point Likert-type scale (strongly disagree; disagree; agree; and strongly agree). The dimensions consist sub-dimensions such as: Situational awareness (understanding and analysis of dangers and consequences, awareness of safety, informed and reactive decision making), Adaptive capacity (Silo mentality, Capabilities and capacities, Strategic vision and expected outcome, innovation and creativity, robustness of operational processes) and Individual participation and engagement (Work enthusiasm and participation and engagement). These dimensions and sub-dimension are appraised by using a set of questions. In order to avoid a set response, some of the questions are reverse coded. The dimensions have been developed through literature review and analysis and synthesis of various other instruments.

Questions from the questionnaire were combined from the poll of questions from previous research studies – McManus's Relative Overall Resilience Model (2008) and Rehak's critical infrastructure system (2020).

The internal consistency of the measuring instrument is determined by Cronbach's alpha coefficient, which for each dimension of the test (Situation awareness, N of items 5,  $\alpha=.597$ ; Adaptive capacities, N of items 10,  $\alpha=.601$ ; Participation and engagement, N of items 7,  $\alpha=.691$ ) shift around the range of acceptable internal consistency.

## 6. RESULTS AND DISCUSSION

To gain an optimal insight relating to the determinant potential of 3 proposed determinants in the model, the scores for each dimension of the organizational resilience were first calculated. The descriptive statistics are presented as mean and standard deviation for each dimension: Situation awareness (Mean= 12.2826, Std. Deviation= 2.43451); Adaptive capacities (Mean= 35.1667, Std. Deviation= 4.46982) and Participation and engagement (Mean= 24.1014, Std. Deviation= 4.74502) (Graph 1).

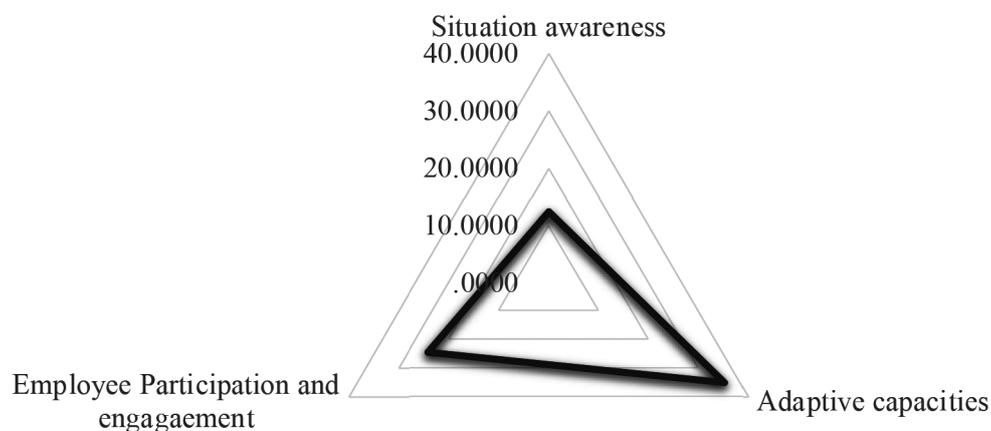
Based on the values of means, it is easy to determine that there is an uneven distribution among the three determinants; in other words, there is an intense influence on the adaptive capacities and participation and engagement among the employees contrary to their situational awareness. This clearly confirms Linnios et al. (2014) in theory of "strategic offense" or "strategic resilience" (Vealakangas and Romme, 2013).

Based on the definition for situational awareness given by Endsley et al. (2003; p. 13) as "... being aware of what is happening around you and understanding what that information means to you now and in the future", applicable on the operational level and distributed evenly among the organization, it acts as an essential requirement for competent performance in dynamic environments, as a vital skill for the determination of the classification of the new situation.

However, low values of the means during the pandemic can be explained by the way of the organization of the processes. This limited, informal cooperative strategy by Roth et al. (2006), which occurs within the organization's culture, is the mechanism through which the organization shares or communicates their situation awareness. The analysis regarding the new situation has a limited reflexive potential, which according to Duchek (200); is connected with the appliance of the already known skills and experiences with the new ones during a crisis situation such as the pandemic caused by Covid-19, supported by highly reactive decision making.

Regarding adaptive capacities, an organization's ability to adapt is at the heart of its ability to display resilient characteristics, and adaptive capacity is also linked to an organization's competitiveness. The acceptance of the changes is one of the key capabilities that can help organizations to avoid or reduce negative consequences from unexpected events, the same as the organizational ability to continuously design and develop solutions to match or exceed the needs of their environment as changes in that environment emerge. With the help of these capabilities, organizations adapt to critical situations and use the change for their own purpose, which is in the direction of their personal future growth and development. In that direction, the optimal intensity of the dimensions owns up to the complementary interactions between the broad frame of determinants such as: silo mentality, internal knowledge and capacities, strategic approach and vision, innovation and creativity, robust organizational processes, according to the activity of the organizations and their infrastructure.

Employee engagement is a positive organizational outcome that has been associated with resilience (King, Newmans, & Luthans, 2015; Mache et al., 2014; Shin, Taylor, & Seo, 2012). Organizations rely on resilient individuals with the goal to easily get through the increasing difficulties, uncertainties, and constant changes. With this, it is expected from employees to have expectations regarding the extent to which the organization cares about their wellbeing and appreciates their contribution in achieving the business goals. The participation of the employees and their engagement are the outcomes of corporative and managerial support. Various studies indicate that there is a relationship between resilience and engagement (Bakker, Albrecht, & Leiter, 2011; Bande et al., 2015; King et al., 2015; Mache et al., 2014; Shin et al., 2012). "Perceived organizational support as a construct is positively associated with employee engagement" (Kurtessis et al., 2015; Mathumbu & Dodd, 2013) clearly states the complementary influence of both sides.



**Graph 1.** Potential effects of three determinants of organizational resilience

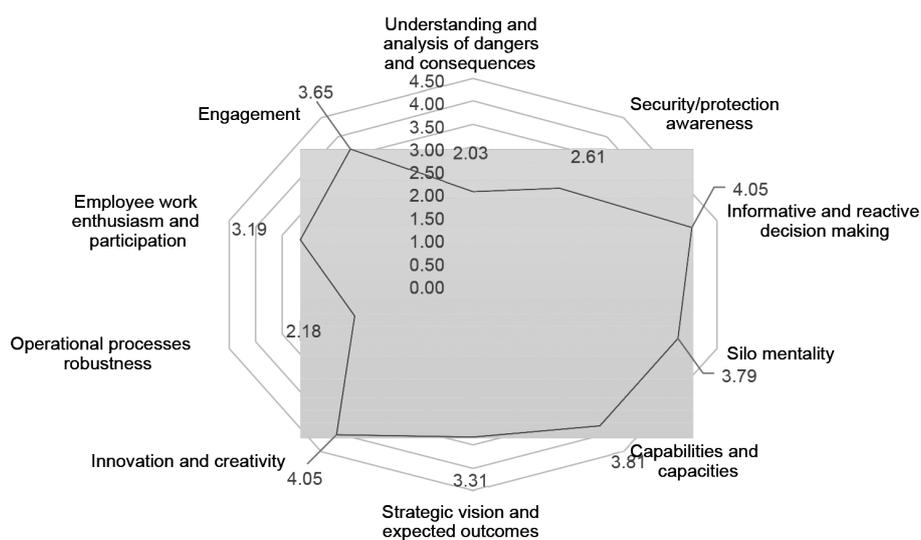
Negative parameters acquired with Pearson’s coefficient of correlation, regarding the relation between the situational awareness and adaptive capacities ( $r=-.482, p\leq.001$ ), and also between the situational awareness and participation and engagement of the employees as determinants ( $r=-.395, p\leq.001$ ) points out an un-proportionate increasing tendency among the dimensions.

The results from the analysis of the statistically significant differences among the dimensions with the application of t-test are presented in Table 1; it shows statistically significant difference among the arithmetic means among the three determinants at a level of significance .001 ( $p\leq 0.01$ ).

**Table 1.** T Test for statistical differences among means of three determinants

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean Lower	95% Confidence Interval of the Difference				
				Upper				
<b>Situation awareness &amp; Adaptive capacities</b>	-22.88	6.03	.51355	-23.899	-21.868	-44.561	137	.000
	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean Lower	95% Confidence Interval of the Difference				
				Upper				
<b>Situation awareness &amp; Participation and engagement</b>	-11.81	6.13	.52174	-12.850	-10.787	-22.653	137	.000
	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean Lower	95% Confidence Interval of the Difference				
				Upper				
<b>Adaptive capacities &amp; Participation and engagement</b>	11.06	3.66	.31132	10.449	11.680	35.543	137	.000

The resilience analysis grid (RAG) visualizes the strength of the potential determinants of the resilient capacity.



**Graph 2.** Resilience analysis grid (RAG)

## 7. CONCLUSION

With the goal of securing optimal sustainability, survivability, adaptation, and generalization of an answer to the conditions of the Covid-19 pandemic, which are now being considered the new normal based on the time period of their appliance, communicate their personal resilient capacity. Considering resilience as a capability, process and/or an attribute based on potential skills in different phases of facing problems and difficulties which affect the vulnerability of the organization, it is essential to have an estimation of the resilient capabilities. With this study, an analysis on the resilience of companies from a sample has been made, securing them with information with a wide spectrum of organizational processes and practices which are in function regarding the resilient capability, divided into three distinct dimensions such as Situational awareness, Adaptive capacities, Participation, and engagement of the employees. With the application of the questionnaire and the RAG the companies had assistance in assessing their resilience, to work with continuous updating to the employees regarding the impact of risks and the application of informative vs reactive decision making; strengthening their strong sides (adaptive capacities), taking advantage of possibilities, and nourishment of the relation with the employees including the care for their wellbeing and engagement which proves to be a significant influencing factor on the antifragility of the companies.

## REFERENCES

- Bhamidipaty, A., & Banavar, G., Lotlikar, R. (2007). RMI: A Framework for Modeling and Evaluating the Resiliency Maturity of IT Service Organizations. Conference: IEEE International Automation Science and Engineering, 2007
- Burnard, K., & Bhamra, R. (2011): Organisational resilience: development of a conceptual framework for organisational responses, *International Journal of Production Research*,49:18, 5581-5599
- Boylan, S.A., Turner, K.A., 2017. Developing organizational adaptability for complex environment. *J. Leadership Educ.* 16 (2), 183–198.
- Baggio, J. A., Brown, K., & Hellebrandt, D. (2015). Boundary object or bridging concept? A citation network analysis of resilience. *Ecology and Society*, 20(2), 2.
- Bonanno G. A. Loss, trauma, and human resilience: Have we underestimated the human capacity to thrive after extremely adverse events? *American Psychologist*. 2004; 59: 20–28.
- Bonanno G. A., Westphal M., Mancini A. D. Resilience to loss and potential trauma. *Annual Review of Clinical Psychology*. 2011; 7: 511–535.
- Bakker, A., Albrecht, S., & Leiter, M. (2011). Key questions regarding work engagement. *European Journal of Work*, 20(1), 4–28
- Bande, B., Fernández-Ferrín, P., Varela, J. A., & Jaramillo, F. (2015). Industrial marketing management emotions and salesperson propensity to leave: The effects of emotional intelligence and resilience. *Industrial Marketing Management*, 44, 142–153.
- Carmeli, A., & Markman, G.D. (2011). Capture, governance, resilience: Strategy implication from the history of Rome. *Strategic management Journal*, 32(3),322-341
- Conz, E., Magnani, G. (2020). A dynamic perspective on the resilience of firms: A systematic literature review and a framework for future research. *European Management Journal* 38 (2020), 400-412
- Denyer, D. (2017). *Organizational Resilience: A summary of academic evidence, business insights and new thinking*. BSI and Cranfield School of Management.

- Dewald, J. and Bowen, F. E. (2010), “Storm clouds and silver linings: responding to disruptive innovations through cognitive resilience”, *Entrepreneurship Theory and Practice*, 34(1): 197-218.
- Demmer, A. W., Vickery, K. S., & Calantone, R. (2011). Engendering resilience in small-and medium-sized enterprises (SMEs): A case study of Demmer Corporation. *International Journal of Production Research* 49(18):5395-5413
- Duchek, S. (2020). Organizational resilience: a capability-based conceptualization. *Business Research* (2020) 13:215–246
- Endsley, M. R., Bolte, B., and Jones, D. G. (2003). *Designing for situation awareness: An approach to user-centered design*, Taylor and Francis, London.
- Everly, G. S. (2011). Building a resilient organizational culture. *Harvard Business Review*, 10(2), 109-138.
- Freeman, F. S., Hirschhorn, L., Triad, M. M. (2003). Moral purpose and organizational resilience: Sandler O’Neill & partners, L.P. in the aftermath of September 11, 2001. *Academy of Management Best Conference Paper 2003 ODC: B6*
- Fiksel, J. (2006) Sustainability and resilience: toward a systems approach, *Sustainability: Science, Practice and Policy*, 2:2, 14-21
- Hollnagel, E. (2006). Resilience: The challenge of the unstable. In E. Hollnagel, D. D. Woods, & N. C. Leveson (Eds.), *Resilience engineering: Concepts and precepts* (pp. 9-18).
- Hollnagel, E. (2011) Resilience engineering and the built environment. *Building Research & Information*, 42(2)
- Ismail, H. S., Poolton, J., & Sharifi, H. (2011). The role of agile strategic capabilities in achieving resilience in manufacturing-based small companies. *International Journal of Production Research*, 49(18), 5469-5487.
- ISO 31000, 2018. Risk management – Guidelines. International Organization for Standardization, Geneva, Switzerland.
- Kalowski, A. (2015). Structure Determining Factors of Business Organization. *International Journal of Innovation and Technology Management* 6(3):206-212
- King, D. D., Newman, A., & Luthans, F. (2015). Not if, but when we need resilience in the workplace. *Journal of Organizational Behavior*, 37(5), 782–786.
- 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), 42-55
- Lengnick-Hall, C. A., Beck, T. E., & Lengnick-Hall, M. L. (2011). Developing a capacity for organizational resilience through strategic human resource management. *Human Resource Management Review*, 21(3), 243e255.
- Linnenluecke, M. K., & Griffiths, A. (2010). Beyond adaptation: Resilience for business in light of climate change and weather extremes. *Business & Society*, 49, 477-511
- Limnios, E. M., Mazzarol, T., Ghadounani, A. (2014). The Resilience Architecture Framework: Four Organizational archetypes. *European Management Journal* 2014(32):104-116
- McManus, S. (2008). “Organisational resilience in New Zealand.” Ph.D. thesis, Univ. of Canterbury, Christchurch, New Zealand.
- McManus, S., Seville, E., Vargo, J., and Brunson, D. (2008). “A facilitated process for improving organizational resilience.” *Nat. Hazards Rev.*, 9(2), 81–90.
- Mache, S., Vitzthum, K., Wanke, E., David, A., Klapp, B., & Danzer, G. (2014). Exploring the impact of resilience, self-efficacy, optimism and organizational resources on work engagement. *Work*, 47(4), 491–500

- Mamouni, Limnios, E. A., Mazzarol, T., Chadouani, A., & Schillizi, S. C. M. (2014). Resilience architecture framework: Four organizational archetypes. *European Management Journal*, 32(1), 104-116
- Masten A. S. Global perspectives on resilience in children and youth. *Child Development*. 2014a; 85: 6–20.
- NIAC (National Infrastructure Advisory Council), 2009. Critical Infrastructure Resilience: Final Report and Recommendations. U.S. Department of Homeland Security, Washington, DC.
- Patriarca, R., Bergström, J., Di Gravio, G., Costantino, F. (2018) Resilience engineering: Current status of the research and future challenges, *Safety Science* (0925-753), Vol. 102, pp. 79-100
- Rehak, D. (2020). Assessing and strengthening organisational resilience in a critical infrastructure system: Case study of the Slovak Republic. *Safety Science* Volume 123
- Roth, E. M., Multer, J., and Raslear, T. (2006). "Shared situation awareness as a contributor to high reliability performance in railroad operations." *Organ. Stud.*, 27(7), 967.
- Rudolph, J.W., Repenning, N. "Disaster dynamics: understanding the role of quantity in organizational collapse," *Admin Sci Quarterly*, vol. 47, 2002, pp. 1-30
- Sutcliffe, K.M., Vogus, T.J. "Organizing for resilience," in *Positive Organizational Scholarship*, K. Cameron, J.E. Dutton, R.E. Quinn, Eds. San Francisco: Berrett-Koehler, 2003, pp. 94-110.
- Sheffi, Y., & Rice Jr., B. J. (2005) A Supply Chain View of the Resilient Enterprise. *Mit Sloan Management Review*, 47(1), 41-48
- Sevile, E., Brunson, D., Dantas, A. (2008) Organisational resilience: Researching the reality of New Zealand organisations. *Journal of Business Continuity & Emergency Planning* 2(2):258-6
- Shin, J., Taylor, M. S., & Seo, M.G. (2012). Resources for change: The relationships of organizational inducements and psychological resilience to employees' attitudes and behaviors toward organizational change. *Academy of Management Journal*, 55(3), 727–748.
- Southwick, S. M., Bonanno, G. A., Masten, A. S., Panter-Brick, C., & Yehuda, R. (2014). Resilience definitions, theory, and challenges: interdisciplinary perspectives. *European journal of psychotraumatology*, 5(1), 25338.
- Tillement, S., Cholez, C., Reverdy, T. (2009). Assessing organizational resilience: An interactionist approach. *Management* 12(4), 230-265
- Taleb, N. N. (2012). "Antifragility as a mathematical idea". *Nature*. 494 (7438): 430.
- Taleb, N., & Douady, R. (2013). Mathematical Definition, Mapping, and Detection of (Anti)Fragility. *Quantitative Finance* 13(11)
- Vogus J. T., & Sutcliffe, M. K. (2007) Organizational Resilience: Towards a Theory and Research Agenda. Conference: Proceedings of the IEEE International Conference on Systems, Man and Cybernetics, Canada, 2007
- Välikangas, L. & Romme, A.G.L. (2012). Building resilience capabilities at "Big Brown Box, Inc.". *Strategy & Leadership*, 40, pp. 43– 45
- Weick, K.E., Sutcliffe, K.M. *Managing the Unexpected*. San Francisco, Jossey-Bass, 2001
- Weick, K. E. & Sutcliffe, K. M. (2007). Managing the Unexpected Resilient Performance in an Age of Uncertainty. *Personal Psychology*, 62(3), 646-652
- Woods, D.D (2015). Four concepts for resilience and the implications for the future of resilience engineering. *Reliability Engineering and System Safety*, 141, 5-9
- Xiao, L. & Cao, H. (2017). Organizational Resilience: The Theoretical Model and Research Implication. *ITM Web of Conferences* 12(18):04021
- Yao Hu et al., (2008) Towards Modeling of Resilience Dynamics in Manufacturing Enterprises: Literature Review and Problem Formulation. Conference: IEEE International Automation Science and Engineering, 2008. CASE 2008.