

Flexibility, coping capacity and resilience of organizations: between synergy and support

Organizations'
coping
capacity and
resilience

Agnieszka Karman

Faculty of Economics, Maria Curie-Skłodowska University, Lublin, Poland

Received 4 October 2019
Revised 18 April 2020
Accepted 20 May 2020

Abstract

Purpose – The purpose of this paper is to study the following related terms: flexibility, resilience and coping capacity, in order to clarify relationships between them.

Design/methodology/approach – Methods applied in the study include the analysis and synthesis of scientific literature and a critical discussion considering provided references. By drawing on the notion of the ladder of abstraction, conceptual differences between the three terms are proposed.

Findings – Based on the most common associations of the terms in the literature, the paper proposes the following relationships between the terms: flexibility is most commonly associated with the inherent property of systems, which allows them to change within pre-established parameters; resilience is the ability of organizations to withstand changes in their environment and still function; coping capacity commonly refers to organizational behavior involving timely purposeful change.

Practical implications – As managers strive to improve the performance of their organizations in turbulent conditions, the paper provides a useful enhanced understanding of the relative roles that flexibility, resilience and coping capacity play in changes and maintaining the continuity of the organization.

Originality/value – While confusion between the meanings of these terms has been noted by various authors, the paper is believed to be the first to discuss the three terms in conjunction and thereby propose relationships between them. The proposed framework overcomes existing definitional fragmentation and raises awareness in the conceptualization of terms: flexibility, coping capacity and resilience. We contribute to extant business and management literature by proposing a model indicating the relationships between them.

Keywords Management, Resilience, Flexibility, Coping capacity, Organization/business

Paper type Conceptual paper

Introduction

The economic imperative to build businesses and organizations, which are more resilient to hazards, was clearly illustrated by the September 11th attacks, where business interruption losses far exceeded the sum of all property losses (Munich, 2001). However, such a need results not only from events of terrorist character. After the 1989 San Francisco Bay Earthquake, it is estimated that 50% of small businesses directly affected were permanently disabled, with the resulting job losses significantly impacting the economy of the area (EPICC, 2003). Having more resilient organizations is a key component toward achieving more resilient communities because it is organizations that deliver essential services and provide employment for a part of the community. The phenomenon of the resistance of the organization was already examined in different frames, taking into account covering the management of a sub-set of assets being human resources (Lengnick-Hall *et al.*, 2011), a focus on reducing vulnerabilities by reducing the propensity to disruptive events (Sheffi, 2005), focus on cognitive frameworks for adapting to environmental conditions (Watts and Paciga, 2011) and the desirability of various dynamic states (Limmios *et al.*, 2014). These works consider resistance as an independent, dynamic ability of the organization, allowing it to



We would like to thank the two anonymous referees for their constructive and supportive comments throughout the review process.

survive under turbulent conditions. Coping capacity and flexibility were viewed in a similar manner. However, the review of the management literature indicates an inconsistency and ambiguity regarding the use of these constructs. They are often used interchangeably with the terms agility and anticipatory adaptation. Therefore, it is not clear whether resilience, flexibility, and coping capacity constitute synonyms or distinctly individual concepts. The failure regarding the explanation of interrelationships among these constructs may lead to different conclusions without theory guiding the progress of practice. In the present paper, we make an attempt to examine the relations between the resistance of the organization, its flexibility and coping capacity. Specifically, we call for developing these capabilities together at the organizational level. However, the paper has a conceptual character, and it is based on the following consolidated theories: resource-based theory and contingency theory. This study departs from the critical issues in extant reviews and literature, and contributes to the ongoing debate on resilience, flexibility and coping capacity in the business and management area by answering the following research question: whether and in what way the resilience is connected with the flexibility and coping capacity of the organization? In doing so, we conducted a systematic literature review of articles published between 2000 and 2018, critically analyzed the selected publications by means of inductive content analysis (Krippendorff, 2012). To provide deeper insight into the functioning of those capabilities, we merge findings from different research areas (e.g., business continuity management, crisis management, innovation management). Beyond that, we highlight important relationships and interactions of terms: coping capacity, flexibility and resilience. The result of this process is an informed, conceptual framework that fosters a comprehensive understanding of the relationships. Furthermore, the framework can serve as a basis for the operationalization of those constructs.

The paper is structured as follows. First, we illustrate the research methodology describing our literature selection criteria and data analysis protocol. Then, we present the main findings from analysis three terms (constructs) separately and analysis of interrelations between them. Finally, we discuss the conceptual framework with a set of propositions and offer future research avenues.

Research methodology

As discussed in the introduction, we aim to identify relationships between flexibility, coping capacity, and resilience. In order to arrive at the objective, we conducted a comprehensive review of the literature and a systematic examination of research papers. We followed the research protocol depicted in Figure 1 (based on Tranfield *et al.*, 2003).

Initially, we defined research questions. To do this, we conducted a preliminary search for organizational resilience, flexibility, and coping capacity. Based on this search, we acknowledged that, in order to understand studies' dependencies better, we needed to examine what we know and what we do not know about the following questions: (1) How are flexibility, resilience, and coping capacity conceptualized at the organizational level?, and (2) What are the dependencies that exist between them? In the second step, we defined the scope of our research. We are interested in the study of resilience in management at the organizational level. Therefore, we included the fields of management and business. We discarded psychology and human resources because the study of resilience in these fields is mainly focused on the resilience of individuals. In the third step, we defined the search criteria and selected a database in which to search. Articles were searched by using the keywords "flexibility" and "resilience," and "coping capacity" and "management" and "organization/business." Thereafter, the contents of these papers were critically analyzed by studying their abstract and introduction. We considered six databases: Elsevier Freedom Collection (www.sciencedirect.com), ScienceDirect, Scopus, Emerald Management 120, DOAJ Directory of Open Access Journals and EBSCO

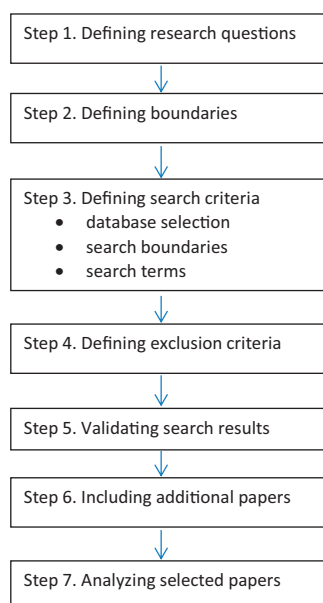


Figure 1.
Research protocol

Academic Search Complete (www.ebsco.com). The time range of the analysis covered the years 2000–2018.

In the fourth step, we defined the exclusion criteria. We refined our results based on the papers' keywords and the analysis of their titles and abstracts. We excluded all the papers whose titles or abstracts were not related to organizational resilience, flexibility, coping capacity, and management. We realized that there were papers, which did not include a keyword section, and also papers that did not relate to economic and management sciences. In the fifth step, we replicated the search to validate our results. Finally, we analyzed all the papers. During this step, we realized that some cited relevant papers did not appear in our search because of the content or publication data. Therefore, we added these papers, as well. Finally, 85 papers were found to be relevant within the scope and boundary of the research. Thus, these papers were selected for further review. The identified contributions are listed in [Appendix 1](#) and in the reference list.

Category selection

The choice of the category was dictated by selected theoretical concepts. Therefore the papers on flexibility, organizational resilience, and coping capacity were identified. An additional category was articles combining the above concepts. Under each structural category, several distinct theoretical approaches were defined. A revised loop was used for continuous revision of approaches whenever there was overlap among the categories.

Content evaluation

We evaluated the collected articles to determine the relevant contextual issues and research trends and to draw conclusions. In the subsequent sections, the detailed issues of each category are described as a result of the analysis of the collected materials.

The rigor of research methodology

In content analysis, trustworthiness is one of the main challenges. This indicates whether the research is valid and relevant, and whether the procedures being followed are genuine or not. In this review paper, a right and focused procedure for the relevant data collection method has been followed. In addition to the authors, one more independent research assistant was also deployed by the authors to carry out this research on the lines as defined and used by the authors. It was observed that there was no significant difference in the research outcomes.

Coping capacity – organizational perspective

Coping capacities are defined as the means by which people or organizations use available resources, skills and opportunities to face adverse consequences, which could lead to a disaster (IPCC, 2012). UNISDR (2009) defined coping capacity as the ability of people, organizations and systems, using available skills and resources, to face and manage adverse conditions, emergencies or disasters. Coping capacity captures the characteristics of an organization, which allow it to anticipate, act, achieve goals and manage resources (Wisner *et al.*, 2004) or which are associated with absorptive capacity and mobilization when a hazardous event occurs (Cutter *et al.*, 2008). This involves resource management to cope with hazards before, during and after they occur. Hertin *et al.* (2003) identified that this feature is related to an awareness of the need to adapt, the ability to make decisions regarding, which measures to implement, and the capacity to implement and control the process of adaptation. The term “capacity” refers to the potential to reduce and adapt to risk. In other words, it goes beyond institutionally based measures and people’s local coping strategies that are already in place; it also includes capacity that may be used in the future to reduce and adapt to risk. Hence coping capabilities can be separated into two subcategories: the ability to accept a problem and the ability to develop and implement solutions (Jaques, 2007). These capabilities imply immediate or short-term action in response to unexpected events (Madni and Jackson, 2009).

The literature of the subject frequently identifies coping capacity with the concept of adaptive capacity. Even though some authors have used them interchangeably, these are different concepts (Gallopín, 2006). Vogel and O’Brien (2004) underline that coping capacity can be viewed as a short-term approach dealing with capacities and survival in the light of extreme events, as well as the protection and conservation of the current system and institutional settings (see also Birkmann, 2013). In contrast, adaptive capacity as a constantly unfolding, progressive and long-term process of learning, experimentation and change, requires planned and strategic actions (Vogel and O’Brien, 2004) and modifications in behavior (Eriksen *et al.*, 2010). These notions differ in the temporal range of the adaptation, as well as the character of the reaction (active-reactive).

Coping capacity allows to maintain an acceptable level of results without making significant internal changes. Therefore, turbulence does not affect the efficiency or time of completing tasks. In order to be used, it requires the ability to recognize that certain actions are necessary for response to external turbulences. Coping capacity refers to the area in which deviations of actual results from expected results emerge. In Figure 2, baseline performance, i.e. a performance that would survive were it not for turbulences, was marked with a blue line. The shaded area indicates a range of values with an acceptable level. The ability to respond concerns the difference between the baseline and actual performance over time. In the first phase of the turbulence, the detection of the turbulence is emphasized. Coping capacity starts with accepting the problem. During this period, the results may or may not change. After the turbulence has been recognized, its nature must be determined and understood in the sense that the organization must determine whether the response is required, and if so, which type of response will be the most optimal. Going from detection to decision constitutes a sense-making phase. The search for a solution in the face of a crisis always constitutes a

combination of sense-making and acting. Sense-making emphasizes that people try to make things rationally accountable to themselves and others. Only if people understand the crisis situation, they are able to act on this. For an effective sense-making, there must be a continual feedback between understanding and action, i.e. sense must continually be made and remade. When a decision or a series of decisions are taken, they should be implemented, where the implementation time is a function of the complexity of the actions and the conditions for their implementation. In turn, the time required to return to an acceptable level of results depends on the type of turbulence and resistance of the organization.

Organizations can cope with turbulences in various ways, including the application of existing available responses to address changing conditions (e.g. in an extreme weather situation a shift of resources to protect people and/or organizations is available), application of an existing response in a new context to address the problem (for example, by means of a business continuity system in the conditions of an unexpected extreme). The way of reaction is called coping strategies, where that term refers to the adaptive or constructive mechanisms that are used to reduce stress. Liu *et al.* (2016) distinguished four dimensions of coping strategies. The first is formalism, which involves ensuring compliance with regulations by setting up internal procedures that adhere strictly to the letter of the law. Accommodation refers to a coping strategy that gives priority to meeting political or bureaucratic demands (Cho *et al.*, 2006), whereas referencing is based on the following guidelines recommended by professional associations. The rest of dimensions—self-determination—emphasizes intellectual flexibility, managerial discretion and autonomy (Kock *et al.*, 2012). Organizations adjust their coping strategies by taking into account the constraints defined by both their internal and external environments.

The ability to react is associated with other dynamic capabilities. This being a dynamic ability in itself, it additionally interacts (and conditions) other abilities. The fact is indicated by Alberts (2011) via comparing the ability to react with:

- (1) Versatility. This component allows you to achieve acceptable performance/ performance levels under new or changed tasks. It is the ability to maintain efficiency as a part of changes in mission and tasks;
- (2) Flexibility. It creates the ability to perform tasks in more than one way. It allows you to use a different reaction instead of sticking to ineffective previous solutions. Although new solutions may be more costly or time-consuming, the possibility of implementing alternatives is better than none at all. Flexibility can apply to individual components, e.g. equipment, and also to the entire organization;
- (3) Innovativeness. It concerns situations in which the organization does not see the possibility of a proper reaction. It is then advisable to generate or develop new tactics and methods of conduct, through the use of a novel solution;

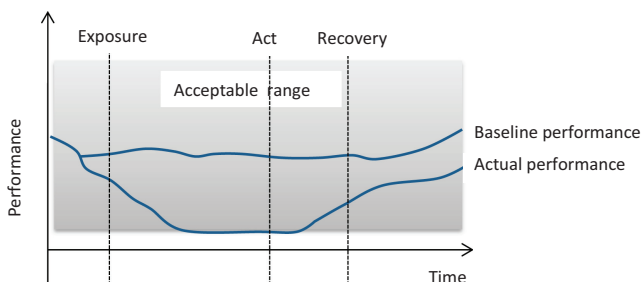


Figure 2. Anatomy of coping capacity

-
- (4) Adaptability. It allows an internal change in the organization, procedures and structures to better adapt to challenges.

Coping capacity is absolutely essential for the organization. If it cannot respond in time, then nothing else matters. An organization that can understand the situation sufficiently to make an appropriate choice and increase the coping capacity, prior to the onset of a turbulence, exhibited a sufficient level of responsiveness to allow the potential resilience and flexibility to be realized.

Resilience of organizations

Many of the recent definitions of organizational resilience embrace the notion of active resilience in a dynamic environment. Traditionally, resilience is viewed as the quality, which enables the individual, community, or organization to cope with, adapt to, and recover from a disaster event (Buckle *et al.*, 2000). Although the term resilience has its roots in science, denoting the ability of materials to return to their original form following deformation (Sheffi, 2006), it is also used to describe the capacity of a system to absorb change, generally conceptualized in the form of sudden shocks, and still retain its essential functionality (Walker *et al.*, 2006). The British Standard 65,000 on Organizational Resilience describes it as an ability of an organization to anticipate, prepare for, and respond and adapt to incremental change and sudden disruptions in order to survive and prosper (BSI, 2014). Conz and Magnani (2020) group papers on resilience into four categories according to their relationship with the temporal phase: (1) resilience as a proactive attribute, before ($t-1$) an event; (2) resilience as absorptive and adaptive attributes, during (t) an event; (3) resilience as a reactive attribute, after ($t + 1$) an event; (4) resilience as a dynamic attribute, before during and after an event. The first group conceptualizes resilience as a proactive attribute. Resilience is defined as an active response to a crisis situation that involves taking proactive steps to be able to thrive during and after a crisis. It focuses on preparing the organization's resources for the future (Brewton *et al.*, 2010; Danes *et al.*, 2009). A different approach treats resilience as an adaptive attribute in real time. In this approach, resilience is seen as a process rather than an outcome. Scholars who focus on the absorptive aspect of resilience, emphasize the robustness of the firm during the critical event, and the stability of its organizational structure. F.e. Biggs *et al.* (2012) refer to resilience as the capacity of the firm to remain in a stable state during a disturbance, similarly Sin *et al.* (2017). Ismail *et al.* (2011) define resilience as the maintenance of a positive adjustment under challenging conditions and identify "operational agility" as a necessary component to develop resilience. Capacity to withstand and to cope with turbulent changes require special capabilities from organizations. Norris *et al.* (2008) proposed that disaster resilience emerges from a set of four networked capacities (social capital, economic development, community competence, information). Social capital comprises factors, which maintain and sustain social health, including social support, social structures and linkages, community bonds and commitments, and a sense of place. Economic development comprises factors supporting the level of economic resources available to communities, including resource volume, resource diversity and resource equity. Community competence embodies factors, which allow communities to learn and work together flexibly to solve problems, including collective action and decision-making, trust, empowerment and partnerships. Information and communication refer to the creation of common meanings and the opportunities for articulating needs, views and attitudes, including narratives and the infrastructure of public information systems. The interactions between these four dynamic capacities shape the readiness and post-disaster recovery. Compliance with a different approach to the resistance of an organization is treated as a desired state. Lengnick-Hall *et al.* (2011) suggested that the capacity for resilience is developed from a blend of organizational level cognitive, behavioral and contextual capabilities. Specifically, organizational resilience

capacity is composed of (1) cognitive resilience capability, which involves conceptual orientation and constructive sense-making variables, (2) behavioral resilience capability composed of learned resourcefulness, counter-intuitive agility, practical habits and behavioral preparedness variables, and (3) contextual resilience capability, which includes variables for psychological safety, deep social capital, diffused power and accountability, and broad resource networks. Both [Lengnick-Hall *et al.* \(2011\)](#) and [Giada Scalera *et al.* \(2014\)](#) introduce the cognitive aspect of resilience without providing further explanation of how cognition-related

mechanisms could support, determine or enhance resilience. The next group of papers related resilience to the post-disaster phase. [McPhee \(2014\)](#) describes resilience as the capacity to survive disruptions, while [Pal, Westerlind and Torstensson \(2013\)](#) and [Smallbone *et al.* \(2012\)](#) view resilience as the ability of firms to respond to times of crisis, or to a change and to maintain their competitive advantage. These studies treat resilience as an ability to recover to a previous equilibrium state. They emphasize the adaptive aspects of being resilient, the dynamic absorption of a shock. Resilience has also been defined as a magnitude. Under this view, resilience is the level of disturbance an organization can tolerate and still survive ([Linnenluecke and Griffiths, 2010](#); [Limnios *et al.*, 2014](#)). These papers refer to the theory of ecological adaptation, where resilience implies a dynamic adaptation by recombining existing resources to emerge strengthened and more resourceful. [Limnios *et al.* \(2014\)](#) indicate that the above approaches are different manifestations of resilience as either offense (adaptation) or defense (resistance) to internal or external disturbance. Resilience assumes a primarily offensive, anticipative character when the system operates at a desirable system state. On the other side, resilience assumes a primarily defensive character (resistance to change) when the system operates at an undesirable system state. A similar dichotomy is indicated by [Rahi \(2019\)](#), who divides indicators aiming to measure organizational resilience in two dimensions, relating to being proactive and manage possible disruptive events and the organization's capacity to transform its structure, processes, culture, etc.

While defining resilience is clearly challenging, identifying the features of organizations, which make them resilient is even more difficult. Although researchers differ in the terms that they use to describe features of organizational resilience they nevertheless, orient their analyses around such features as redundancy, resourcefulness, effective communication and self-organization ([Kendra and Wachtendorf, 2003](#)). One of the most important conceptualizations of organizational resilience stems from [Weick \(1993\)](#). He identified four potential sources of resilience, which allow for effective responses in the case of unexpected events: bricolage, virtual role systems, wisdom, and respectful interaction. Bricolage is the capacity to improvise and apply creativity in problem-solving. It refers to the practice of creating order out of whatever is available. A virtual role system enables the members of an organization to simultaneously develop a shared vision of emergent challenges and ranges of action ([Kendra and Wachtendorf, 2003](#)). Wisdom is defined as the capacity to question what is known, to appreciate the limits of knowledge and to seek new information. Finally, respectful interaction consists of respecting the reports of others and being willing to act on them; reporting honestly to others; and respecting one's own perceptions and trying to integrate them with others ([Kendra and Wachtendorf, 2003](#)). [Weick \(1993\)](#) argues that these four principles facilitate collective sense-making, and thus, can help to avoid the dramatic consequences of unexpected events. In turn, [McManus](#) identified resilience in an organizational context as a function of an organization's situation awareness, management of keystone vulnerabilities, and adaptive capacity in a complex, dynamic and interconnected environment. Other attributes or elements of a resilient organization include building situation awareness ([Braes and Brooks, 2011](#)), managing organization's vulnerabilities ([Erol *et al.*, 2010](#)), having resources ([Aleksic *et al.*, 2013](#)), improvisation capacity ([Coutu, 2002](#)), ability to anticipate events ([Apneseth *et al.*, 2013](#)). An overview of resistance-related features is presented by [Ruiz-Martin *et al.* \(2018\)](#).

Flexibility

[Holweg \(2005\)](#) defines flexibility as a generic ability to adapt to internal and/or external influences. [Dla Escrig-Tena et al. \(2011\)](#) flexibility means a firm's abilities to respond to problems speedily, rethink its activities and strategies, and better meet environmental demands. [Vokurka and Fliedner \(1998\)](#) conceptualize flexibility as the capability of an organization to move from one task to another quickly and as a routine procedure. It means that flexibility is an enabling ability to change status within the current configuration (a pre-established and limited scope and achievability). The scope is the number of different states that can be achieved. The achievability is the transition cost and time to move from one state to another within the established scope.

While considering the essence of flexibility, one might apply ([De Toni and Tonchia, 2005](#)):

- (1) The economic approach,
- (2) The organizational approach.

As far as the economic approach is concerned, the notion of flexibility was presented in the economic literature for the first time by G. Stigler ([Carlsson, 1989](#)). He defined flexibility as the property of manufacturing, which allows for applying various variants of production. He suggested that the company is more flexible with regard to its production volume if it has a lower final cost, connected with changes in the production volume. Thus, he made flexibility dependent on the form of a curve of production costs, assuming that the flatter the curve of (unit) costs with a slower increase of the final cost, the greater the flexibility. G. Stigler also investigated flexibility understood as a company's response to uncertainty connected with the demand fluctuation. With time, the notion of flexibility was broadened, taking into consideration all types of turbulences in the firm's environment, not only changes in demand. Flexibility in management sciences is not an end in itself, but a means that enables a desirable outcome ([Bernardes and Hanna, 2009](#)). This permits the organization to try another response instead of having to adhere to an ineffective, preempted one. Through flexibility, organizations may anticipate changes in their environment, mount an offensive and try to control changes in their environment. Alternatively, they may react to the changes once they reveal their impact. Such an understanding of flexibility indicates its reactive or proactive dimension. In reactive understanding, this term is posited as the ability to allow for a key response to environmental changes, particularly when faced with fierce competition ([Fernandez-Perez et al., 2012](#)). Proactive flexibility is related to model, shape and transforms firms' environment ([Perez-Valls et al., 2015](#); [Combe et al., 2012](#); [Sushil, 2015](#)). [Volberda \(1998\)](#) states that organizational flexibility derives from the control capacity of the management and the controllability of the organization. From this definition, organizational flexibility is treated as a two-dimensional concept: the managerial task and the organizational design task. Both tasks need to match the combination of environmental characteristics.

Taking into account strategies for using flexibility, [Gerwin \(1993\)](#) distinguishes adaptive and redefinition strategies. The adaptive strategy refers to the defensive or reactive use of flexible competencies to accommodate unknown uncertainty, while the redefinition strategy refers to the proactive use of flexible competencies to raise customer expectations, increase uncertainty for rivals and gain a competitive edge.

With regard to the outcomes, the review shows that most of the previous literature in the field consider the positive relationships between flexibility and superior performance ([Combe et al., 2012](#); [Nadkarni and Narayanan, 2007](#); [Saini and Johnson, 2005](#)), and between flexibility and competitive advantage ([Zhang, 2005](#); [Nandakumar et al., 2014](#)). Some authors have concluded that flexibility increase perceived service quality ([Gylling et al., 2012](#)), increased innovation capabilities ([Fan et al., 2013](#)), contribute to new product development ([Kandemir and Acur, 2012](#)). These benefits are achieved by the process of performing flexibility,

referring to other managerial practices and strategies (see f.e. [Escrig-Tena et al., 2011](#)). The analytical model implies relationships between different aspects of flexibility, and the existence of various combinations of relationships between triggers, dimensions, enablers, barriers, processes and outcomes is presented in [Brozovic \(2018\)](#).

Flexibility, resilience, coping capacity – an attempt to determine the interdependence

Flexibility, resilience and coping capacity are common, related concepts in a number of scientific disciplines, and they have gained currency in disaster work. A key question that emerges, however, concerns the relationship between them. Is resilience the opposite of coping capacity? Is flexibility a factor of coping capacity? and so on.

The dependencies between coping capacity and resilience presented in the literature have different characters. Although there are several conceptualizations of the relationship between resilience and coping capacity (for example, [Cutter et al., 2008](#)), a general consensus that they are closely related exists at present ([Brown and Westaway, 2011](#); [Maclean et al., 2014](#)). The resilience approach helps us understand the relationship between coping capacity and adaptation: measures and actions undertaken now will determine whether an organization has the ability to reorganize or whether it will collapse in the future ([Abel et al., 2006](#)). Hence, coping capacity can be treated as a component of resilience ([Paton, 2007](#)). [Linnenluecke and Griffiths \(2010\)](#) explain that capabilities enabling organizations to prepare for extreme weather events (e.g. anticipatory adaptation, robustness) were thought to be key elements of resilience ([Dalziell and McManus, 2004](#)). [McEntire \(2001\)](#) determines coping capability as being a function of in-built resistance and resilience. Organizations must possess coping capabilities to realize their resilience potential. For example, they must be able to apply their crisis plans and use their collective knowledge to develop crisis specific solutions ([Duchek, 2020](#)).

According to a different approach, resistance is one of the dimensions of the reaction capability. [Pelling \(2003\)](#) views resilience as a component of the ability of an actor to cope with or adapt to hazard stress. That includes the planned preparation and the spontaneous or premeditated adjustments undertaken in the face of natural hazards. [Adger \(2006\)](#) takes a similar position.

Others ([UN International Strategy, 2002](#)) interpret resilience as the “flip”—positive—side of vulnerability or the ability to resist damage. Resilience is treated as the capacity of an organization to absorb and recover from the occurrence of a hazardous event. Both abilities reflect an increased recognition of people’s ability to face climate-related and other natural hazards, which was not captured in the mainly negative concept of vulnerability. They refer to resources and assets people possess to resist, cope with and recover from disaster shocks they experience ([Davis, 1984](#)).

[Holweg \(2005\)](#) presents one of the seminal attempts at differentiating coping capacity and flexibility. He identifies three determinant factors of responsiveness, which he calls “dimensions of responsiveness.” By referring to resilience, some authors highlight that it is supported by flexibility. Resilience implies uncertainty about the future state (configuration) of the organization. Various types or forms of flexibility refer to specific internal mechanisms, which may be employed to contribute to the overall organizational coping capacity. As a consequence, flexibility often represents the means of responding to changes. Flexibility is an attribute of the system, while responsiveness is an outcome or use of that capability to address stimuli. This illustrates the notion that flexibility indicates the capability of the operating system to absorb disturbances, while responsiveness indicates how well the system behaves vis-a`-vis market change. [Daugherty and Pittman \(1995\)](#) suggest that responsiveness is a performance-related concept originating from the interaction with

markets, while flexibility is an internal capability that may or may not interface with the external environment. Muller, Koslowski and Accorsi (2013) link the concept of resilience with flexibility by indicating that resilience is a system's ability to bounce back from disruptions and disasters by building in redundancy and flexibility. Rice and Caniato (2003) focus on security and resilience by upholding flexibility and redundancy as two methods with the greatest potential to create resilience. Sheffi (2005) employs flexibility as a means to achieve resilience, stating that "instead of relying solely on supply chain redundancy, a well-managed firm should develop resilience, by building flexibility that can be used to "bounce back" from disruptions." Flexibility or agility, robustness and resilience are different sides of the same coin (Asbjørnslett, 2008). Flexibility, or agility, denotes the inherent capability to modify a current direction to accommodate and successfully adapt to changes in the environment, whereas coping capacity refers to the ability to endure such changes without adapting. Differences between the examined terms are summarized in Table 1.

From single components to scientific theories

According to the resource-based theory (RBV), organizations that own strategic resources have important competitive advantages over organizations that do not. Resources are strategic to the extent that they are valuable, rare, difficult to imitate, and non-substitutable (Barney, 1991). Capabilities are one of the key concepts within the resource-based theory. Capabilities tend to arise over time as a firm takes actions, which build on its strategic resources. Building on RBV, dynamic capabilities (DC) mean that an organization has a unique capability of creating new capabilities. In other words, an organization that enjoys a dynamic capability is skilled at continually updating its array of capabilities to keep pace with changes in its environment. Zollo and Winter (2002) defined dynamic capabilities as learned and stable patterns of collective activity, enabling an organization to improve effectiveness through generating and modifying their operating routines. Based on the definition of Teece et al. (1997), and the research of Eisenhardt and Martin (2000), dynamic capabilities allow to integrate, reconfigure, gain and release resources in order to match and even create changes. Both resilience, as well as coping capacity and flexibility, belong to dynamic capabilities. This research is based on dynamic capability as a theoretical

Resilience	Coping capacity	Flexibility
Type of turbulence Jumping, sudden, discontinuous changes	Gradual adjustment Emergency changes	Predictable and unpredictable changes
Character Active	Reactive	Reactionary or proactive
Strategic behaviors Maintaining business continuity / survival/ transformation Minimizing losses Reconstruction	Forced adjustment Positive, voluntary adjustment	Changes in operational system changes of the organizational structures major transformation while responding to the changes from the macro environment.
Sources Resilience is embedded in a set of organizational routines and processes by which a firm conceptually orients itself	Rooted in resources, which are endogenous to the organization and which rely on traditional knowledge, indigenous skills and technologies and solidarity networks	Flexibility is gained by utilizing the internal factors connected with a given organization (redundancies of single resources, diversification of activities), its potential or by utilizing external factors, the components of this organization's environment

Table 1.
Comparison of
resilience, coping
capacity, flexibility

background. Coping capacity refers to an organization's ability to rapidly respond to changes in an uncertain business environment, and its capability to survive and prosper through quick and effective reactions. Upton (1995) refers to flexibility as the ability to adapt or change at the plant level, whereas Zhang *et al.* (2003) suggest that this ability exhibits the attributes of robustness (maintaining the status quo despite change) versus agility (instigating change rather than reacting to it). Resilience constitutes the capacity to effectively absorb, respond to and potentially capitalize on disruptive surprises. Resilience and coping capacity are complementary capabilities. They both offer the potential for enhancing the organization's capability set as a direct consequence of the response activities. In order to reflect the time in the dynamic nature of dynamic capabilities theory, this research investigates the moderating effects of the dynamics of environment on the relationship between the studied dynamic capabilities.

Toward a conceptual framework

All three capabilities share common roots. As we proved, they belong to the so-called dynamic capabilities. Thus, a range of skills, resources and competences that contribute to resilience simultaneously help develop a company's coping capacity and flexibility. Coping capacity is rooted in resources, being endogenous to the organization, which is the traditional knowledge, indigenous skills and technologies. Similarly, resistance is based on internal resources. Its level depends on structural solutions, but also on the level of knowledge, learning abilities, etc. Similarly, a number of competencies that positively influence the organization's resilience also positively affect its flexibility, e.g. double-loop learning, open communication, promoting internal collaboration and process integration. A number of authors draw attention to close relationships between the surveyed capabilities, indicating the broader significance of resistance (Bernardes and Hanna, 2009). It covers the flexibility and coping capacity as its integral components. Therefore

H1. Skills and competencies, which contribute to resilience, also contribute to coping capacity and flexibility. Therefore, as an organization works to develop its resilience, it concurrently creates a foundation for coping capacity and flexibility.

Coping capacity and flexibility are the essential capabilities that characterize the adaptive path of a firm when facing shocks. Coping capacity (adaptability) is the capability to adjust the firm's response and to adapt internal processes to changing external conditions (Folke *et al.*, 2002). Flexibility is the capability of implementing rapid decision-making processes, quick internal communication and fast learning so as to quickly adapt routines and strategies to changing conditions (Pal *et al.*, 2014). Coping capacity strengthens the ability to absorb turbulences while flexibility determines adaptability. Conz and Magnani (2020) explain that the resilience of an organization is characterized by two dynamic paths: the absorptive and the adaptive that are both equally effective for the achievement of a positive adjustment after a shock. Hence coping capacity and flexibility constitute core capabilities for organizational resilience.

Direct and indirect connections between these constructs suggest that strong resilience creates a useful internal guidance system for organizational analysis and decision making, enabling the diagnosis of the environmental conditions and select the most effective behaviors more accurately. Consequently, as organization builds its resilience capacity it simultaneously enhances a foundation for creating coping capacity and flexibility.

H2. Organizations with high levels of resilience are more likely to have a high level of coping capacity and flexibility.

Sutcliffe and Vogus (2003) suggested that organizational resilience provides firms with capabilities to mediate the unexpected and encourage growth by assessing their processes,

structures, and practices by promoting competence, flexibility, malleability, convertible, and restorative efficacy. They treat resilience as the ability and speed of return to normal performance levels following disruptions, through reducing vulnerability, and building redundancy and flexibility. In this sense, flexibility supports the resilience of the organization; it is a prerequisite for becoming resilient. Coping capacity is the ability of an organization to make rapid and balanced adjustments to the predictable and unpredictable changes. It is a buffer that absorbs small turbulence. Koornhof (2001) points out that this capability enables survival in the face of unprecedented threats from the business environment, and thus, determines the possibility of further reacting and functioning. In the context of resilience, flexibility and coping capacity allow organizations to absorb uncertainty by functioning as a buffer for them. These capacities strengthen each other's impact and effectiveness. The impact of individual capabilities, e.g. flexibility on resilience, is smaller than the total flexibility and coping capacity. Our view is consistent with Corning (1995) conception of synergy. The synergy results from combined effects and interactions between capabilities.

H3. Flexibility and coping capacity have a synergistic effect on resilience.

Detracting capabilities would be more frequently present in less resilient firms. Those capabilities which are necessary but not sufficient would be expected to be present in all firms, and they may also be present in organizations resilient through to middling firms.

Figure 3 depicts how different levels of coping capacity and flexibility may be present in organizations of various resilience levels.

Coping capacity and flexibility are not in themselves sufficient to shape a resilient organization. Collins (2015) points out that resilience requires additional capabilities: processes to direct internal R&D, delineating the customer solution and business model, selecting enterprise boundaries to manage complements and control platforms, avoiding decision errors and anticannibalization proclivities, decentralization, governance, and knowledge management capabilities. Parsons *et al.* (2006) distinguish two sets of capacities: coping capacities and adaptive capacities. Therefore, resilience is created by the application of bundles of dynamic capabilities.

H4. Coping capacity and flexibility are necessary but not sufficient to create resilience.

From the resource-based theory perspective, firms are viewed as a unique bundle of resources and capabilities, which enables them to develop competitive advantages. Organizations need

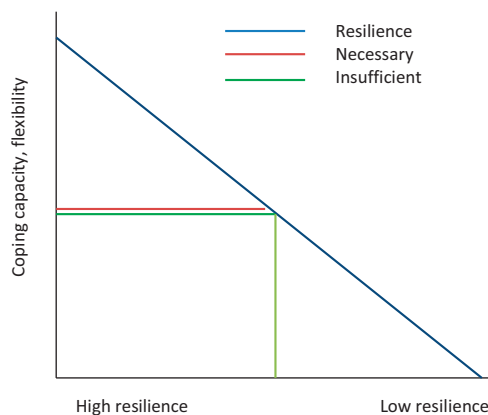


Figure 3.
Coping capacity and flexibility as resilience contributors

resources to take advantage of their capabilities. However, having resources alone does not guarantee a competitive advantage. Only the use of resources differentiates organizations. The application of dynamic capabilities activates leveraging other resources (Bowman and Ambrosini, 2003); enhances learning (Zollo and Winter, 2002; Bowman and Ambrosini, 2003); flexibility (Zahra *et al.*, 2006); responsiveness in turbulent environments (Zahra and George, 2002). As a consequence, dynamic capabilities do not in themselves create efficiency. Instead, they help to create operational capabilities, which are efficient (Teece, 2007).

Resilience is a process that leads to “superior outcomes,” a form of “spontaneous prevention of risk occurring without external intervention” (Brodsky *et al.*, 2011). McCann *et al.* (2009) demonstrate that agility and anti-resiliency have significant positive correlations with both performance measures: profitability and competitiveness. Their results indicate that firms can build competitiveness, even in turbulent conditions, by being more agile and resilient.

Coping capacity is a different, important capability needed for firms to achieve a competitive advantage (Matson and McFarlane, 1999; Holweg, 2005; Storey *et al.*, 2005; Reichhart and Holweg, 2007). Bessant *et al.* (2003) assert that competitive success in manufacturing is strongly linked to the ability of a firm to respond quickly and flexibly to its environment and meet the emerging challenges with innovative responses; they call such abilities responsiveness.

Flexibility also has a positive impact on financial results. Organizations characterized by high levels of both internal and external flexibilities (instead of that have high levels of both internal and external flexibilities) were found to have a second level of performance (Dias and Escoval, 2014). Yuan *et al.* (2010) found that coordination flexibility (i.e. effectively and efficiently integrating and deploying organizational resources) positively moderated the relationship between product innovation and firm performance (i.e. market position, sales volume, profit rate, reputation) in highly competitive environments. Moreover, Verdu-Jover *et al.* (2004) examined the match between a firm’s flexibility and environmental requirements on operational (e.g. variation in the volume of production), structural (e.g. job enrichment), strategic level (e.g. speed of strategic change). Their findings revealed a significant and positive relationship between operational flexibility and business performance (i.e. sales growth, ROA, ROS, overall performance, growth success).

H5. Both flexibilities, coping capacity and resistance contribute to super firm performance in turbulent conditions.

According to contingency theory, which helps us to understand the interrelationships between the alignment of organizational capabilities, and performance in relation to environmental conditions, firm performance is dependent on the match between the external context and internal arrangements. Contingency theory comprises of contextual (or contingency), response (i.e. organizational or managerial actions in response to contingency factors), and performance variables (Sousa and Voss, 2008). In light of such assumptions, the external turbulence can be

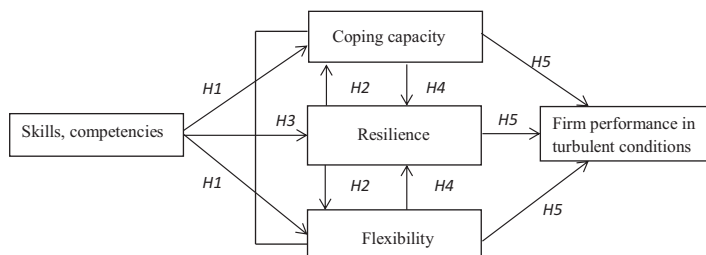


Figure 4.
Propositions
framework

regarded as a contingency factor moderating the capabilities-performance relationships. The same proposition 5 is consistent with the contingency theory.

Conclusions

This work responds to the recent call for research along these lines in [Duchek \(2020\)](#) by attempting to address the wide conceptual ambiguity associated with the terms, flexibility, coping capacity and organizational resilience. This study first carries out an analysis of the terms—types, elements, dimensions, parameters and others. Then, it identifies the existing similarities and differences among them. In this way, the paper would contribute to the conceptual systematization of the flexibility, coping capacity, resilience constructs by synthesizing the vast literature available in an attempt to address the conceptual ambiguity associated with them. This conceptual systematization and attempt to determine the relationships between these constructs are a necessary preliminary step in the development of the field, which will permit future researchers to advance in the homogeneous operationalization of the terms.

The differentiation of terms proposed in this study has important theoretical and practical implications. Establishing clear definitions is a necessary first step for research progress in any field. This study has proposed a conceptual differentiation of the terms flexibility, coping capacity, and resilience. By referring to resilience, our research has shown that this capability plays a superior role in relation to other capabilities, and thus, has an implication for the modus operandi of disaster/ crisis management. In opposition to previous papers, which treated resilience on an equal with other dynamic capabilities, our results indicate that resilience can be conceptualized as a meta-capability consisting of a set of organizational capabilities. Coping capacity refers to the effective handling of unexpected events, and its ability to absorb disturbances, assimilate deviations. The ability to adapt to changes is conditioned by the flexibility of the organization. In addition, resilience can substantially contribute to a firm's ability to both develop a long-term resistance to shocks and in the selection of the most appropriate form of reaction in turbulent conditions. Therefore, resilience can be viewed as a moderator of the relationship between coping capacity and flexibility and subsequent firm performance.

One important contribution of this study is a better understanding of the relationships between flexibility, coping capacity, and resilience, which enable an organization to thrive under different conditions. Together, requisite capabilities give an organization the best chance of successfully coping with a turbulence. Flexibility and coping capacity contribution to resilience constitutes a new source of power and lies in the nature of relationships emerging among organizations. Second, resilience enhances organizations' ability to select the most appropriate form of coping capacity at a particular point in time. It also supports organizations' efforts to implement, reconfigure, integrate, or release resources toward the desired configuration. It provides increased access to important resources by fostering and building on strong network relationships. Resilience is possible through resourcefulness, adaptability and flexibility. A better understanding of the connections among resilience, flexibility, coping capacity and organizational performance contributes to the growing literature on dynamic capabilities.

Our paper offers certain managerial implications as well. Resilience capacity can be developed and managed. This implies that managers should build the capacities to effectively analyze and shape resilience. These can constitute activities directed at reinforcing resilience or related to shaping flexibility and coping capacity. Through such activities, managers can actively attend to their firm's resilience levels in order to achieve greater potential outcomes.

Our model, being emergent, stemming inductively from existing literature, has some limitations. The main concerns that the model does not account for the heterogeneity of

potential environmental conditions that might be a threat or alter the equilibrium of organization, rather it more generally refers to all shocks/risks. Empirical research is needed to investigate the relationships among the different types of events and different responses.

A better understanding of studied relationships offers a number of interesting research directions. For example, while a variety of resources and competencies are likely to underpin all capabilities, it would be useful to examine the specific resources that are universally useful in generating capabilities and the resources and competencies that are more strongly associated with resilience. Future research can build on our study via efforts to empirically test the propositions. Verification of the proposed hypotheses will contribute to a deeper understanding of the relationship between resilience, coping capacity, and flexibility. In addition, future process studies might investigate how organizations actually prepare for unexpected events, accept problems, and learn from them. Finally, because improving certain capabilities can amplify other capabilities, we hope that our study will stimulate further research, which can empirically advance understanding of how resilience is achieved. It is about answering the question regarding which mechanisms, such as flexibility or coping capacity, stimulate the development of resilience.

References

- Abel, N.D., Cumming, H.M. and Anderies, J.M. (2006), "Collapse and reorganization in social-ecological systems: questions, some ideas, and policy implications", *Ecology and Society*, Vol. 11 No. 1, p. 17.
- Adger, W.N. (2006), "Vulnerability", *Global Environmental Change*, Vol. 16 No. 3, pp. 268-281.
- Akgün, A.E. and Keskin, H. (2014), "Organisational resilience capacity and firm product innovativeness and performance", *International Journal of Production Research*, Vol. 52 No. 23, pp. 6918-6937.
- Alberts, D.S. (2011), *The Agility Advantage. A Survival Guide for Complex Enterprises and Endeavors*, CCRP.
- Aleksic, A., Stefanović, M., Arsovski, S. and Tadić, D. (2013), "An assessment of organizational resilience potential in SMEs of the process industry, a fuzzy approach", *Journal of Loss Prevention in the Process Industries*, Vol. 26 No. 6, pp. 1238-1245.
- Andres, L. and Round, J. (2015), "The creative economy in a context of transition: a review of the mechanisms of micro-resilience", *Cities*, Vol. 45, pp. 1-6.
- Apneseth, K., Wahl, A. and Hollnagel, E. (2013), "Measuring resilience in integrated planning", in Albrechtsen, E. and Besnard, D. (Eds), *Oil and Gas, Technology and Humans: Assessing the Human Factors of Technological Change*, CRC press, Boca Raton, FL.
- Asbjørnslett, B. (2008), "Assessing the vulnerability of supply chains", in Zsidisin, G.A. and Ritchie, B. (Eds), *Supply Chain Risk: A Handbook of Assessment, Management and Performance*, 15-33, Springer, New York.
- Barney, J. (1991), "Firm resources and sustained competitive advantage", *Journal of Management*, Vol. 17 No. 1, pp. 99-120.
- Barrales-Molina, V., Bustinza, O.F. and Gutierrez, L.J.G. (2013), "Explaining the causes and effects of dynamic capabilities generation: a multiple-indicator multiple-cause modelling approach", *British Journal of Management*, Vol. 24, pp. 571-591.
- Bernardes, E.S. and Hanna, M.D. (2009), "A theoretical review of flexibility, agility and responsiveness in the operations management literature: toward a conceptual definition of customer responsiveness", *International Journal of Operations and Production Management*, Vol. 29 No. 1, pp. 30-53.
- Bessant, J., Kaplinsky, R. and Lamming, R. (2003), "Putting supply chain learning into practice", *International Journal of Operations and Production Management*, Vol. 23 No. 2, pp. 167-84.

-
- Bhamra, R., Dani, S. and Burnard, K. (2011), "Resilience: the concept, a literature review and future directions", *International Journal of Production Research*, Vol. 49 No. 18, pp. 5375-5393.
- Biggs, D., Hall, C.M. and Stoeckl, N. (2012), "The resilience of formal and informal tourism enterprises to disasters: reef tourism in Phuket, Thailand", *Journal of Sustainable Tourism*, Vol. 20 No. 5, pp. 645-665.
- Birkmann, J. (2013), "Measuring vulnerability to promote disaster-resilient societies and to enhance adaptation: discussion of conceptual frameworks and definitions", in Birkmann, J. (Ed.), *Measuring Vulnerability to Natural Hazards: Towards Disaster Resilient Societies*, United Nations University Press, Tokyo, pp. 9-79.
- Bowman, C. and Ambrosini, V. (2003), "How the resource-based and the dynamic capability views of the firm inform corporate-level strategy", *British Journal of Management*, Vol. 14 No. 4, pp. 289-303.
- Braes, B. and Brooks, D. (2011), "Organisational resilience: understanding and identifying the essential concepts", *Safety and Security Engineering*, Vol. IV, p. 117, WIT Press.
- Brewton, K.E., Danes, S.M., Stafford, K. and Haynes, G.W. (2010), "Determinants of rural and urban family firm resilience", *Journal of Family Business Strategy*, Vol. 1 No. 3, pp. 155-166.
- British Standards Institution (2014), *British Standard BS65000:2014: Guidance on Organizational Resilience*, BSI, London.
- Brodsky, A.E., Welsh, E., Carrillo, A., Talwar, G., Scheibler, J. and Butler, T. (2011), "Between synergy and conflict: balancing the processes of organizational and individual resilience in an Afghan Women's Community", *American Journal of Community Psychology*, Vol. 47, pp. 217-235.
- Brown, K. and Westaway, E. (2011), "Agency, capacity, and resilience to environmental change: lessons from human development, well-being, and disasters", *Annual Review of Environment and Resources*, Vol. 36 No. 1, pp. 321-342.
- Brozovic, D. (2018), "Strategic flexibility: a review of the literature", *International Journal of Management Reviews*, Vol. 20, pp. 3-31.
- Buckle, P., Mars, G. and Smale, S. (2000), "New approaches to assessing vulnerability and resilience", *Australian Journal of Emergency Management*, Vol. 15 No. 2, pp. 8-15.
- Burkett, V.R. (2013), "Coping capacity", in Bobrowsky, P.T. (Eds), *Encyclopedia of Natural Hazards. Encyclopedia of Earth Sciences Series*, Springer, Dordrecht.
- Carlsson, Bo (1989), "Flexibility and theory of the firm", *International Journal of Industrial Organization*, Vol. 7 No. 2, pp. 179-203.
- Cho, C.H., Patten, D.M. and Roberts, R.W. (2006), "Political expenditures, environmental performance, and environmental disclosure", *Journal of Business Ethics*, Vol. 67, pp. 139-154.
- Collins, S. (2015), "Strategising for resilience", PhD Thesis, Victoria University of Wellington.
- Combe, I.A. and Greenley, G.E. (2004), "Capabilities for strategic flexibility: a cognitive content framework", *European Journal of Marketing*, Vol. 38, pp. 1456-1480.
- Combe, I.A., Rudd, J.M., Leeflang, P.S.H. and Greenley, G.E. (2012), "Antecedents to strategic flexibility: management cognition, firm resources and strategic options", *European Journal of Marketing*, Vol. 46, pp. 1320-1339.
- Conz, E. and Magnani, G. (2020), "A dynamic perspective on the resilience of firms: a systematic literature review and a framework for future research", *European Management Journal*, Vol. 38 No. 3, pp. 400-412.
- Corning, P.A. (1995), "Synergy and self-organization in the evolution of complex systems", *Systems Research*, Vol. 12 No. 2, pp. 89-121.
- Coutu, D.L. (2002), "How resilience works", *Harvard Business Review*, Vol. 80 No. 5, pp. 46-56.
- Cutter, S.L., Barnes, L., Berry, M., Burton, C., Evans, E., Tate, E. and Webb, J. (2008), "A place-based model for understanding community resilience to natural disasters", *Global Environmental Change*, Vol. 18, pp. 598-606.

- Dahles, H. and Susilowati, T.P. (2015), "Business resilience in times of growth and crisis", *Annals of Tourism Research*, Vol. 51, pp. 34-50.
- Dalziel, E.P. and McManus, S.T. (2004), *Resilience, Vulnerability, and Adaptive Capacity: Implications for System Performance*, Stoos.
- Danes, S.M., Lee, J., Amarapurkar, S., Stafford, K., Haynes, G. and Brewton, K.E. (2009), "Determinants of family business resilience after a natural disaster by gender of business owner", *Journal of Developmental Entrepreneurship*, Vol. 14 No. 4, pp. 333-354.
- Daugherty, P.J. and Pittman, P.H. (1995), "Utilization of time-based strategies: creating distribution flexibility/responsiveness", *International Journal of Operations and Production Management*, Vol. 15 No. 2, pp. 54-60.
- Davis, I. (1984), "Prevention is better than cure", *RRDC Bulletin*, October, pp. 3-7.
- De Toni, A. and Tonchia, S. (2005), "Definitions and linkages between operational and strategic flexibilities. Omega", *The International Journal of Management Science*, Vol. 33 No. 9, pp. 525-540.
- Dias, C. and Escoval, A. (2014), "Organizational flexibility as a strategic option: fostering dynamic capabilities of hospitals", *Healthcare Quarterly*, Vol. 17 No. 2, pp. 38-43.
- Duchek, S. (2020), "Organizational resilience: a capability-based conceptualization", *Business Research*, Vol. 13, pp. 215-246.
- Dumitrascu, V. and Dumitrascu, R.A. (2016), "The use of fuzzy sets and elements of the information theory for assessing the resilience level of business organizations", *Calitatea*, Vol. 17 No. S3, pp. 69-85.
- Eisenhardt, K.M. and Martin, J.A. (2000), "Dynamic capabilities: what are they?", *Strategic Management Journal*, Vol. 21 Nos 10-11, pp. 1105-1121.
- Engle, N.L. (2011), "Adaptive capacity and its assessment", *Global Environmental Change*, Vol. 21 No. 2, pp. 647-56.
- EPICC (2003), *Earthquake Planning for Businesses: A Guide for Businesses in British Columbia*, Emergency Preparedness for Industry and Commerce Council.
- Eriksen, S., Aldunce, P., Bahinipati, C.S., Martins, R.D.A., Molefe, J.I., Nhemachena, C., O'Brien, K., Olorunfemi, F., Park, J., Sygna, L. and Ulstrup, K. (2010), "When not every response to climate change is a good one: identifying principles for sustainable adaptation", *Climate and Development*, Vol. 3 No. 1, pp. 7-20.
- Erol, O., Henry, D., Sauser, B. and Mansouri, M. (2010), "Perspectives on measuring enterprise resilience", *IEEE International Systems Conference Proceedings, SysCon*, pp. 587-592.
- Escrig-Tena, A.B., Bou-Llusar, J.C., Beltran-Martin, I. and Roca-Puig, V. (2011), "Modelling the implications of Quality Management elements on strategic flexibility", *Advances in Decision Sciences*, pp. 1-27, doi: [10.1155/2011/694080](https://doi.org/10.1155/2011/694080).
- Fan, Z., Wu, D. and Wu, X. (2013), "Proactive and reactive strategic flexibility in coping with environmental change in innovation", *Asian Journal of Technology Innovation*, Vol. 21, pp. 187-201.
- Fernandez-Perez, V., Garcia-Morales, V.J. and Bustinza, O.F. (2012), "The effects of CEOs' social networks on organizational performance through knowledge and strategic flexibility", *Personnel Review*, Vol. 41, pp. 777-812.
- Folke, C., Carpenter, S., Elmqvist, T., Gunderson, L., Holling, C.S. and Walker, B. (2002), "Resilience and sustainable development: building adaptive capacity in a world of transformations", *AMBIO: A Journal of the Human Environment*, Vol. 31 No. 5, pp. 437-440.
- Gallopin, G.C. (2006), "Linkages between vulnerability, resilience, and adaptive capacity", *Global Environmental Change*, Vol. 16 No. 3, pp. 293-303.
- Gerwin, D. (1993), "Manufacturing flexibility: a strategic perspective", *Management Science*, Vol. 39 No. 4, pp. 395-410.

-
- Giada Scalera, V., Mukherjee, D., Perri, A. and Ram, M. (2014), "A longitudinal study of MNE innovation: the case of Goodyear", *Multinational Business Review*, Vol. 22 No. 3, pp. 270-293.
- Gylling, C., Elliott, R. and Toivonen, M. (2012), "Co-creation of meaning as a prerequisite for market-focused strategic flexibility", *European Journal of Marketing*, Vol. 46, pp. 1283-1301.
- Herbane, B. (2015), "Threat orientation in small and medium-sized enterprises: understanding differences toward acute interruptions", *Disaster Prevention and Management*, Vol. 24 No. 5, pp. 583-595.
- Herlin, J., Berkhout, F., Gann, D. and Barlow, J. (2003), "Climate change and the UK house building sector: perceptions, impacts and adaptive capacity", *Building Research and Information*, Vol. 31 No. 3, pp. 278-290.
- Holweg, M. (2005), "The three dimensions of responsiveness", *International Journal of Operations and Production Management*, Vol. 25 Nos 7/8, pp. 603-622.
- International Panel on Climate Change (IPCC) (2012), *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation*, Cambridge University Press, Cambridge.
- Ismail, H.S., Poolton, J. and Sharifi, H. (2011), "The role of agile strategic capabilities in achieving resilience in manufacturing-based small companies", *International Journal of Production Research*, Vol. 49 No. 18, pp. 5469-5487.
- Jaques, T. (2007), "Issue management and crisis management: an integrated, non-linear, relational construct", *Public Relations Review*, Vol. 33, pp. 147-157.
- Kandemir, D. and Acur, N. (2012), "Examining proactive strategic decision-making flexibility in new product development", *Journal of Product Innovation Management*, Vol. 29, pp. 608-622.
- Kendra, J.M. and Wachtendorf, T. (2003), "Elements of resilience after the world trade center disaster: reconstituting New York city's emergency operations center", *Disasters*, Vol. 27 No. 1, pp. 37-53.
- Kock, C.J., Santalo, J. and Diestre, L. (2012), "Corporate governance and the environment: what type of governance creates greener companies?", *Journal of Management Studies*, Vol. 49, pp. 492-514.
- Koornhof, C. (2001), "Developing a framework for flexibility within organizations", *South African Journal of Business Management*, Vol. 32 No. 4, pp. 21-29.
- Krippendorff, K. (2012), *Content Analysis: An Introduction to its Methodology*, Sage, 3rd ed., Sage Publications, Thousand Oaks, CA.
- Kurt, D. and Hulland, J. (2013), "Aggressive marketing strategy following equity offerings and firm value: the role of relative strategic flexibility", *Journal of Marketing*, Vol. 77, pp. 57-74.
- Lengnick-Hall, C.A. and Beck, P. (2009), "Resilience capacity and strategic agility: prerequisites for thriving in a dynamic environment", UTSA Working Paper, Wp# 0059MGT-199-2009.
- Lengnick-Hall, C.A., Beck, T.E. and Lengnick-Hall, M.L. (2011), "Developing a capacity for organizational resilience through strategic human resource management", *Human Resource Management Review*, Vol. 21 No. 3, pp. 243-255.
- Limnios, A.M., Mazzarol, T., Ghadouani, A. and Schilizzi, S.G.M. (2014), "The resilience architecture framework: four organizational archetypes", *European Management Journal*, Vol. 32 No. 1, pp. 104-116.
- Linnenluecke, M.K. and Griffiths, A. (2010), "Beyond adaptation: resilience for business in light of climate change and weather extremes", *Business and Society*, Vol. 49 No. 3, pp. 477-511.
- Liu, N., Tang, S.Y., Wing-Hung Lo, C. and Zhan, X. (2016), "Stakeholder demands and corporate environmental coping strategies in China", *Journal of Environmental Management*, Vol. 165, pp. 140-149.
- Maclea, K., Cuthill, M. and Ross, H. (2014), "Six attributes of social resilience", *Journal of Environmental Planning and Management*, Vol. 57 No. 1, pp. 144-156.
- Madni, A.M. and Jackson, S. (2009), "Towards a conceptual framework for resilience engineering", *IEEE Systems Journal*, Vol. 3, pp. 181-191.

-
- Matson, J.B. and McFarlane, D.C. (1999), "Assessing the responsiveness of existing production operations", *International Journal of Operations and Production Management*, Vol. 19 No. 8, pp. 765-784.
- McCann, J., Selsky, J. and Lee, J. (2009), "Building agility, resilience and performance in turbulent environments", *People and Strategy*, Vol. 32 No. 3, pp. 44-51.
- McEntire, D.A. (2001), "Triggering agents, vulnerabilities and disaster reduction: towards a holistic paradigm", *Disaster Prevention and Management*, Vol. 10 No. 3, pp. 189-196.
- McPhee, W. (2014), "A new sustainability model: engaging the entire firm", *Journal of Business Strategy*, Vol. 35 No. 2, pp. 4-12.
- Muller, G., Koslowski, T. and Accorsi, R. (2013), "Resilience—a new research field in business information systems", *ACM Symposium on Business Computing*, pp. 1-12.
- Munich, Re (2001), *11th September 2001*, Munich Re Reinsurance Company.
- Nadkarni, S. and Narayanan, V.K. (2007), "Strategic schemas, strategic flexibility, and firm performance: the moderating role of industry clockspeed", *Strategic Management Journal*, Vol. 28, pp. 243-270.
- Nandakumar, M.K., Jharkharia, S. and Nair, A.S. (2014), *Organisational Flexibility and Competitiveness*, Springer India, New Delhi.
- Norris, F.H., Stevens, S.P., Pfefferbaum, P., Wyche, K.F. and Pfefferbaum, R.L. (2008), "Community resilience as a metaphor, theory, set of capacities and strategy for disaster readiness", *American Journal of Community Psychology*, Vol. 41, pp. 127-150.
- Pal, R., Westerlind, R. and Torstensson, H. (2013), "Exploring the resilience development process by implementing the crisis strategic planning framework: a Swedish textile SME perspective", *International Journal of Decision Sciences, Risk and Management*, Vol. 5 No. 1, pp. 1-34.
- Pal, R., Torstensson, H. and Mattila, H. (2014), "Antecedents of organizational resilience in economic crises: an empirical study of Swedish textile and clothing SMEs", *International Journal of Production Economics*, Vol. 147 No. PB, pp. 410-428.
- Parsons, M., Glavac, S., Hastings, P., Marshall, G., McGregor, J., McNeill, J., Morley, P., Reeve, I. and Stayner, R. (2006), "Top-down assessment of disaster resilience: a conceptual framework using coping and adaptive capacities", *International Journal of Disaster Risk Reduction*, Vol. 19, pp. 1-11.
- Paton, D. (2007), "Measuring and monitoring resilience in Auckland", GNS Science Report 2007/18, Institute of Geological and Nuclear Sciences.
- Pelling, M. (2003), *The Vulnerabilities of Cities: Natural Disasters and Social Resilience*, Earthscan, London.
- Perez-Valls, M., Cespedes-Lorente, J. and Moreno-Garcia, J. (2015), "Green practices and organisational design as sources of strategic flexibility and performance", *Business Strategy and the Environment*, Vol. 25 No. 8, pp. 529-544, doi: [10.1002/bse.1881](https://doi.org/10.1002/bse.1881).
- Rahi, K. (2019), "Indicators to assess organizational resilience—a review of empirical literature", *International Journal of Disaster Resilience in the Built Environment*, Vol. 10 Nos 2/3, pp. 85-98.
- Reichhart, A. and Holweg, M. (2007), "Creating the customer-responsive supply chain: a reconciliation of concepts", *International Journal of Operations and Production Management*, Vol. 27 No. 11, pp. 1144-1172.
- Rice, J.B. and Caniato, F. (2003), "Building a secure and resilient supply network", *Supply Chain Management Review*, Vol. 7 No. 5, pp. 22-30.
- Roca-Puig, V., Beltrán-Martín, I., Escrig-Tena, A.B. and Bou-Lluisar, J.C. (2005), "Strategic flexibility as a moderator of the relationship between commitment to employees and performance in service firms", *International Journal of Human Resource Management*, Vol. 16, pp. 2075-2093.
- Ruiz-Martin, C., López-Paredes, A. and Wainer, G. (2018), "What we know and do not know about organizational resilience", *International Journal of Production Management and Engineering*, Vol. 6 No. 1, pp. 11-28.

-
- Saini, A. and Johnson, J.L. (2005), "Organizational capabilities in e-commerce: an empirical investigation of brokerage service providers", *Journal of the Academy of Marketing Science*, Vol. 33, pp. 360-375.
- Sheffi, Y. (2005), *The Resilient Enterprise: Overcoming Vulnerability for Competitive Advantage*, MIT Press, Cambridge MA.
- Sheffi, Y. (2006), "Manage risk through resilience", *Chief Executive*, Vol. 214, pp. 28-29.
- Shimizu, K. and Hitt, M.A. (2004), "Strategic flexibility: organizational preparedness to reverse ineffective strategic decisions", *Academy of Management Review*, Vol. 18, pp. 44-59.
- Sin, I., Musa, N. and Ng, K. (2017), "Building business resilience through incident management body of knowledge (IMBOKTM): the amalgamated framework for total resilient capability", *Global Business and Finance Review*, Vol. 22 No. 1, pp. 38-50.
- Smallbone, D., Deakins, D., Battisti, M. and Kitching, J. (2012), "Small business responses to a major economic downturn: empirical perspectives from New Zealand and the United Kingdom", *International Small Business Journal*, Vol. 30 No. 7, pp. 754-777.
- Sousa, R. and Voss, C.A. (2008), "Contingency research in operations management practices", *Journal of Operations Management*, Vol. 26 No. 6, pp. 697-713.
- Storey, J., Emberson, C. and Reade, D. (2005), "The barriers to customer responsive supply chain management", *International Journal of Operations and Production Management*, Vol. 25 No. 3, pp. 242-60.
- Sushil (2015), "Strategic flexibility: the evolving paradigm of strategic management", *Global Journal of Flexible Systems Management*, Vol. 16, pp. 113-114.
- Sutcliffe, K.M. and Vogus, T. (2003), "Organizing for resilience", in Cameron, K.S., Dutton, J.E. and Quinn, R.E. (Eds), *Positive Organizational Scholarship: Foundations of a New Discipline*, Berrett-Koehler, San Francisco, pp. 94-110.
- Teece, D.J., Pisano, G. and Shuen, A. (1997), "Dynamic capabilities and strategic management", *Strategic Management Journal*, Vol. 18 No. 7, pp. 509-533.
- Teece, D.J. (2007), "Explicating dynamic capabilities: the nature and microfoundations of (sustainable) enterprise performance", *Strategic Management Journal*, Vol. 28, pp. 1319-1350.
- Tompkins, E.L. and Adger, W.N. (2005), "Defining response capacity to enhance climate change policy", *Environmental Science and Policy*, Vol. 8, pp. 562-571.
- Tranfield, D., Denyer, D. and Smart, P. (2003), "Towards a methodology for developing evidence-informed management knowledge by means of systematic review", *British Journal of Management*, Vol. 14, pp. 207-222.
- UNISDR (2009), "UNISDR terminology on disaster risk reduction", available at: <http://www.unisdr.org/eng/terminology/terminology-2009-eng.html>.
- United Nations International Strategy for Disaster Reduction (2002), *Living with Risk: A Global Review of Disaster Reduction Initiatives*, United Nations International Strategy for Disaster Reduction, Geneva.
- Upton, D.M. (1995), "What really makes factories flexible?", *Harvard Business Review*, Vol. 73 No. 4, pp. 74-84.
- Verdu-Jover, A.J., Llorens-Montes, F.J. and Garcia-Morales, V.J. (2004), "The concept of fit in services flexibility research: an empirical approach", *International Journal of Service Industry Management*, Vol. 15 No. 5, pp. 499-514.
- Villagrán de León, J.C. (2006), "Vulnerability—a conceptual and methodological review", Studies of the university: research, counsel, education, publication series of UNU-EHS 4/2006. Bonn.
- Vogel, C. and O'Brien, K. (2004), "Vulnerability and global environmental change: rhetoric and reality", *AVISO – Information Bulletin on Global Environmental Change and Human Security*, Vol. 13 No. 1, pp. 1-8.

- Vokurka, R.J. and Fliedner, G. (1998), "The journey toward agility", *Industrial Management and Data Systems*, No. 4, pp. 165-71.
- Volberda, H.W. (1998), *Building the Flexible Firm*, Oxford University Press, Oxford.
- Walker, B.H., Gunderson, L.H., Kinzig, A.P., Folke, C., Carpenter, S.R. and Schultz, L. (2006), "A handful of heuristics and some propositions for understanding resilience in social-ecological systems", *Ecology and Society*, Vol. 11 No. 1, p. 13.
- Watts, G. and Paciga, J.J. (2011), "Conscious adaptation: building resilient organizations", in Carmichael, T. (Ed.), *Complex Adaptive Systems: Energy, Information and Intelligence: 158-167*, AAAI Fall Symposium Series, Arlington VA.
- Wedawatta, G. and Ingirige, B. (2012), "Resilience and adaptation of small and medium-sized enterprises to flood risk", *Disaster Prevention and Management*, Vol. 21 No. 4, pp. 474-488.
- Weick, K.E. (1993), "The collapse of sensemaking in organizations: the Mann Gulch disaster", *Administrative Science Quarterly*, Vol. 38 No. 4, pp. 628-652.
- Wisner, B., Blaikie, P., Cannon, T. and Davis, I. (2004), *At Risk: Natural Hazards, People's Vulnerability and Disasters*, Routledge, Abingdon.
- Yuan, L., Zhongfeng, S. and Yi, L. (2010), "Can strategic flexibility help firms profit from product innovation?", *Technovation*, Vol. 30 No. 5, pp. 300-309.
- Zahra, S.A. and George, G. (2002), "The net-enabled business innovation cycle and the evolution of dynamic capabilities", *Information Systems Research*, Vol. 13 No. 2, pp. 147-150.
- Zahra, S.A., Sapienza, H.J. and Davidsson, P. (2006), "Entrepreneurship and dynamic capabilities: a review, model and research agenda", *Journal of Management Studies*, Vol. 43 No. 4, pp. 917-955.
- Zahra, S.A., Hayton, J.C., Neubaum, D.O., Dibrell, C. and Craig, J. (2008), "Culture of family commitment and strategic flexibility: the moderating effect of stewardship", *Entrepreneurship: Theory and Practice*, Vol. 32, pp. 1035-1054.
- Zhang, Q., Vonderembse, M.A. and Lim, J.S. (2003), "Manufacturing flexibility: defining and analyzing relationships among competence, capability, and customer satisfaction", *Journal of Operations Management*, Vol. 21 No. 2, pp. 173-191.
- Zhang, M.J. (2005), "Information systems, strategic flexibility and firm performance: an empirical investigation", *Journal of Engineering and Technology Management*, Vol. 22, pp. 163-184.
- Zhou, K.Z. and Wu, F. (2010), "Technological capability, strategic flexibility, and product innovation", *Strategic Management Journal*, Vol. 31, pp. 547-561.
- Zollo, M. and Winter, S.G. (2002), "Deliberate learning and the evolution of dynamic capabilities", *Organization Science*, Vol. 13 No. 3, pp. 339-351.

Further reading

- Linnenluecke, M.K. (2017), "Resilience in business and management research: a review of influential publications and a research agenda", *International Journal of Management Reviews*, Vol. 19, pp. 4-30.
- Santos Bernardes, E. and Hanna, M.D. (2009), "A theoretical review of flexibility, agility and responsiveness in the operations management literature: toward a conceptual definition of customer responsiveness", *International Journal of Operations and Production Management*, Vol. 29 No. 1, pp. 30-53.

Appendix 1.

Contributions identified for the purposes of the literature review (see reference list for full details)

Previous Carlsson; Daugherty and Pittman; Gerwin; Upton; Vokurka and Fliedner; Volberda

2000 Buckle, Mars and Smale

2001 Koornhof; McEntire

2002 Coutu; Folke *et al.*; Zollo and Winter

2003 Hertin *et al.*; Kendra and Wachtendorf; Pelling; Rice and Caniato; Sutcliffe and Vogus; Zhang, Vonderembse and Lim
 2004 Combe and Greenley ; Dalziell and McManus; Verdu-Jover, Llorens-Montes and Garcia-Morales; Shimizu and Hitt
 2005 De Toni and Tonchia; Holweg; Roca-Puig *et al.*; Sheffi
 2006 Abel, Cumming and Anderies; Adger; Gallopín; Parsons *et al.*; Sheffi; Walker *et al.*; Zahra, Sapienza and Davidsson
 2007 Nadkarni and Narayanan ; Paton; Teece
 2008 Cutter *et al.*; Norris *et al.*; Zahra *et al.*
 2009 Bernardes and Hanna; Danes *et al.*; Lengnick-Hall and Beck; McCann, Selsky and Lee; Santos Bernardes and Hanna
 2010 Brewton *et al.*; Erol *et al.*; Linnenluecke and Griffiths; Zhou and Wu
 2011 Alberts; Braes and Brooks; Bhamra, Dani and Burnard; Brodsky *et al.*; Brown and Westaway; Escrig-Tena *et al.*; Ismail, Poolton and Sharifi; Lengnick-Hall, Beck and Lengnick-Hall.; Watts and Paciga
 2012 Biggs, Hall and Stoeckl; Combe *et al.*; Fernandez-Perez *et al.*; Gylling Elliott and Toivonen; Kandemir and Acur; Wedawatta and Ingirige
 2013 Aleksic *et al.*; Apneseth, Wahl and Hollnagel; Barrales-Molina *et al.*; Birkmann; Fan, Wu and Wu; Muller, Koslowski and Accorsi; Kurt and Hullah; Pal, Westerlind and Torstensson
 2014 Akgün and Keskin; Dias and Escoval; Limmios *et al.*; Maclean, Cuthill and Ross; Pal, Torstensson and Mattila
 2015 Andres and Round; Collins; Dahles and Susilowati; Herbane; Sushil
 2016 Dumitrascu and Dumitrascu; Liu *et al.*
 2017 Sin, Musa and Ng; Linnenluecke
 2018 Brozovic; Ruiz-Martin, López-Paredes and Wainer
 Newer Conz and Magnani; Rahi; Duchek

Authors/ year	Definition	Approach
<i>Coping capacity</i> Wisner <i>et al.</i> (2004)	Is the manner in which people act within the limits of existing resources and range of expectations to achieve various ends	Proactive capability
Tompkins and Adger (2005)	The ability to manage both the causes of environmental change and the consequences of that change	Reactive capability
Gallopín (2006)	The capacity of a system to cope with a natural hazard is determined by the ability of the system to adjust to a disturbance, moderate potential damage, take advantage of opportunities and adapt to the consequences	Reactive capability
UNISDR (2009)	The ability of people, organizations and systems, using available skills and resources, to face and manage adverse conditions, emergencies or disasters . . . ” which can “ . . . contribute to the reduction of disaster risks	Quick, timely respond
Villagrán de León (2006)	Coping capacities refer to the means by which people or organizations use available resources and capacities to face adverse consequences related to disaster	Reactive capability
Engle (2011)	It is a critical system property, for it describes the ability to mobilize scarce resources to anticipate or respond to perceived or current stresses	Proactive capability
Burkett (2013)	The ability of a system (natural or human) to respond to and recover from the effects of stress or perturbations that have the potential to alter the structure or function of the system	Reactive capability

Table A1.
Selected references and definitions listed according to the category

(continued)

Organizations' coping capacity and resilience

Authors/ year	Definition	Approach
<i>Flexibility</i>		
Combe and Greenley (2004)	Capability to respond quickly to environmental changes	Reactive capability
Shimizu and Hitt (2004)	Capability to identify major changes in the external environment, quickly commit resources to new courses of action in response to those changes and recognize and act promptly when it is time to halt or reverse existing resource commitments	Reactive capability
Zhang (2005)	Flexibility is a means to involve constant improvement in the firm's organizational process, organizational learning and capabilities and skills	Proactive capability
Nadkarni and Narayanan (2007)	Ability to precipitate intentional changes and adapt to environmental changes through continuous changes in current Strategic actions, asset deployment, and investment strategies Ability to precipitate intentional changes and adapt to environmental changes through continuous changes in current Strategic actions, asset deployment, and investment strategies Ability to precipitate intentional changes and adapt to environmental changes through continuous changes in current Strategic actions, asset deployment, and investment strategies Ability to precipitate intentional changes and adapt to environmental changes through continuous changes in current Strategic actions, asset deployment, and investment strategies	Quick, timely respond
Zahra <i>et al.</i> (2008)	The ability to precipitate intentional changes and adapt to environmental changes in current strategic actions, asset deployment, investment strategies	Proactive capability
Roca-Puig <i>et al.</i> (2005)	The ability to pursue new opportunities and respond to threats in the competitive environment Flexibility can be explained as a process in which employees can perform multiple tasks and responsibilities at various position utilizing their skills and abilities	Proactive capability
Zhou and Wu (2010)	Flexibility is high, greater technological capability, associated with more explorative innovation	Reactive capability
Escrig-Tena <i>et al.</i> (2011)	Firm's abilities to respond to problems speedily, rethink its activities and strategies, and better meet environmental demands	Reactive capability
Combe <i>et al.</i> (2012)	Set of abilities that enable firms to lead or respond to change	Quick, timely respond
Fernandez-Perez <i>et al.</i> (2012)	The ability to allow for a key response to environmental changes, particularly when faced with fierce competition	Reactive capability
Kandemir and Acur (2012)	Dynamic capability that enables firms to make effective strategic decisions by maintaining multiple simultaneous decision alternatives	Proactive capability
Kurt and Hulland (2013)	It is a key factor determining firms' willingness and ability to adapt to changing competitive environments	Quick, timely respond

(continued)

Table A1.

Authors/ year	Definition	Approach
Barrales-Molina <i>et al.</i> (2013)	Operational flexibility is the ability to renew most day-to-day tasks or routines involved in basic processes; structural flexibility-the ability of the firm to adapt its organizational structure to new conditions; strategic flexibility-managers' ability to sense and respond quickly to external changes	Quick, timely respond
Sushil (2015)	Flexibility can be defined as the proactive as well as reactive strategic moves for change, both internally and externally, by leveraging the vital and desirable aspects of the continuity of the organization in terms of core values, culture, core competence, brand, and its strategic positioning	Proactive capability
<i>Resilience</i>		
Danes <i>et al.</i> (2009)	Stored capacity to rely on when a disruptive event occurs	Proactive capability
Brewton <i>et al.</i> (2010)	Firm resilience conceptually refers to the reservoir of individual and family resources that cushions the family firm against disruptions and is characterized by individual and collective creativity used to solve problems and get work done	Proactive capability
Linnenluecke and Griffiths (2010)	Organizational survival when encountering unexpected, adverse conditions that result either from large-scale disturbances or the accumulation of several minor disruptions	Reactive capability
Lengnick-Hall and Beck (2009)	Resilience capacity is defined as a unique blend of cognitive, behavioral and contextual properties that increase a firm's ability to understand its current situation and to develop customized responses that reflect that understanding	Adaptive capability
Ismail <i>et al.</i> (2011)	Maintenance of positive adjustment under challenging conditions	Adaptive capability
Bhamra <i>et al.</i> (2011)	Capability and ability of an element to return to a stable state after disruption	Reactive capability
Biggs <i>et al.</i> (2012)	The ability of a system to maintain and adapt its essential structure and function in the face of disturbance while maintaining its identity	Adaptive capability
Wedawatta and Ingirige (2012)	Adaptation to risk	Adaptive capability
Smallbone <i>et al.</i> (2012)	Firm ability to respond to changes in the external environment to retain competitive advantage	Reactive capability
Pal <i>et al.</i> (2013)	Response to a time of crisis	Reactive capability
Akgün and Keskin (2014)	Capacity to compose specific cognitive abilities, behavioral characteristics and contextual conditions-related variables in the product innovation context	Adaptive capability
Pal <i>et al.</i> (2014)	Capability to be ready in time of crisis and to sustain superior organizational performance	Proactive capability
McPhee (2014)	Capacity to survive to disruptions	Reactive capability
Andres and Round (2015)	Cope with and adapt to external shocks, such as the current economic downturn. Micro resilience can be taken to mean the nimble taking advantage of opportunities	Adaptive capability
Dahles and Susilowati (2015)	Capacity for an enterprise to survive, adapt and grow in the face of turbulent change	Adaptive capability

Table A1.

(continued)

Organizations'
coping
capacity and
resilience

Authors/ year	Definition	Approach
Herbane (2015)	Rebuild quickly and bounce back	Reactive capability
Dumitrascu and Dumitrascu (2016)	Resilience is the capacity of the organization to absorb shocks and serious impacts without losing the ability to accomplish a specific mission	Adaptive capability
Sin <i>et al.</i> (2017)	Enterprise's strategic capability to maintain positive causatum under challenging conditions in today's uncertain and complex business environment	Adaptive capability

Table A1.

Corresponding author

Agnieszka Karman can be contacted at: agnieszka.karman@poczta.umcs.lublin.pl

For instructions on how to order reprints of this article, please visit our website:

www.emeraldgroupublishing.com/licensing/reprints.htm

Or contact us for further details: permissions@emeraldinsight.com