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RESEARCH ARTICLE

The Relationship Between Knowledge Management and Organizational Resilience in terms of Organizational Structure[1]

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Abstract

This study has started with the foresight that in today's world where economies are intertwined like a spiral on the international level, organic organization structures can lead organizations to become more resilient by providing more effective knowledge management. Although the effect of knowledge management on organizational resilience has been discussed in the international literature, what makes this study different from previous studies is the inclusion of organizational structure in the research. In this context, the main question of the research is whether different organizational structures have an effect on knowledge management and organizational resilience. Turkey's top 500 and second 500 industrial companies, prepared by the Istanbul Chamber of Industry, constitute the population of the research. The survey method was conducted with 246 middle or top level managers of the relevant companies. Results suggest that (i) organic organizational structures positively affect knowledge management processes (ii) knowledge management and organic organizational structures positively affect organizational resilience (iii) knowledge management partially mediates the association between organic organizational structures and organizational resilience. This paper offers new empirical evidence which bolsters the notion that organic organizational structures and knowledge management are important for optimizing organizational resilience. Moreover, the interference between organizational structure, knowledge management, and resilience has been founded which may be a base for a new theory about the survival of businesses.

Keywords: *Knowledge management, Organizational structure, Organic structure, Organizational resilience*
Jel Codes: *D83, Q01, M10*

Örgüt Yapısına Göre Bilgi Yönetimi ve Örgütsel Dayanıklılık İlişkisi

Özet

Bu çalışma, ekonomilerin uluslararası düzlemde bir sarmal gibi iç içe geçtiği günümüzde organik örgüt yapılarının işletmelerde daha etkin bilgi yönetimini sağlayarak örgütleri dayanıklılığa ulaştırabileceği öngörüsüyle başlamıştır. Bilgi yönetiminin örgütsel dayanıklılığa olan etkisi uluslararası yazında ele alınmış olmakla beraber bu çalışmayı daha önce yapılmış olan çalışmalardan farklı kılan, örgüt yapısının da araştırmaya dâhil edilmesidir. Bu bağlamda araştırmanın temel sorusu, farklı örgüt yapılarının bilgi yönetimi ve örgütsel dayanıklılık üzerinde etkisi olup olmadığıdır. İstanbul Sanayi Odası tarafından hazırlanan Türkiye'nin en büyük ilk 500 ve ikinci 500 sanayi kuruluşu araştırmanın evrenini oluşturmaktadır. İlgili şirketlerin orta veya üst kademe yöneticileriyle gerçekleştirilen çalışmada anket yöntemi kullanılmış, 246 şirketle yapılan anket analize dâhil edilmiştir. Araştırma sonuçları; (i) organik örgüt yapısının bilgi yönetimi sürecini pozitif yönde etkilediğini (ii) bilgi yönetimi ve organik örgüt yapılarının örgütsel dayanıklılığı pozitif yönde etkilediğini (iii) bilgi yönetiminin organik örgüt yapısı ile örgütsel dayanıklılık arasındaki ilişkiye kısmen aracılık ettiğini göstermektedir. Bu makale, organik örgüt yapısı ve bilgi yönetiminin örgütsel dayanıklılığı sağlamak için önemli olduğu fikrini destekleyen yeni ampirik kanıtlar sunmaktadır. Ayrıca, işletmelerin hayatta kalmasıyla ilgili yeni bir teori için bir temel olabilecek örgüt yapısı, bilgi yönetimi ve dayanıklılık arasındaki model desteklenmiştir.

Anahtar kelimeler: *Bilgi yönetimi, Örgüt yapısı, Organik yapı, Örgütsel dayanıklılık*
Jel Kodu: *D83, Q01, M10*

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1. INTRODUCTION

In contemporary market environments, one of the most basic assets of businesses is their knowledge. Beyond the traditional production factors of land, labour, and capital it is important for firms to harness and optimize knowledge as a primary production factor that provides competitive advantage. Therefore, knowledge management has become a vital issue for businesses. Knowledge, which represents strategic power, is the key to goal attainment in businesses such as creating added value, productivity, and high performance. The ability of organizations to maintain their competitive advantages depends not only on having knowledge, but also on their ability to manage it. The concept of knowledge management (KM) was introduced into the business literature by Karl Wiig (1986), and he described it as "a conscious strategy to turn knowledge into action to improve organizational performance".

The market economy is characterized by dynamism and uncertainties which can and will lead to negative events. Being able to understand why some organizations can overcome mishaps and difficulties, while others cannot, and what makes organizations able to survive or adapt to changes has become even more important. Organizational resilience, which expresses the response of the organization to negative events such as crises, is an important issue that has been on the agenda in recent years. The concept is evaluated within the scope of crisis management in the organizational theory literature, and it includes being solution-oriented, creative, and proactive in the context of challenges.

From a post-modern management perspective, it is emphasized that organizational structures created by prevailing situations and conditions can lead organizations to success. Organizational structures depend on various factors such as operational characteristics, technology choice, internal dynamics, production preferences, and intellectual capital. The organizational structure classification put forward by Burns and Stalker (1961) is widely applied in the organizational literature; this classification demarcates organizations as mechanistic or organic. Organizations are defined as mechanistic where tasks and responsibilities are defined precisely; control, authority, and communication take place in line with a hierarchical structure; and operations and working behaviours follow the instructions and decisions taken by managers. In organic organizational structures, duties and responsibilities are constantly redefined in line with changes and interactions; control, authority, and communication occur in the form of networks and the hierarchical structure is simple. In this kind of organization, work is carried out based on information, dialogue, and decisions which are constantly being generated to optimize responses and outcomes. It is argued by many researchers (e.g., Burns and Stalker, 1961; Lawrence and Lorsch, 1967) that the most effective firms tend to use organic structures in turbulent, dynamic environments and mechanistic structures in more stable, predictable circumstances. Mechanistic structures can provide efficiency in organizations where the work is certain and monotonous, and products are standard and do not change much. However, organic structures are needed in cases where change is rapid, uncertainty is high, and thus work cannot be standardized.

This study creates a difference in the literature as it focuses on relationships between knowledge management and organizational resilience, and the mediation effect of knowledge management on the association between organic organizational structure and organizational resilience which before has not examined experientially.

2. THEORETICAL BACKGROUND

2.1 Knowledge Management

Knowledge has always been a determinant of business performance. However, the type of knowledge required for businesses to attain and maintain competitive advantages has changed over time. In the first half of the 20th century, successful businesses focused on improving their internal processes as they needed to increase the efficiency of their production and management activities. The scientific management approach developed by Taylor (1919) considered organizational knowledge with respect to the development of internal processes. This first generation of organizational knowledge, called atomic business knowledge, which focused on the functions of the business, remained valid until the 1950s. However, economic growth and increasing competition increasingly caused businesses to focus not only on themselves but also on their environment. The theory of competitive advantage put forward by Michael Porter (1985) can be given as an example of the second generation of organizational knowledge that emerged because of this necessity. This second generation of organizational knowledge continued to be valid from the 1950s to the 1990s. The third generation of organizational knowledge emerged to understand socio-cultural dynamics in the global economy through a systems approach. This type of organizational knowledge, which emerged in the 2000s, has become more visible with the acceleration of environmental dynamics. Within this third generation of knowledge, issues such as intellectual capital, innovation, and social responsibility are notable.

Starting in the 1990s, when the knowledge-based economy began to be expressed extensively, changes occurred in the strategies implemented by organizations to increase their performance and revenues. In traditional economies, organizations concentrate on tangible production factors such as natural resources, labor, and capital, while in the knowledge-based economy, information, and knowledge, which are abstract resources, are critical for organizations. Unlike physical resources that can be depleted, knowledge is considered an abstract capital that can be created, acquired, shared, reused, and applied (Tseng and Fan, 2011: 325). In other words, knowledge has become the symbol of the new economy as it forms the basis of economic development. As Drucker (1993a) emphasizes, today the main source of prosperity is knowledge. Therefore, it is not surprising that knowledge is a desirable phenomenon for modern organizations (Kreiner, 2002: 112).

Knowledge management is a multidisciplinary concept in terms of its importance and content. The concept of knowledge management is discussed in a wide range of literature from management science to education, from sociology to linguistics, and from engineering to journalism. The history of thought and scholarship in the management literature shows how the concept of knowledge management has been evaluated from management perspectives. Taylor (1919), in his book "Scientific Management", describes the attempt to formalize employees' experiences and hidden talents by turning them into objective and scientific knowledge. Drucker (1993b), through his use of the term “knowledge worker”, emphasized the importance of knowledge as a resource rather than capital, natural resources, or labor. Alfred Marshall, one of the neoclassical economists, expressed knowledge as the foundation of capital and organization and the most powerful locomotive of production (Davenport, 1965).

KM provides solutions to critical issues such as organizational adaptation, survival, and preparation for unforeseen changes. KM is a process of creating synergies by combining the creative aspect and innovative capacity of people with the data and information processing capacities of information technologies (Malhotra, 1998: 59). In other words, KM is an application aimed at utilizing the collective knowledge and skills of the entire workforce to achieve organizational objectives. In this application, businesses are treated as dynamic and living social entity. Although KM is related to technology, it is more fundamentally related to people (Gümüştekin, 2004: 204). Therefore, KM,

which is also referred to as the management of intellectual capital (Mårtensson, 2000: 205), is the basis for identifying collective knowledge within an organization and strengthening it by transforming it into value-creating activities (Von Krogh, 1998: 133). In this direction, KM requires that information and knowledge should be transferred to the right people, at the right time, with the right source, at the right amount, and at the right cost, pursuant of being more effective and productive by means of strategic approaches.

In the 1990s, the concept of knowledge or information management was used as equivalent to the management of various information systems and technological software in which information can be stored and transformed. This approach has been strongly criticized by authors (Nonaka and Takeuchi, 1995; Sveiby, 1997; Von Krogh, Nonaka, and Aben, 2001) who think that KM is much more than information technology and that the concept includes strategy, management, and innovation components. According to them, KM generally covers all relevant areas of management and is an integral part of corporate governance (Krumina, Krumins, and Rozentalec, 2015: 782). KM is the sum of the processes that govern the creation, dissemination, and use of information to achieve organizational objectives (Bailey and Clarke, 2000: 237). According to another study that defines the concept in processual terms, KM consists of creating, validating, introducing, and distributing information to employees and applying it to production processes. Following the completion of this five-stage process, organizations can build, maintain, or improve their core competencies by remembering what they know, learning new things, or forgetting what they know wrong (Bhatt, 2001: 71). Calvo-Mora, Navarro-Garcia, and Perianez-Cristobal (2015: 1643), Downes and Marchant (2016: 60-61), and Wong and Aspinwall (2004: 53-55) handled the KM process in four interrelated stages: (1) knowledge creation, (2) knowledge representation (storage and retrieval), (3) knowledge transfer, and (4) knowledge application. In what follows, the KM concept is discussed according to this classification.

2.2 Organizational Resilience

Nowadays, businesses are exposed to many threats both internally and externally. Natural disasters, epidemics, economic contraction, equipment failures, and human errors are just a few examples that disrupt the security and stability of an organization and its environment. In addition, organizations operate in a world where social, economic, and technological interdependence is constantly increasing. It is possible that uncertainties and fluctuations, often seen as insignificant, can be reflected in organizations by creating a butterfly effect since organizations have lost their independence because of interactions with other subsystems in various networks. For this reason, organizational resilience, has become an emphasized concept in recent years (Annarelli and Nonino, 2016: 2).

According to Lengnick-Hall, Beck, and Lengnick-Hall (2011: 244), there are two different perspectives on the definition of organizational resilience in the literature. First, organizational resilience was defined in terms of the ability to rebound from unexpected, stressful, and adverse situations and to pick up where it left off (Gittell, Cameron, Lim, and Rivas, 2006; Mallak, 1998a). This view coincides with the definition of resilience in the physical sciences where a resilient object is known for regaining its original shape and characteristics after being stretched, pressured, or pounded. When organizational resilience is seen as bouncing back, the focus is generally on coping strategies and on optimizing the ability to resume expected performance levels. Organizational efforts are designed to re-establish a strong fit between the firm and the new reality while simultaneously avoiding or limiting dysfunctional and regressive behaviors.

The second view on organizational resilience focuses on the development of new abilities such as the ability to keep up with situational changes, and the creation of new opportunities (Coutu, 2002; Freeman, 2004). This perspective, which emphasizes the idea of development, means benefiting from

unexpected difficulties and dynamics. In other words, the resources and capabilities at hand emphasize not only the resolution of existing dilemmas but also the building of a successful future by benefiting from opportunities. This perspective is therefore referred to as transformative.

When other definitions in the literature are examined, it is understood that the concept is also handled from other perspectives. According to Horne and Orr (1998: 31), each system has a particular internal resilience capability that can flex, orient, and shape itself in accordance with changes in the environment. Vogus and Sutcliffe (2007: 3418) define resilience as the maintenance of positive adjustment under challenging conditions such that the organization emerges from those conditions strengthened and more resourceful. Extreme events or challenging conditions that require organizations to be resilient include all events that are dangerous and likely to harm the organization. The perception of a particular event as risk varies according to the scope, place, and time of the event. So-called extreme events are factors of strategic uncertainty for organizations because they can affect not only the organizational structure but also the survival of the organization. Meyer (1982: 515) defines such events as "environmental jolts". These events can range from severe weather events, infrastructure failures, fuel crises, global credit crunches, flu pandemics, and terrorism. It is argued that the frequency of extreme events is increasing, and they can affect all types of organizations irrespective of size (Sullivan-Taylor and Branicki, 2011: 5566).

According to Mallak (1998b: 149), the resilience of an organization is based on the individual resilience of its members. Individual resilience is a concept that has its roots in positive psychology (Moenkemeyer, Hoegl, and Weiss, 2012: 630). Many researchers take this concept as a personality tendency and explain it in terms of traits such as tolerance, robustness, and self-efficacy (Kimhi and Eshel, 2009: 71). According to Fraser, Richman, and Galinsky (1999: 136), individual resilience means to be able to adapt to unusual situations and their unexpected consequences and to maintain positive attitudes towards them. In other words, individual resilience is to be able to successfully adapt to risky or troublesome processes (Masten, 1994: 3). The basic logic of considering individual resilience, and thus also the starting point of organizational resilience (Mallak, 1998a; Lengnick-Hall et al., 2011), stems from the fact that the actions and interactions of individuals as members of the organization constitute the collective capacity required for the resilience of the organization. Thus, the relationship between individual resilience and organizational resilience can be conceived as a relationship between systems and subsystems. However, defining skills at the organizational level as the sum of individual abilities is insufficient. In addition to the abilities of individuals, new capabilities resulting from the interaction of individuals' abilities increase organizational capacity and therefore resilience.

The concept of resilience is characterized by such properties as "recovery" (Freeman, Hirschhorn, and Triad, 2003), "robustness" (Tierney, 2003), "survival", and "improvement" (Fenwick, Seville, and Brunsdon, 2009). According to McManus, Seville, Vargo, and Brunsdon (2008: 84), a resilient organization has a greater awareness of itself, its key stakeholders, and the environment in which it operates; an increased ability to identify and manage its keystone vulnerabilities; and the ability to adapt to changed situations with new and innovative solutions. Similarly, Hollnagel, Nemeth, and Dekker (2008) mentioned four basic skills that provide and increase the quality of resilience: the ability to respond to various disturbances and regular or irregular threats, the ability to flexibly monitor the current state, the ability to anticipate disruptions, and the ability to learn from experience (Lee, Vargo, and Seville, 2013: 29-30).

Lengnick-Hall et al. (2011: 245) explain that an organization's capacity for resilience is derived from a set of specific organizational capabilities, routines, practices, and processes by which a firm conceptually orients itself, acts to move forward, and creates a setting of diversity and adjustable integration. Robb (2000: 29-31) associates organizational resilience with an appropriate cultural background, positing that a resilient organization can be established based on an appropriate culture

with appropriate skills and ultimately with an appropriate structure. Organizational resilience can be realized based on an organizational culture focused on innovation, learning, and experimentation where members are creative and capable of thinking differently.

Kantur and İşeri-Say (2012: 770) formulated their organizational resilience model based on the meaning of resilience put forward by the Multidisciplinary Centre for Earthquake Engineering Research: Specifically, resilience is conceptualized as the sum of physical and social capacity that provides resistance against natural disasters such as earthquakes and hurricanes and various disasters caused by people. Physical and social capacities that constitute resilience consist of four dimensions (Tierney, 2003: 2):

1. Robustness - The ability of units and systems to survive without any damage, deterioration, or loss of function in the face of various difficulties and needs.
2. Redundancy - The ability of units and systems to meet needs even in the event of deterioration, destruction, or loss of function.
3. Resourcefulness - The capacity to identify problems, establish priorities, and mobilize resources to avoid or cope with damage or disruption; the ability to apply human and material resources to meet priorities and achieve goals.
4. Rapidity - The capacity to meet priorities and achieve goals in a timely manner.

3. RESEARCH MODEL

One of the issues discussed in relation to KM is the benefits provided by different organizational structures including the issues that restrict such benefits. As noted above, in the literature, organizations can be classified in terms of their structures as "mechanistic organizations" or "organic organizations" (DeWitt, 1993; Wang and Ahmed, 2003; Burns and Stalker, 2005). This classification is based on the formalization, centralization, and integration levels of organizations (Bucic and Gudergan, 2004; Eriksen, 2006).

Formalization refers to the degree of work standardization within the organization and the extent to which employee behaviors are guided by rules and procedures (Andrews and Kacmar, 2001: 353). Organizations with higher formalization apply strict rules and procedures and there is an absence of spontaneous situations and flexibility. In formal organizations where tasks are defined and standardized by senior personnel, employees do not have any autonomy on how to do their jobs. Since everything has already been determined in such organizations, alternative methods are not considered. In other words, the dominance of strict rules restricts new ideas. However, the way of doing things is not as structured in organizations with low levels of formalization. Employees in these organizations, where rules and procedures are not strict, have opportunities to evaluate alternative operational methods. In this respect, the flexibility that encourages the creation of knowledge is the defining characteristic of organizational structure (Chen and Huang, 2007: 106).

According to Zheng, Yang, and McLean (2010: 765), centralization refers to an organizational structure in which the decision-making authority is at the top of the hierarchy. Employees can rarely participate in decisions and their interactions are limited as there is one-way communication. In centralized organizational structures where participation in decisions and communication is restricted, creative solutions and knowledge sharing are limited. On the other hand, in a decentralized organization, decision-making authority and therefore power are distributed throughout the organization. The dissemination of power facilitates freedom of expression and communication which are the lifeblood of the process of knowledge creation (Lee and Choi, 2003: 192).

Integration refers to the extent to which subdivisions work together. Information flow, communication, and cooperation become easier as different units interact with each other in an integrated organizational structure. Chen, Huang, and Hsiao (2010: 854) stated that KM can be

performed more effectively in organizations with high levels of integration. According to the results of many studies which examine the impact of organizational structure on KM, while centralization affects KM negatively, integration affects it positively (Lee and Choi, 2003; Chen and Huang, 2007; Willem and Buelens, 2009; Chen et al., 2010; Zheng et al., 2010).

The unidirectional flow of communication prevents individuals from sharing information in bureaucratic organizational structures because of strict rules and procedures, and the fact that wrong information can cause various penalties (Lang, 2001: 51; Çakar, Yıldız, and Dur, 2010: 77-78). By contrast, communication and information sharing are encouraged in open, flexible, or horizontal organizational structures. Organizations that have an open communication system and a lean organizational structure in which hierarchical levels are reduced are more effective in KM processes (Çakar et al., 2010, p. 87).

Overall, the literature suggests that KM is more effective in organic structures, which are neither hierarchical nor bureaucratic. Flexibility, creativity, and openness to new ideas are the defining characteristics of such organic organizations so knowledge can be gained, developed, shared, and applied to operations easily. On the other hand, KM is less effective in mechanistic structures as there are strict rules which restrict new ideas and operations (Damanpour, 1991: 579). Considering the foregoing, the following hypothesis is proposed:

H1: Organic organizational structures have a positive effect on knowledge management.

To identify the effect of organic organizational structures on each KM process, Hypothesis 1 is partitioned into the following four sub-hypotheses:

H1a: Organic organizational structures have a positive effect on knowledge creation.

H1b: Organic organizational structures have a positive effect on knowledge representation.

H1c: Organic organizational structures have a positive effect on knowledge transfer.

H1d: Organic organizational structures have a positive effect on knowledge application.

Moving on, studies suggest that KM constitutes a basis for organizational resilience, and effective KM positively affects organizational resilience. In a report by the World Intellectual Property Organization, organizational resilience is stated as one of the strategic objectives of KM (WIPO, 2015: 10).

The International Forum on Knowledge Assets Dynamics (IFKAD) organizes a congress with different KM themes every year. In 2017, the theme was "Knowledge Management in the 21st Century: Developing with Resilience, Creativity, and Co-creation". The fact that the business world is increasingly characterized by complexity and turmoil motivated the determination of this theme.

Chewning, Lai, and Doerfel (2012: 246) emphasize the importance of the use of information and communication technologies, which are considered as KM tools, to provide organizational resilience during crises. They deal with post-disaster situations and state that using information and communication technologies in such contexts facilitates the requisite coordination to ensure the continuation of daily work so organizational resilience may be increased.

Although it can be known from the literature that there may be a positive relationship between KM and organizational resilience, there is no empirical study that analysed the KM and organizational resilience relationship. Here, we propose the following hypothesis to know the relationship between these concepts, if any.

H2: Knowledge management positively affects organizational resilience.

To identify the effect of KM on each dimension of organizational resilience, Hypothesis 2 is partitioned into the following four sub-hypotheses:

H2a: Knowledge management positively affects robustness.

H2b: Knowledge management positively affects redundancy.

H2c: Knowledge management positively affects resourcefulness.

H2d: Knowledge management positively affects rapidity.

According to Dalziell and McManus (2004), it is possible for organizations to cope with crises with innovative and organic structures rather than structures based on command-and-control systems. Decision systems in organizational structures dominated by command and control weaken adaptative capacity by reducing awareness. Crises can be faced with organizational structures characterized by creative and flexible decision-making systems (McManus et al., 2008: 84). Similarly, Somers (2009: 13-14) states that creativity and adaptation skills are hindered to a large extent by bureaucratic, command, and control mechanisms. He emphasizes that a decentralized decision system is very important if organizations are to successfully adapt to changing conditions and respond quickly during crisis periods, and he states that resilience potential is higher in decentralized organizational structures.

Alavi, Wahab, Muhamad, and Shirani (2014: 4; 12) provided empirical evidence which suggested that organic structure and organizational learning are the main enablers of agility which is a dimension of organizational resilience. Ahiauzu and Ololube (2016: 355) state that organizational structure has important effects on organizational survival, and they found evidence to support the notion that organizational structure affects innovation via its impact on organizational resilience.

Jaaron and Backhouse (2014: 2036-2037) examine the organizational resilience of service enterprises, and they concluded that organic organizational structures are needed to achieve resilience. In their study, characteristic features of organic organizational structure are identified as open inter-departmental communication channels, formal and informal communication at every management level, and the ability of employees to make and implement decisions.

In sum, the foregoing provides the rationale for the following hypothesis:

H3: Organic organizational structure positively affects organizational resilience.

To identify the effect of organic organizational structure on each dimension of organizational resilience, Hypothesis 3 is partitioned into the following four sub-hypotheses:

H3a: Organic organizational structure positively affects robustness.

H3b: Organic organizational structure positively affects redundancy.

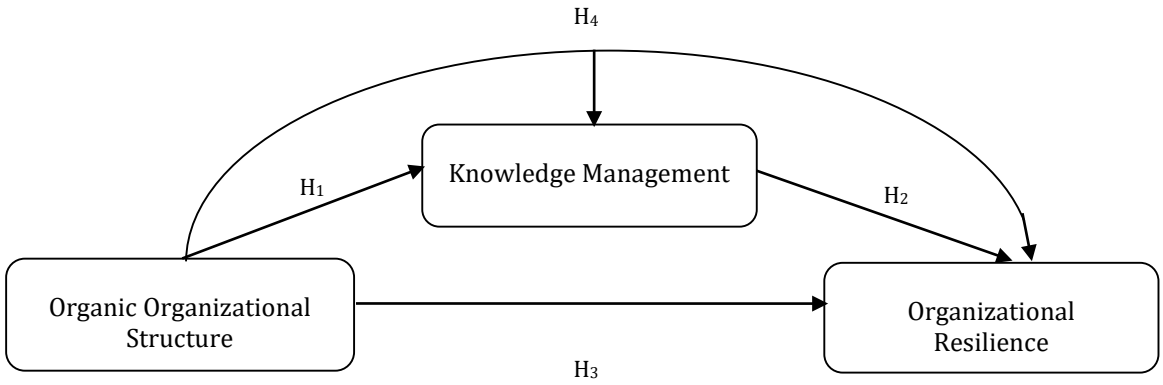
H3c: Organic organizational structure positively affects resourcefulness.

H3d: Organic organizational structure positively affects rapidity.

Considering the deductions leading to Hypotheses 1, 2, and 3, this study presumes that organizations with organic structures exhibit more robustness, redundancy, resourcefulness, and rapidity, possibly through increased knowledge creation, knowledge representation, knowledge transfer, and knowledge application. Therefore, the mediating effect of knowledge management on the relationship between organic organizational structure and organizational resilience is examined as per the following hypothesis and the conceptual model is shown in Figure 1.

H4: Knowledge management mediates the association between organic organizational structure and organizational resilience.

Figure 1: Proposed Research Model



4. METHODOLOGY

4.1 Sample and Data Collection

The top 1000 industrial enterprises in Turkey, defined in terms of companies' turnover, represent the study population. These best-performing enterprises are identified by the Istanbul Chamber of Industry (ICI). In accordance with the research focus, the unit of analysis was determined as "organization". A survey methodology was employed with respondents taken as middle or senior managers from each company (n = 246).

4.2 Measures

The central elements of the survey can be identified in terms of knowledge management, organizational resilience, and organizational structure. KM was measured using the 22-expressions scale prepared by Downes and Marchant (2016, p. 56). The scale measures KM in four dimensions: creation, representation, transfer, and application of knowledge. Next, it was decided to use the scale developed by Wicker et al. (2013, p. 516) to capture the concept of organizational resilience. This scale employs 21 expressions covering robustness, redundancy, resourcefulness, and rapidity. Finally, the organizational structure scale used in this research was designed by Covin, Slevin, and Heeley (2001: 65) and consists of 14 expressions demarcated into two dimensions - organic and mechanistic.

4.3 Analyses

LISREL (version 8.51) and SPSS (version 17) were used for data analyses. The first step involved assessing the reliability and validity of the data and measurement model. The structural model was then used to test the hypotheses.

4.4 Reliability and validity of the measurement model

One of the most used methods to measure model reliability is internal consistency analysis. Internal consistency analysis is performed by examining values of Cronbach's alpha. The experimental validity of the model used in the study, in other words, the construct validity was examined by confirmatory factor analysis as per best practice guidelines (Çokluk, Şekercioğlu, and Büyüköztürk, 2012: 276).

4.5 Bivariate correlation analysis

As a precursor to hypotheses testing, the connections between organic organizational structure, knowledge management, and organizational resilience are examined using bivariate correlation analysis. This is undertaken to gauge whether and the extent to which the study's expectations of

interconnectedness between organic structure, KM processes, and organizational resilience appear to be tenable.

4.6 Hypotheses testing

Univariate, multivariate, and hierarchical regression analyses are used to test the suite of hypotheses put forward in this study.

5. RESULTS

5.1 Reliability and Validity of the Measurement Model

Cronbach's α values associated with the four KM dimensions are as follows: knowledge creation (0.752), knowledge representation (0.913), knowledge transfer (0.840), and knowledge application (0.889). For organizational resilience dimensions, α levels are as follows: robustness (0.937), redundancy (0.813), resourcefulness (0.846), and rapidity (0.919). Finally, the organic organizational structure is associated with an α level of 0.615. All these values are acceptable for the purposes of moving onto the next stage of analysis.

Next, the results of confirmatory factor analysis provide comprehensive support for the construct validity of the research model (Table 1). When fit indices are considered (χ^2/df, RMSEA, SRMR, GFI, AGFI, CFI, NFI, NNFI, and IFI), it is seen that values are in the expected range indicating that the research model has been validated.

Table 1: Confirmatory Factor Analysis/Fit Indices

Fit Indices	Perfect Fit	Acceptable Fit	Organizational Structure	Knowledge Management	Organizational Resilience
χ^2/df	0 ≤ χ2/df ≤ 2	2 ≤ χ2/df ≤ 3	1.64	1.96	2.52
RMSEA	0.00 ≤ RMSEA ≤ 0.05	0.05 ≤ RMSEA ≤ 0.08	0.05	0.06	0.07
SRMR	0.00 ≤ SRMR ≤ 0.05	0.05 ≤ SRMR ≤ 0.10	0.04	0.04	0.05
GFI	0.95 ≤ GFI ≤ 1	0.90 ≤ GFI ≤ 0.95	0.98	0.87	0.85
AGFI	0.90 ≤ AGFI ≤ 1	0.85 ≤ AGFI ≤ 0.90	0.95	0.84	0.81
CFI	0.95 ≤ CFI ≤ 1	0.90 ≤ CFI ≤ 0.95	0.96	0.99	0.98
NFI	0.95 ≤ NFI ≤ 1	0.90 ≤ NFI ≤ 0.95	0.91	0.97	0.97
NNFI	0.95 ≤ NNFI≤ 1	0.90 ≤ NNFI ≤ 0.95	0.94	0.98	0.98
IFI	0.95 ≤ IFI ≤ 1	0.90 ≤ IFI ≤ 0.95	0.96	0.99	0.98

5.2 Bivariate Correlation Analysis

Table 2 presents a bivariate correlation matrix as well as means and standard deviations for the salient constructs. The results demonstrate that all KM process and organizational resilience variables exhibit significant relationships with organic structure and with each other. This provides preliminary support for the study's expectations of interconnectedness between organic structure, KM processes, and organizational resilience.

Table 2: Bivariate Correlation Matrix

Variable	Mean	SD	1	2	3	4	5	6	7	8
1. Organic Structure	3.39	0.85								
2. Knowledge Creation	4.12	0.70	0.229**							
3. Knowledge Representation	3.97	0.84	0.243**	0.735**						
4. Knowledge Transfer	3.70	0.80	0.281**	0.695**	0.763**					
5. Knowledge Application	3.90	0.81	0.197**	0.684**	0.775**	0.768**				
6. Robustness	4.42	0.58	0.183**	0.456**	0.464**	0.472**	0.540**			
7. Redundancy	4.25	0.60	0.263**	0.539**	0.563**	0.580**	0.656**	0.724**		
8. Resourcefulness	4.16	0.64	0.258**	0.453**	0.469**	0.483**	0.555**	0.598**	0.789**	
9. Rapidity	4.35	0.61	0.284**	0.513**	0.483**	0.471**	0.581**	0.687**	0.741**	0.748**

Note: **Correlation is significant at the 0.01 level

5.3 Hypotheses Testing

Simple linear regression analysis is conducted to test H1, which asserts that organic organizational structure has a positive effect on the KM process. The results presented in Table 3 suggest that 8.8% of the variability in the dependent variable (KM) is explained by the independent variable (organic structure) and this result is statistically significant (r2 = 0.088, p = 0.000). Moreover, a 1-unit increase in the organicity of organizational structure improves the KM process by 0.26 units and this is statistically significant (p = 0.000). Accordingly, H1 is accepted. After obtaining significant results in regression analysis, one of the methods used to determine the magnitude of the effect is Cohen's f analysis. In this analysis f2 = r2 / (1-r2) is used. If the result is between 0.02 and 0.15, the effect size is low; between 0.15 and 0.35, the effect size is medium; and the effect size is determined to be large for values greater than 0.35. Accordingly, the effect size for the regression analysis between organic organizational structure and KM is found to be low because f2 = 0.088 / (1-0.088) = 0.096.

Table 3: Regression results: the effect of organic organizational structure on KM

Coefficients[a]

	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
Model	B	Std Error	Beta	t	Sig.	Tolerance	VIF
1 (Constant)	3.208	0.189		16.942	0.000		
Organic Org. Structure	**0.262**	0.054	0.297	4.856	0.000	1.000	1.000

[a] Dependent Variable: KM

Simple linear regression analysis is also performed to test H1a, H1b, H1c, and H1d and the results are summarized in Table 4. As can be seen, the organic organizational structure has a significant and positive effect on all dimensions of KM. Therefore, all sub-hypotheses of H1 are supported. In terms of magnitudes, the greatest impact is with respect to knowledge transfer (B=0.276) and the lowest is with respect to creating and applying knowledge (B=0.222).

Table 4: Regression Results: The Effect of Organic Organizational Structure on KM Dimensions

Dimensions	R	r^2	F	Sig.	t	Sig.	B
Knowledge Creation	0.270[a]	0.073	19.139	0.000	4.375	0.000	0.222
Knowledge Representation	0.269[a]	0.072	19.039	0.000	4.363	0.000	0.265
Knowledge Transfer	0.294[a]	0.087	23.157	0.000	4.812	0.000	0.276
Knowledge Application	0.233[a]	0.054	14.049	0.000	3.748	0.000	0.222

[a]Predictors: (Constant), Organic Organizational Structure

Multivariate regression analysis is conducted to test H2 and H3 which state, respectively, that knowledge management and organic structure positively affect organizational resilience. Results in Table 5 suggest that 43% of the variability in organizational resilience is explained by KM and organic organizational structure, and this is statistically significant (r2 0.430, p=0.000). At the (beta) coefficient level, a 1-unit improvement in KM increases organizational resilience by 0.43 units whilst a 1-unit improvement in organic organizational structure increases organizational resilience by 0.08 units. Both beta coefficients are statistically significant ($p \leq 0.05$). Since two independent variables are included in this model, the extent of multicollinearity is quantified. The fact that the variance inflation factors (VIFs) in Table 5 are less than 5 is an indication that no substantive multicollinearity exists between the variables and thus regression results are not undermined because of biased standard errors. According to these results, H2 and H3 are both accepted. Finally, the effect size is quantified using Cohen's f in conjunction with the relevant r2 values obtained because of regression analyses performed for each variable separately. The effect size of KM on organizational resilience is found to be high because f2 =0.414/ (1-0.414) =0.70. However, the effect size of organic organizational structure on organizational resilience is low given that f2=0.078/ (1-0.078) =0.08.

Table 5: Regression Results: The Effect of KM and Organic Organizational Structure on Organizational Resilience

Coefficients[a]

		Unstandardized Coefficients	Standardized Coefficients			Collinearity Statistics	
Model		B	Std Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	2.213	0.160		13.835	0.000		
	KM	0.436	0.037	0.604	11.905	0.000	0.912	1.097
	Organic Org. Structure	0.086	0.032	0.134	2.645	0.009	0.912	1.097

[a] Dependent Variable: Organizational Resilience

To test H2a, H2b, H2c and H2d which posit that KM positively affects all dimensions of organizational resilience, univariate regression analyses are performed for each dimension.

Table 6: Regression Results: The Effect of KM on Organizational Resilience Dimensions

Dimensions	R	r^2	F	Sig.	t	Sig.	B
Robustness	0.535[a]	0.286	97.825	0.000	9.891	0.000	0.417
Redundancy	0.649[a]	0.421	177.773	0.000	13.333	0.000	0.522
Resourcefulness	0.543[a]	0.295	102.251	0.000	10.112	0.000	0.466
Rapidity	0.563[a]	0.316	112.969	0.000	10.629	0.000	0.455

[a]Predictor: (Constant), KM

The results presented in Table 6 suggest that KM positively and significantly affects all dimensions of organizational resilience (p=0.000). Thus, all sub-hypotheses of H2 are supported. The beta coefficients are reasonably similar for all four dimensions, but it is worth noting that KM appears to have the most (least) impact on redundancy (robustness). Specifically, a 1-unit increase in KM increases redundancy by 0.52 units and increases robustness by 0.417 units.

Univariate regression analysis is performed to test H3a, H3b, H3c, and H3d. The results in Table 7 suggest that organic organizational structure positively affects all dimensions of organizational resilience. Thus, all sub-hypotheses of H3 are supported.

Table 7: Regression Results: The Effect of Organic Organizational Structure on Organizational Resilience Dimensions

Dimensions	R	r^2	F	Sig.	T	Sig.	B
Robustness	0.210[a]	0.044	11.212	0.001	3.348	0.001	0.144
Redundancy	0.289[a]	0.084	22.311	0.000	4.723	0.000	0.206
Resourcefulness	0.297[a]	0.088	23.531	0.000	4.851	0.000	0.225
Rapidity	0.309[a]	0.095	25.702	0.000	5.070	0.000	0.221

[a]Predictor: (Constant), Organic Organizational Structure

According to Table 7, the organic organizational structure exhibits the greatest impact on resourcefulness (B=0.225) and the least impact on robustness (B=0.144).

Finally, hierarchical regression analysis and the Sobel test are used to test H4, which posits that KM mediates the association between organic organizational structure and organizational resilience. The first prerequisite for performing hierarchical regression analysis to test a mediation effect is a significant correlation between the variables (Baron and Kenny, 1986). This prerequisite is met according to the results presented above in Table 2.

In the first step of hierarchical regression analysis, the effect of organic organizational structure on organizational resilience is examined; r2=0.098 and B=0.200. In the second step, the impact of KM on organizational resilience is examined; r2=0.414 and B=0.465. To understand the mediation effect, these two values are expected to be higher in the third step of the hierarchical regression analysis. If only one of the values is high, this indicates partial mediation. According to the results of the third step, r2 for the effect of organic organizational structure on organizational resilience is found to be 0.098 whilst that for the effect of KM on organizational resilience is 0.430. It is observed that the explained variance level (r2=0.098) of organic organization structure is the same as the result of univariate regression analysis, but the explained variance of KM (r2=0.430) is higher than the explained variance level (r2=0.414) from the analysis performed in the second step. This is a

mediating effect in hierarchical regression analysis. When the change statistics are examined, this change is significant (p=0.000).

When the values of B in Table 8 are examined, it is seen that the degree of influence of organic organizational structure alone (B=0.200) is higher than the degree of influence with KM (B=0.086). This situation does not accord with what would be expected if full mediation were occurring and thus it is understood that there is a partial mediation effect according to the results.

Table 8: Hierarchical Regression Results: The Mediating Effect of KM on the Association Between Organic Organizational Structure and Organizational Resilience

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std Error	Beta			Tolerance	VIF
1	(Constant)	3.613	0.136		26.537	0.000		
	Organic Org. Structure	0.200	0.039	0.313	5.153	0.000	1.000	1.000
2	(Constant)	2.213	0.160		13.835	0.000		
	Organic Org. Structure	0.086	0.032	0.134	2.645	0.009	0.912	1.097
	KM	0.436	0.037	0.604	11.905	0.000	0.912	1.097

[a] Dependent Variable: Organizational Resilience

Finally, the results of a Sobel test (z=4.0823 and p=0.000) confirm that this mediation effect is statistically significant. KM has a mediating role in the effect of organic organizational structure on organizational resilience and thus H4 is supported.

6. DISCUSSION AND CONCLUSIONS

Based on the results, H1, which asserts that organic organizational structure positively affects the KM process, is supported. This finding corresponds with previous research. Zheng et al. (2010: 768) examined the effects of organizational structure, organizational culture, and strategy on KM, and concluded that organizational structure has a positive effect on KM. Çakar et al. (2010: 85-87) investigated the effects of organizational culture and organizational structure on KM processes and organizational effectiveness and suggested that organizational structure has a significant and positive effect on the transformation, protection, and application of knowledge. Those authors also noted that a lean and non-bureaucratic organizational structure, which is designed to allow open communication, would positively affect KM processes.

H2, which states that knowledge management positively affects organizational resilience, is also supported. Values obtained from hypothesis tests show that KM has a high level of impact on organizational resilience. Accordingly, it is understood that there is a positive relationship between KM and organizational resilience based on theoretical foundations, and the results presented herein. However, there is a need for more empirical research to be done in different fields to testify the relationships between KM and organizational resilience.

H3, which predicts that organic organizational structure will positively affect organizational resilience, is supported. Although statistically significant and positive effects are detected here, r2 and beta values obtained from the regression analysis show that these effects are quite small. However, this is not unexpected because, as stated in the literature, there are many factors that affect organizational resilience. Individual resilience (Mallak, 1998a; Riolla and Savicki, 2003; Lengnick-

Hall et al., 2011), company type and size (Pal, Torstensson, and Mattila, 2014; Castelacci, 2015), innovation and creativity (Chen and Huang, 2007; McManus et al., 2008; Dewald and Bowen, 2010; Noronha and Pinto, 2016) are just some of these factors. In Alavi et al. (2014: 12), where it was revealed that organic organizational structure increases the agility of the workforce, it was observed that the effect size of organizational structure is small and organizational learning was found to be a more substantive determinant of workforce agility.

Finally, H4, which posits that KM mediates the association between organic organizational structure and organizational resilience, is also supported. However, notwithstanding the support revealed for this hypothesis, the extent to which other constructs also mediate this relationship is an open question.

The positive effect of organic organizational structure on KM and organizational resilience in organizations is empirically supported based on the analyses reported herein. Accordingly, it can be stated that organizations need flexible structures and processes to deal with the challenges posed by rapid changes. This flexibility and change can be realized with a flatter and simple structure away from hierarchical and central structures.

The study started from the assumption that knowledge management plays an important role in ensuring organizational resilience and it is concluded that this assumption is tenable based on the results. For the industrial enterprises that constitute the study sample, it is vital to keep up to date in terms of embracing and harnessing technological innovations and using knowledge in production processes in line with rapidly changing consumer demands. However, to maximize organizational efficiency, performance, and sustainability it is also important for these entities to strive to do this before their competitors. Gathering the information obtained and produced in a pool of knowledge that can be accessed when necessary and sharing the knowledge with the relevant people will increase organizational memory. Thus, knowledge can be applied to all processes of the business such as new product development, improving processes, reducing costs, improving performance, and so providing competitive advantage. In this way, organizations, if faced with any negative events can identify and solve problems and direct available resources appropriately, substitute reserves that cannot be used effectively at the time of difficulty and create opportunities from these crises by overcoming them via optimized response strategies. In other words, by virtue of their resilience, they are robust and can survive without any damage, deterioration, or loss of function.

REFERENCES

Ahiauzu, L. and Ololube, N. P. (2016). The mediating effect of organizational culture, size, and structure on the relationship between innovations and resilience in selected Nigerian Universities. In N. P. Ololube (Ed.), Handbook of Research and Organizational Justice and Culture in Higher Education Institutions (pp. 327-364). Hershey: IGI Global.

Alavi, S., Wahab, D., Muhamad, N. and Shirani, B. A. (2014). Organic structure and organisational learning as the main antecedents of workforce agility. International Journal of Production Research, 52(21), 6273-6295. https://doi.org/10.1080/00207543.2014.919420

Andrews, M. C. and Kacmar, K. M. (2001). Discriminating among organizational politics, justice, and support. Journal of Organizational Behavior, 22, 347-366. https://doi.org/10.1002/job.92

Annarelli, A. and Nonino, F. (2016). Strategic and operational management of organizational resilience: Current state of research and future directions. Omega, 62, 1-18. https://doi.org/10.1016/j.omega.2015.08.004

Bailey, C. and Clarke, M. (2000). How do managers use knowledge about knowledge management? Journal of Knowledge Management, 4(3), 235-243. https://doi.org/10.1108/13673270010350039

Baron, R. M. and Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. Journal of Personality and Social Psychology, 51(6), 1173-1182. https://doi.org/10.1037/0022-3514.51.6.1173

Bhatt, G. D. (2001). Knowledge management in organizations: Examining the interaction between technologies, techniques, and people. Journal of Knowledge Management, 5(1), 68-75. https://doi.org/10.1108/13673270110384419

Bucic, T. and Gudergan, S. P. (2004). The impact of organizational settings on creativity and learning in alliances. M@n@gement, 7(3), 257-273. https://doi.org/10.3917/mana.073.0257

Burns, T. and Stalker, G. M. (1961). The Management of Innovation. London: Tavistock.

Burns, T. and Stalker, G. M. (2005). Mechanistic and organic systems. In J. B. Miner (Ed.), Organizational Behavior 2: Essential Theories of Process and Structure (pp. 214-225). New York: Routledge.

Calvo-Mora, A., Navarro-Garcia, A. and Perianez-Cristobal, R. (2015). Project to improve knowledge management and key business results through the EFQM Excellence Model. International Journal of Project Management, 33, 1638-1651. https://doi.org/10.1016/j.ijproman.2015.01.010

Castellacci, F. (2015). Institutional voids or organizational resilience? Business groups, innovation, and market development in Latin America. World Development, 70, 43-58. https://doi.org/10.1016/j.worlddev.2014.12.014

Chen, C. J. and Huang, J. W. (2007). How organizational climate and structure affect knowledge management: The social interaction perspective. International Journal of Information Management, 27, 104-118. https://doi.org/10.1016/j.ijinfomgt.2006.11.001

Chen, C. J., Huang, J. W. and Hsiao, Y. C. (2010). Knowledge management and innovativeness. International Journal of Manpower, 31(8), 848-870. https://doi.org/10.1108/01437721011088548

Chewning, L. V., Lai, C.-H. and Doerfel, M. L. (2012). Organizational Resilience and Using Information and Communication Technologies to Rebuild Communication Structures. Management Communication Quarterly, 27 (2), 237-263.

Coutu, D. L. (2002). How resilience works. Harvard Business Review, 80(5), 46-56. Retrieved from: https://hbr.org/2002/05/how-resilience-works

Covin, J. G., Slevin, D. P. and Heeley, M. B. (2001). Strategic decision making in an intuitive vs. technocratic mode: Structural and environmental considerations. Journal of Business Research, 52(1), 51-67. https://doi.org/10.1016/S0148-2963(99)00080-6

Çakar, N. D., Yıldız, S. and Dur, S. (2010). Bilgi yönetimi ve örgütsel etkinlik ilişkisi: Örgüt kültürü ve örgüt yapısının temel etkileri. Ege Akademik Bakış, 10(1), 71-93. Retrieved from: https://dergipark.org.tr/tr/pub/eab/issue/39875/473149

Çokluk, Ö., Şekercioğlu, G. and Büyüköztürk, Ş. (2012). Sosyal Bilimler İçin Çok Değişkenli İstatistik SPSS ve LISREL Uygulamaları. Ankara: Pegem Akademi.

Dalziel, E. P. and McManus, S. T. (2004). Resilience, vulnerability, and adaptive capacity: Implications for system performance. International Forum for Engineering Decision Making. Stoos, Switzerland. Retrieved from: http://hdl.handle.net/10092/2809

Damanpour, F. (2001). Organizational innovation: A meta-analysis of effects of determinants and moderators. The Academy of Management Journal, 34(3), 555-590. https://doi.org/10.2307/256406

Davenport, H. J. (1965). The Economics of Alfred Marshall. NY: Augustus M. Kelley.

Dewald, J. and Bowen, F. (2010). Storm clouds and silver linings: Responding to disruptive innovations through cognitive resilience. Entrepreneurship Theory and Practice, Baylor University, 34(1), 197-218. https://doi.org/10.1111/j.1540-6520.2009.00312.x

DeWitt, R. (1993). The structural consequences of downsizing. Organization Science, 4(1), 30-40. https://doi.org/10.1287/orsc.4.1.30

Domínguez Escrig, E., Mallén Broch, F. F., Lapiedra Alcamí, R. and Chiva Gómez, R. (2019). How to enhance radical innovation? The importance of organizational design and generative learning. Review of Managerial Science, Published Online https://doi.org/10.1007/s11846-019-00326-7

Downes, T. and Marchant, T. (2016). The extent and effectiveness of knowledge management in Australian community service organisations. Journal of Knowledge Management, 20(1), 49-68. https://doi.org/10.1108/JKM-11-2014-0483

Drucker, P. F. (1993a). Post-capitalist society. NY: Routledge, Taylor and Francis Group.

Drucker, P. F. (1993b). The rise of the knowledge society. Wilson Quarterly, 17(2), 52-71.

Eriksen, B. (2006). Organization design constraints on strategy and performance. In: Burton, R. M., Eriksen, B., Hakonsson, D. D., & Snow, C. C. (Eds.) Organization design (pp. 165-180). Boston: Springer.

Fenwick, T., Seville, E. and Brunsdon, D. (2009). Reducing the impact of organizational silos on resilience. Resilient Organisations Research Report 2009/01 University of Canterbury. Civil and Natural Resources Engineering. http://hdl.handle.net/10092/9468

Fraser, M. W., Richman, J. M. and Galinsky, M. (1999). Risk, protection, and resilience: Toward a conceptual framework for social work practice. Social Work Research, 23(3), 131-143. https://doi.org/10.1093/swr/23.3.131

Freeman, S. F. (2004). Beyond traditional systems thinking: Resilience as a strategy for security and sustainability. 3rd International Conference on Systems Thinking in Management Session on Sustainability, (pp. 1-12). Philadelphia, US. Retrieved from: http://cpor.org/rt/BeyondTraditionalSysThinking-ResilienceForSafety,Sustainability.pdf

Freeman, S. F., Hirschhorn, L. and Triad, M. M. (2003). Moral purpose and organizational resilience: Sandler O'neill & Partners, Lp in the aftermath of September 11, 2001. Academy of Management Proceedings (pp. B1-B6). New York: August, Briarcliff Manor. https://doi.org/10.5465/ambpp.2003.13792457

Gittell, J. H., Cameron, K., Lim, S. and Rivas, V. (2006). Relationships, layoffs, and organizational resilience: Airline industry responses to September 11. The Journal of Applied Behavioral Science, 42(3), 300-329. https://doi.org/10.1177/0021886306286466

Gümüştekin, G. E. (2004). Bilgi yönetiminin stratejik önemi. Atatürk Üniversitesi İktisadi ve İdari Bilimler Dergisi, 18(3-4), 201-212.

Horne, J. F. and Orr, J. E. (1998). Assessing behaviors that create resilient organizations. Employment Relations Today, 24(4), 29-39. https://doi.org/10.1002/ert.3910240405

Jaaron, A. A. and Backhouse, C. J. (2014). Service organisations resilience through the application of the vanguard method of systems thinking: A case study approach. International Journal of Production Research, 52(7), 2026-2041. https://doi.org/10.1080/00207543.2013.847291

Kantur, D. and İşeri-Say, A. (2012). Organizational resilience: A conceptual integrative framework. Journal of Management & Organization, 18(6), 762-773. https://doi.org/10.5172/jmo.2012.18.6.762

Kimhi, S. and Eshel, Y. (2009). Individual and public resilience and coping with long-term outcomes of war. Journal of Applied Biobehavioral Research, 14, 70-89. https://doi.org/10.1111/j.1751-9861.2009.00041.x

Kreiner, K. (2002). Tacit knowledge management: the role of artifacts. Journal of Knowledge Management, 6(2), 112-123. https://doi.org/10.1108/13673270210424648

Krumina, I., Krumins, G. and Rozentalec, S. (2015). Vidzeme Region of Latvia: Knowledge management in micro enterprises. Procedia-Social and Behavioral Sciences (pp. 781-786). Kaunas, Lithuania: 20th International Scientific Conference on Economics and Management. doi: 10.1016/j.sbspro.2015.11.475

Lang, J. C. (2001). Managerial concerns in knowledge management. Journal of Knowledge Management, 5(1), 43-59. https://doi.org/10.1108/13673270110384392

Lawrence, P. R. and Lorsch, J. W. (1967). Organization and Environment. Boston, MA: Harvard Business School, Division of Research.

Lee, A., Vargo, J. and Seville, E. (2013). Developing a tool to measure and compare organizations' resilience. Natural Hazards Review, 14(1), 29-41. https://doi.org/10.1061/(ASCE)NH.1527-6996.0000075

Lee, H. and Choi, B. (2003). Knowledge management enablers, processes, and organizational performance: An integrative view and empirical examination. Journal of Management Information Systems, 20(1), 179-228. https://doi.org/10.1080/07421222.2003.11045756

Lengnick-Hall, C., Beck, T. E. and Lengnick-Hall, M. L. (2011). Developing a capacity for organizational resilience through strategic human resource. Human Resource Management Review, 21, 243-255. https://doi.org/10.1016/j.hrmr.2010.07.001

Malhotra, Y. (1998). Tools at work: Deciphering the knowledge management hype. The Journal for Quality and Participation, 21(4), 58-60.

Mallak, L. (1998a). Putting organizational resilience to work. Industrial Management, 40(6), 8-13.

Mallak, L. A. (1998b). Measuring resilience in health care provider organizations. Health Manpower Management, 24(4), 148-152. https://doi.org/10.1108/09552069810215755

Mårtensson, M. (2000). A critical review of knowledge management as a management tool. Journal of Knowledge Management, 4(3), 204-216. https://doi.org/10.1108/13673270010350002

McManus, S., Seville, E., Vargo, J. and Brunsdon, D. (2008). Facilitated process for improving organizational resilince. Natural Hazards Review, 9(2), 81-90. https://doi.org/10.1061/(ASCE)1527-6988(2008)9:2(81)

Meyer, A. D. (1982). Adapting to environmental jolts. Administrative Science Quarterly, 27(4), 515-537. DOI: 10.2307/2392528

Moenkemeyer, G., Hoegl, M. and Weiss, M. (2012). Innovator resilience potential: A process perspective of individual resilience as influenced by innovation project termination. Human Relations, 65(5), 627-655. https://doi.org/10.1177/0018726711431350

Nonaka, I. and Takeuchi, H. (1995). The Knowledge-Creating Company. NY: Oxford University Press.

Noronha, H. and Pinto, H. (2016). Innovation for Resilience. Faro: Universidade do Algarve.

Pal, R., Torstensson, H. and Mattila, H. (2014). Antecedents of organizational resilience in economis crises: An empirical study of Swedish textile and clothing SMEs. International Journal of Production Economics, 147(B), 410-428. https://doi.org/10.1016/j.ijpe.2013.02.031

Porter, M. E. (1985). The competitive advantage: Creating and sustaining superior performance. New York: Free Press.

Riolli, L. and Savicki, V. (2003). Information system organizational resilience. Omega-The International Journal of Management Science, 31(3), 227-233. https://doi.org/10.1016/S0305-0483(03)00023-9

Robb, D. (2000). Building resilient organizations. OD Practitioner, 32(3), 27-32.

Somers, S. (2009). Measuring resilience potential: An adaptive strategy for organizational crisis planning. Journal of Contingencies and Crisis Management, 17(1), 12-23. https://doi.org/10.1111/j.1468-5973.2009.00558.x

Sullivan-Taylor, B. and Branicki, L. (2011). Creating resilient SMEs: Why one size might not fit all. International Journal of Production Research, 49(18), 5565-5579. https://doi.org/10.1080/00207543.2011.563837

Sveiby, K. E. (1997). The new organizational wealth: Managing & measuring knowledge-based assets. San Francisco: Berrett-Koehler Publishers.

Taylor, F. W. (1919). The Principles of Scientific Management. NY: Harper&Brothers Publishers.

Tierney, K. J. (2003). Conceptualizing and measuring organizational and community resilience: Lessons from the emergency response following the September 11, 2001 Attack on the World Trade Center. Preliminary Paper #329. University of Delaware Disaster Research. Retrieved from: http://udspace.udel.edu/handle/19716/735

Tseng, F. C. and Fan, Y. J. (2011). Exploring the influence of organizational ethical climate on knowledge management. Journal of Business Ethics, 101(2), 325-342. https://doi.org/10.1007/s10551-010-0725-5

Vogus, T. J. and Sutcliffe, K. (2007). Organizational resilience: Towards a theory and research agenda. IEEE International Conference on Systems, Man, and Cybernetics, (s. 3418-3422). Montreal. https://doi.org/10.1109/ICSMC.2007.4414160

Von Krogh, G. (1998). Care in knowledge creation. California Management Review, 40(3), 133-153. https://doi.org/10.2307/41165947

Von Krogh, G., Nonaka, I., & Aben, M. (2001). Making the most of your company's knowledge: A strategic framework. Long range planning, 34(4), 421-439. https://doi.org/10.1016/S0024-6301(01)00059-0

Wang, C. L. and Ahmed, P. K. (2003). Structure and structural dimensions for knowledge-based organizations. Measuring Business Excellence, 7(1), 51-62. https://doi.org/10.1108/13683040310466726

Wicker, P., Filo, K. and Cuskelly, G. (2013). Organizational resilience of community sport clubs impacted by natural disasters. Journal of Sport Management, 27, 510-525. https://doi.org/10.1123/jsm.27.6.510

Wiig, K. M. (1986). Management of knowledge: Perspectives of a new opportunity. Gottlieb Duttweiler Institutt Technology Assessment and Management Conference Zurich, Switzerland, October 20-21, 1986.

Willem, A. and Buelens, M. (2009). Knowledge sharing in inter-unit cooperative episodes: The impact of organizational structure dimensions. International Journal of Information Management, 29(2), 151-160. https://doi.org/10.1016/j.ijinfomgt.2008.06.004

Wong, K. Y. and Aspinwall, E. (2004). Characterizing knowledge management in the small business environment. Journal of Knowledge Management, 8(3), 44-61. https://doi.org/10.1108/13673270410541033

World Intellectual Property Organization (WIPO) (2015). Knowledge Management Strategy (2015-2018). Available at: WIPO Knowledge Management Strategy 2015-2018. Last accessed 05 April 2022

Zheng, W., Yang, B. and McLean, G. N. (2010). Linking organizational culture, structure, strategy, and organizational effectiveness: Mediating role of knowledge management. Journal of Business Research, 63, 763-771. https://doi.org/10.1016/j.jbusres.2009.06.005