University of Bath

Alternative formats
If you require this document in an alternative format, please contact:
openaccess@bath.ac.uk

DECONSTRUCTING ORGANIZATIONAL RESILIENCE: A MULTIPLE-CASE STUDY

Abstract:

This study extends previous research on organizational resilience by focusing on its relational resilience dimension and integrating with its operational resilience dimension. Our main goal is to understand relational resilience construct and complement it with operational resilience construct to have a complete and balanced picture of organizational resilience. We analyse complementary contributions of relational and operational resilience on organizational resilience in survival and sustainability dimensions. A multiple-case study has been conducted on two manufacturing and two service organizations. This study has conceptualized relational resilience beyond its survival dimension and extended it in sustainability dimension. This understanding enables congruence with the recent conceptualization of organizational and operational resilience in survival and sustainability aspects.

Keywords: relational resilience, operational resilience, organizational resilience

Deconstructing Organizational Resilience: A Multiple-Case Study

1 Introduction

Organizational resilience encapsulates restorative (Sutcliffe and Vogus, 2003), adaptive (Holling, 2001; Sutcliffe and Vogus, 2003; Lee et al., 2013; Nilakant et al., 2013; Chang-Richards et al., 2013), and transformative (Lengnick-Hall and Beck, 2011; Hamel and Valikangas, 2003; Seville, 2018; Seville et al., 2014) responses of an organization in the face of adversity. While restorative responses lead to survival, adaptive and transformative responses serve to maintain the sustainability of a resilient organization (Yilmaz Borekci et al., 2015). As Burnard and Bhamra (2011) underline, in the face of disruptive conditions, organizational resilience operates as a linchpin against the possibility of breakdowns within and between organizations. Since these breakdowns may occur in the operations of a company and in its relations with the various stakeholders (Seville et al., 2014), organizational resilience is closely related to both operational and relational resilience components (Yilmaz Borekci et al., 2014).

Operational resilience is defined as the survival and sustainability of an organization's operations including task completion, work performance, and product delivery, in case of operational disruptions within and between organizations (Yilmaz Borekci et al., 2014). Adverse conditions may also influence the way organizations relate to other organizations (inter-organizational relations) and the way organizational members relate with other organizational members (intra-organizational relations) (Seville et al., 2014). Those relational influences may continue even after the disturbance is over (Kahn et al., 2013). Parallel to the concept of operational resilience, relational resilience is defined as the survival and sustainability of an organization's relationships within and between organizations against

adversities. Since resilience is developed via the interactions and relationships between organizations (Powley, 2009; Burnard and Bhamra, 2011) and between organizational members, each party in these relationships is expected to contribute to the survival and sustainability of the overall system (Bhamra et al., 2011; Yilmaz Borekci et al., 2015).

Kahn et al. (2013, pp. 377) state, "*if crises are understood to be operationally resolved yet the relational systems that underlie organizations remain disturbed, the crises may not actually be resolved, with implications for ongoing dysfunctional patterns of behavior, organizational vulnerabilities, and longer-term performance problems*." Despite the key role of relational resilience, most research has, to date, exclusively focused on operational resilience (Allen, 2011). An exception is Ponomarov (2009) who delineated the concept of relational resilience. Ponomarov (2009) studied the concept at an inter-organizational level but mainly concentrated on the survival dimension of relational resilience without paying attention to the dimension of sustainability. Kahn et al. (2013) analyzed the concept in terms of the relational dynamics within organizations. We should also note the studies that underline the importance of networks and relations for organizational resilience (Seville, 2018; Seville et al., 2014; Brown et al., 2017; Chang-Richards et al., 2017)

Building on the emerging research on organizational resilience, the main aim of this study is to investigate the various dimensions of organizational resilience, namely relational and operational resilience. This study makes two contributions to research on organizational resilience. First, this study presents a complete and coherent picture of organizational resilience, paying attention to its complementary relational and operational resilience dimensions. Although organizational resilience research has mainly focused on operational resilience and given limited attention to relational resilience (Ponomarov, 2009; Kahn et al., 2013; Seville et al., 2014), this study conceptualizes organizational resilience composed of relational and operational resilience dimensions with a holistic and balanced approach. In a

related vein, this research attempts to analyze impacts of relational and operational resilience on organizational resilience with regards to the dimensions of survival and sustainability. Adopting this approach brings clarity to the literature and offers a more complete picture. Second, to the best of our knowledge, this study is one of the first attempts that focus not only on the survival dimension of relational resilience but also integrates its sustainability dimension (Ponomarov, 2009; Chang-Richards et al., 2014; Kuntz et al., 2016; Seville et al., 2014). This understanding enables congruence with the recent conceptualization of organizational and operational resilience in survival and sustainability aspects (Powley, 2009). We develop our theorization in the following sections.

2 Conceptual Background

2.1 Deconstructing Organizational Resilience: Operational and Relational Resilience

Resilient organizations survive and sustain in their networks because resilience enables the focal organization to develop organizational capabilities and processual resources against adversities (Hald et al., 2009; Yilmaz Borekci et al., 2014). Organizational survival involves coping with crisis conditions and regaining pre-crisis performance targets (Lengnick-Hall et al., 2011; Yilmaz Borekci et al., 2014). Dynamics and processes that a) retain organizational resources and competencies and b) maintain experience repertoires and efficacies serve organizational survival (Sutcliffe and Vogus, 2003). On the other hand, organizational sustainability involves responding to adversities by adapting, changing, reinventing, and thriving (Yilmaz Borekci et al., 2014; Seville et al., 2014). Dynamics and processes that a) create organizational resources and competencies and b) combine/ recombine experiences and increase efficacies serve organizational sustainability (Sutcliffe and Vogus, 2003).

One perspective on organizational resilience refers to a system's capacity to rebound from and reinvent against unexpected, stressful and adverse situations that influence system's operations (Armenakis and Harris, 2009; Beck et al., 2008). This perspective underlines an

4

organization's operational resilience by restoring and reinventing operations and processes. Another perspective on resilience refers to a system's ability to maintain and develop relationships and to learn flexibility and readiness from these networks of relationships in order to restore and reinvent itself (Waterman et al., 1994; Ponomarov, 2009; Kahn et al., 2013; Seville, 2018; Brown et al., 2017; Chang-Richards et al., 2017). This perspective underscores an organization's relational resilience. In this research, organizational resilience is conceptualized as being composed of aspects of operational and relational resilience and in so doing, the dynamic relationships among these constructs are explored.

2.1.1. Operational Resilience

Increasingly complex, uncertain, and unpredictable business environments make it difficult to determine and predict how the environment will affect the operations of an organization. Operational resilience is the capability to rebound from and reinvent against unexpected, stressful and adverse situations (Armenakis and Harris, 2009; Beck et al., 2008). According to Ponomarov (2009; pp.325) operational resilience is related to "dealing with continuity of processes and operations."

Crises may interrupt the operations of an organization such as production, inventory, quality, project management and many other interdependent activities (Yilmaz Borekci et al., 2015). In order to maintain operations, production targets should be met in terms of quantity, quality, and time; project milestones should be achieved, processes should deliver the outputs required from the inputs, and products should be introduced, delivered, and withdrawn according to the market needs (Armenakis and Harris, 2009).

Yet, in some other cases of adversities, operations of an organization such as production management, inventory management, quality management, project management, process management, and product management can no longer serve the current organizational

needs (Beck et al., 2008). In such cases, operational resilience means adaptation and transformation of intra-organizational and inter-organizational operations as required. To ensure sustainability of operations, new production methods could be introduced to serve the identified needs better; processes and quality could be improved or redesigned to streamline the transformation of inputs to outputs and new products could be developed and innovations could be introduced (Fletcher et al. 2006).

2.1.2 Relational Resilience

Good quality relationships within and between organizations are crucial because these internal and external relationships influence how work is conducted. Borrowing from Kahn (1998), it can be stated that, through their sets of relationships, business partners (inter-organizational) and organizational members (organizational) can "*join together not simply to fix problems but to strengthen how they think, work, and learn about themselves, their work, and their environment.*" Crises may harm organizational partners and members and the connections between them (Kahn, 2013; Seville, 2014). On the other hand, adverse conditions may bring new opportunities for parties to relate to each other in novel ways (Dutton et al., 2006).

High quality relationships are characterized by mutual trust, commitment, and exchange of resources between parties (Blau, 1964; Cropanzano and Mitchell, 2005). Parties involved in these exchange relationships modify their exchange patterns according to their perceptions of benefits and opportunities received. In such relational exchanges, parties acquire and retain the resources that they value and need (Gouldner, 1960). Those resources are likely to involve different combinations of tangible and intangible elements and those involved are inclined to preserve these resources in cases of any unexpected conditions (Hobfoll et al., 2003). Exchanges influenced by relational patterns can enable a company to absorb and overcome risks, hence increase organizational resilience.

Ponomarov (2009) concentrates on mutually beneficial and trust-driven behaviors (reciprocal actions that reflect a willingness to accept vulnerability in the face of uncertainty) as the relational antecedents to buyer-supplier resilience and indicates that mutual trusting behaviors could be viewed as the relational source of buyer-supplier resilience. Acceptance of vulnerability in their mutual actions secures their relationship in the face of adversities. Long-term relationship orientation shows mutual desire to maintain their relationships in the future (Ganesan, 1994). Ponomarov (2009) proposes that long-term orientation positively moderates the influence of trust on relational resilience. If business partners are willing to maintain a long-term relationship, then they may be less inclined to act opportunistically. As a result, their relationships are more likely to survive.

Organizations in networks of relationships tend to learn from each other through relational learning (Kohtamki, 2012). They may face turbulence together. They may advise each other on how to overcome some setbacks. They may share their previous experiences. Characteristics of relational resilience include diversification, making new connections, bringing in new parties into their networked relationships, and forming new cooperation or co-opetition groups (Yilmaz Borekci et al., 2015). As a result of these new relational forms, new resource and capability sets may be developed (Gatignon and Capron, 2013; Lengnick-Hall et al., 2011; Chang-Richards et al., 2017). Learning from relationships, e.g. via adaptive (exploitative) or generative (explorative) learning, influences the sustainability of organizational relationships. Exploitative learning may involve cost reduction, productivity, and quality improvement whereas explorative learning may involve new product or market opportunities or innovations via interactions between business partners (Kohtamki, 2012).

3 Research questions and conceptual framework

Drawing on the emerging research on organizational resilience, the goal of this current research is to understand how relational and operational resilience dimensions contribute to

and constitute organizational resilience. Previous research in this field revealed that scholars mainly focused on operational resilience and only a few of these studies, as outlined above, have analyzed relational resilience by focusing on aspects of its survival. Thus, this research aims to fill this gap by focusing on both relational and operational dimensions of resilience in both survival and sustainability aspects.

In this respect, the research questions that drive this study are:

- What are the underlying survival and sustainability dynamics of relational resilience? How does relational resilience influence organizational resilience?

- What are the underlying survival and sustainability dynamics of operational resilience? How does operational resilience influence organizational resilience?

Our research framework is depicted in Figure 1.

The proposed research framework includes relational, operational, and organizational resilience variables. In this regard, organizational resilience is schemed as being influenced by relational and operational resilience. The constructed framework will serve two purposes. On one hand, it represents both relational and operational dynamics of organizational resilience; on the other hand, it is used as a tool to guide this research in the sense that each dimension of the framework was operationalized to collect, organize and analyze the study data as presented in Table 1.

4 Methodology

To explore the relational and operational resilience dynamics and their influence on organizational resilience with regards to the components of survival and sustainability, this research is based on a case study approach (Eisenhardt, 1989). Yin (2009) emphasizes that multiple-design case studies should be adopted in order to achieve replication, strengthen the

emerging constructs, and reveal the pattern of relationships among the investigated constructs. Therefore, we adopted a multiple-design case approach and built on interviews, observations, and analysis of inter-intra organizational documents across several organizations operating in Istanbul, Turkey.

In a case study approach, it is important to identify cases that demonstrate insights about the research constructs and the relationships among these constructs (Eisenhardt, 1989; Eisenhardt and Graebner, 2007). Thus, in this research we concentrated on two manufacturing and two service organizations. We use pseudonyms to avoid revealing the identities of the organizations. The organizations, their employees and managers have revealed important insights about the dynamics of relational and operational resilience. The organizations were selected because they experienced a series of crises, such as funding and debt problems, global competition, and losing high profile customers/staff, and handled such issues in their own way and managed to remain in business. In Table 2, pseudonyms for the case study organizations, their size in terms of number of employees, and their main area of operations are presented.

Within each organization, a semi-structured interview process was followed as suggested by Choi and Hong (2002) and open-ended questions were used in the interviews. In order to ensure internal reliability, we supported the findings with documents from the firms and their networks. The procedure followed during the case study is presented in Table 3. The data were collected and coded until the point of information saturation (Ridder et al., 2009).

Interviews were conducted with the relevant individuals either face-to-face or via telephone or email. Both of the interviewers were engineers with management graduate degrees. This enabled capture of both operational and relational aspects of the phenomena under study. In addition, since the interviewers have experience of resilience related studies they were very appropriate for the purpose of this study. The pseudonyms of the participant

companies are Kerkes, Simurg, Anka and Phoenix. The business development director of Kerkes was interviewed for three two-hour sessions. Moreover, interviews with the CEO of Kerkes in one leading national journal and a national newspaper were also utilized. We interviewed one of the partners of Phoenix in two three-hour sessions and conducted a one and a half hour cross-checking interview with the managing partner. One of the former assistant general managers of Simurg was contacted via e-mail and telephone, and answered our case questions. A former consultant-trainer of Simurg also provided answers to the case questions. Interviews with the head of department of Anka and one of the professors of the institute were our case sources. Interviews at Anka were conducted in three two-hour sessions. The profiles of the case organizations and their executives were important in analyzing the dynamics underlying relational behaviors and resilience. Those interviewed were experienced individuals who had been with their organizations to witness the adverse dynamics and their organizations' responses. The statistics related to the number of interviews, total length of interviews, and the key informants for each case are given in Table 4. In addition, the provision of consultancy services for the case firms by one of the authors enabled triangulation for the interpretation of the interviews.

All interviews were recorded and the data were linked to the research questions in accordance with the analytical framework. Ordered categories were utilized in matrix format to structure and analyze data (Miles and Huberman, 1994). The central goal of this approach was to compare cases and determine shared patterns and convergent points. After multiple reading and double-checking, we first classified data for each case under survival and sustainability, then under operational and relational categories as defined in our analytical framework. The categorization of data was then assessed and criticized by five academics with related knowledge of this study topic.

In the following sections, case findings (both within and across organizations) and survey results are reported.

5 The case organizations: Relational, operational, and organizational resilience

Kerkes

Kerkes is a manufacturing company operating in Istanbul and has been one of the pioneers in its sector. The 1970s were the golden age for Kerkes. Yet, family conflicts that started in the 1980s have always been a handicap for the company. In the 1990s, one part of the family held all the shares. Then Kerkes was listed on the Stock Exchange. The 2001 economic crisis caused major disruptions for the firm such as an 85% decrease in sales and a 75% decrease in revenue and increase in debts. Agreements with banks and hard work enabled the firm survive for two years, and the firm began to grow quickly and achieved considerable revenues in the mid-2000s. Kerkes then initiated its process of globalization. During this period, by producing in several central European countries, Kerkes sold its products to almost one hundred countries. The company became one of the ten biggest producers in the world in its sector. In 2006, financial crises in global markets influenced Kerkes. In addition, family conflicts also increased with members suing each other. This led to the appointment of trustees. The firm's global operations were gathered under an umbrella firm. Under financial burden, Kerkes halted its production in 2008 and faced chaos. Firm's dealers, suppliers, employees, banks and all other payees demanded payment.

After a period of difficulty in that year, Kerkes convinced some of its dealers and restarted production. With the funding provided by its dealers, Kerkes was able to produce the first products branded with its own name in the following year. For years, Kerkes had produced under license from a globally recognized European manufacturer and due to its recent crisis, had lost its position as licensee. Although increased production rates raised

positive expectations, continuing litigations and conflicts led to Kerkes being declared bankrupt.

Phoenix

In operation for over thirty years, Phoenix manufactures and sells outdoor sporting equipment and clothes in Istanbul. To begin with, the company only imported these to sell in the local market. Due to increased import costs and financial crises, the company began manufacturing its own branded products in the beginning of 2000. The fabrics used in the production of the sports clothes are still imported from the Far East. Although until recently they operated their own retail stores, they currently utilize a retail network. In addition to local sales, they export to countries all over the world. One of the owners of Phoenix started his career as a worker in the same sector. The other owner entered the textile business in her early childhood. They built a manufacturing company by transforming their importing firm. Their core management team is made up of family members. Their core operating personnel have worked for Phoenix for more than ten years. Their sector is a niche one and there are international competitors. In addition, Phoenix complains about the seasonality of some of their products and looks for ways to overcome this issue.

Simurg

Simurg is a human resources consultancy firm that has served leading companies from various industries for the last twenty years. Simurg provides human resource management consultancy, recruitment, and training services. Before the economic crisis in 2008, Simurg experienced its golden age. At that time, they were providing training services to the leading banks. Their training services were diversified and ranged from technical to managerial.

Simurg's employees are mainly operation oriented and the company recruits freelance consultants and university professors for training and consultancy projects. Due to an increase

in customer accounts and projects, Simurg began construction of its training center just before 2008. A huge amount of investment was made. The 2008 economic crisis created significant debt and lost accounts for Simurg. They were near bankruptcy and sold all their assets. The owner tried to maintain Simurg's business via a home-office. They again utilized freelance trainers and consultants. By regaining some of its previous power, Simurg moved to a business center in 2011. This time, Simurg recruited an experienced head of operations. They tried to improve their accounts receivables. Simurg tried to improve its own processes in terms of cycle times and costs. In 2013, Simurg experienced a downsizing and decided to operate in management consultancy and human resources consultancy lines separately.

Anka

Anka is a department of one of the largest faculties of an old university. Anka has provided undergraduate degree programs since the early 1990s. Its master and doctorate degree programs are fifteen years old. Graduates of Anka are well respected in business circles and work in manufacturing and service industries. Due to an increase in the number and quality of competitors, Anka faces a potential decline in the quality and entrance exam rankings of its students in addition to potential academic staff turnover.

Anka serves in an interdisciplinary area thus is able to establish diverse and rich relationships. The academic personnel of Anka consist mainly of academicians who have different backgrounds and perform interdisciplinary academic studies. In 2014, Anka initiated several programs with its relational partners and made several operational arrangements, such as starting to deliver some of its courses in English.

6 Analysis and the findings

An analysis of the both intra-organizational and inter-organizational relationships and operations of the case firms clearly reveals a set of insights that must be handled properly.

The study findings depict relational and operational dimensions of organizational resilience in survival and sustainability aspects.

6.1 Summary of the findings

The operational, relational, and organizational resilience dynamics of the case companies in specified crises are summarized in Tables 5-12. By comparing the crises experiences of the case companies in accordance with our analytical framework, a summative picture was obtained as presented in Table 13.

6.1.1 Resilience of Kerkes

One of the entries about Kerkes in a local web dictionary Ekşisözlük says, *"A firm that never dies despite all the troubles it faces."* When the production halted, some dealers and customers commented on several Internet platforms that they would not change even the corpse of Kerkes and its products for its competitors and their products. This loyalty and trust enabled Kerkes to survive in very tough situations. In some other web sources Kerkes' dealers shared comments like *"My father was their dealer. I will continue to be their dealer whatever happens."* The existence of dealers who have been with the company for fifty years may reflect the firm's relational persistence. The CEO of Kerkes stated in an interview that the formation of a funding firm by ten former dealers that trust Kerkes led to their organization's survival and sustainability. In other words, sustainability of the relationships enabled organizational survival. The business development director of Kerkes stated that:

"When we achieved our own branded products, we were born out of our ashes."

6.1.2 Resilience of Phoenix

In their search for export opportunities, Phoenix began to participate in international fairs via their international contacts. One of the partners of Phoenix expressed the following quote:

"When my husband went to the USA, he was met by one of the X community members. They organized all his meetings with potential customers and assisted him since he didn't speak any English."

Phoenix achieved timely withdrawal from that community (some members were involved in activities that are no longer permitted by the government) by being aware of that community's problematic situation via their contacts in political parties. It can be deduced that Phoenix has flexible relationships. It has a core employee, supplier, customer, and business partner base. In addition to this, Phoenix utilizes flexible relational parties according to the zeitgeist. Thus, Phoenix achieves relational survival via its core groups while it achieves sustainability through flexible relational arrangements.

Phoenix's relationships with a religious community enabled them to produce shoes as part of their religious clothing. This kind of production enabled Phoenix to overcome seasonality. Their relationships with various municipalities enabled them to manufacture outdoor work clothes by utilizing the distinguishing properties of Phoenix's textiles. The nature of the fabrics (waterproof etc.) they used in their outdoor sports clothes enabled Phoenix to utilize these fabrics in the production of specialist clothes such as those used by delivery persons and firefighters. Their tailoring and pattern building skills enabled Phoenix to customize their products.

Most of Phoenix's staff have been employed by the company since it began production. Phoenix tried to make timely payments and built a trusting relationship with them. Phoenix's partners' style could be described as paternalistic. They provided meals for their employees during Ramadan, attended their weddings and similar ceremonies. Even in the

presence of a lower-cost Syrian work force, Phoenix preferred to work with their existing employees.

6.1.3 Resilience of Simurg

Simurg operated on a very small and operational core and provided its responsive flexibility by utilizing freelancers and academics on a project-by-project basis. Head of operations stated that she felt guilty not paying staff salaries and consultancy fees even though Simurg began receiving payments from customers after 2011. Payments received were sometimes used for personal payments by the firm's partners instead of paying staff. During this period, intra-organizational and inter-organizational trust levels were very low.

One of freelance consultants and trainers said that:

"Each time we met with the partner of Simurg, she expressed how her staff was ill performing and how weak they were. She also complained about some free-lancer consultants and trainers with whom we worked as colleagues in various projects. Thus, we were expecting same kind of talk about us, too."

Simurg's managing partner ordered an assessment of Simurg from the free-lancing consultants, trainers and academicians utilized in Simurg's projects. The advice based on the assessment was very well received and attempts were made to apply the advice regarding operational activities.

6.1.4 Resilience of Anka

Anka responded to criticisms by its academic staff regarding the quality of its students by making the department more attractive (via high graduate recruitment rates, English programs, and other relational and operational actions) for potential high-ranking students. A professor at Anka expressed:

"Two years ago, in a department meeting, almost all of the academic personnel complained about junior students' unsatisfactory levels. One of the professors compared previous students' performances with that year's students by reminding us some of those names. We all remembered those previous students with good feelings."

Another professor noted:

"We don't want to work with graduate students who are here to escape from military services or who are unwillingly here since they didn't find a satisfactory job. We want dedicated students who have scientific ambitions. Thus, I believe Anka's relationship building with international universities and other interdisciplinary departments is fruitful in this respect to attract better graduate students."

Anka's core academic staff delivered all the major courses. In addition, the inter-disciplinary nature of its academic staff enabled them to design and deliver most of their inter-disciplinary courses. Thus, Anka integrated the faculty members of other departments, faculties, and universities for a very limited number of courses. As a result, Anka has been able to develop a strong and flexible core group of academic staff.

7 Discussion

The case analyses revealed interesting insights regarding the existence of relational and operational resilience dimensions of organizational resilience with both survival and sustainability aspects. This research has extended organizational resilience research by conceptualizing its relational and operational dimensions as complementary and emphasizing both survival and sustainability aspects.

Relational survival is maintenance of organizational and inter-organizational relations against crises. Preserving and maintaining organizational and inter-organizational relationships results in retaining internal and external resources and capabilities necessary for an organization's survival. The loyal dealer network of Kerkes enabled maintenance

capabilities and resources. The cases of Phoenix and Simurg showed that a core group of relational parties both within and from the partners provides a kernel that is easy to retain and maintain. In addition, relational survival leads to expansion of the parties' repertoire of reciprocity experiences against crises. Another consequence of relational survival is an increase in the relational parties' efficacy in dealing with crises. Thus, we can argue that relational survival leads to organizational survival.

Bringing in new parties (new freelancers as in the case of Simurg), creating new forms of organizational and inter-organizational relations (as dealer funding organization of Kerkes), and changing forms of relationships (freelancers become personnel or vice-versa in the case of Simurg) result in the creation of necessary internal and external resources and capabilities, varied sets of experiences for improvisation, and increased efficacy of the parties for organizational sustainability. Thus, we can state that relational sustainability leads to organizational sustainability. In addition, relational sustainability influences organizational survival mechanisms such as network based funding and debt restructuring arrangements.

In cases of crises, pre-crises operational experiences can be utilized with known courses of action. For example, Kerkes and Simurg's implementation of ERP provided the companies with process management platforms that enabled knowledge and control of the processes. In those cases, regaining previous performance levels refreshed the efficacy of the companies. Thus, we can argue that operational survival leads to organizational survival.

Trying to improve/ change operations and related performance levels lead to the creation of new resource and capability sets for organizational sustainability. For example, Kerkes's transfer of knowledge from the licensee period and beginning to produce all the major components in-house enhanced operational sustainability. Likewise, Phoenix adapted and customized its products and therefore overcame seasonality issues. These actions cause an increase in a firm's repertoire of experiences and efficacy. Thus, we can state that operational

sustainability leads to organizational sustainability. Additionally, operational sustainability increases beliefs in organizational survival potential. Thus, operational sustainability leads to organizational survival by retaining core staff, re-attracting suppliers and banks.

Our revised framework is depicted in Figure 2. The model indicates that relational and operational resilience influence organizational resilience in survival and sustainability dimensions.

The revised model, to our knowledge, is among the first attempts to extend previous research on organizational resilience by focusing on its relational resilience dimension and integrating this with its operational resilience dimension. Understanding the relational resilience construct and complementing it with the operational resilience construct enables us to have a complete and balanced picture of organizational resilience (Thompson and Ravlin, 2010). We developed and refined a conceptual model in this regard and argued that relational resilience and operational resilience in survival and sustainability dimensions influences organizational resilience in survival and sustainability dimensions.

Although previous research has examined organizational and operational resilience in depth, there is scant study, to our knowledge, related to relational resilience (Ponomarov, 2009; Kahn et al., 2013; Seville, 2018; Seville et al., 2014; Brown et al., 2017; Chang-Richards et al., 2017). Thus, this study prepared an infrastructure for further conceptual and empirical development studies on relational resilience. A significant theoretical contribution of this study is the conceptualization of organizational resilience as comprised of complementary operational and relational resilience dimensions.

In this study, survival and sustainability dimensions of relational resilience were formed by matching relational constructs in the related literature such as relationship management (Blau, 1964) and relationship quality and relationship learning (Kohtamki,

2012). Analysis of organizational, relational, and operational resilience constructs in the same survival and sustainability dimensions brings analytical integrity.

8 Limits and further research directions

The main aim of this research was to understand the relational and operational resilience dimensions of the organizational resilience construct. We explored our research questions by adopting a multiple case study approach. It will be interesting for future research to adopt a quantitative approach and replicate the findings across different industries. Therefore, validation of this model will offer critical insights with respect to causal patterns.

This study adopted a multiple-case design perspective that increased the validity of insights. However, it should be noted that the study is conducted in a Turkish business environment, which, therefore, reduces its power of generalizability. Case studies can be carried out in different national business environments to further strengthen the external validity.

In the framework development process, the effects of wider contextual elements such as culture and structure of the organizations were not included. It is highly plausible to see that the study constructs will change depending on the impact of culture and the context within which organizations operate. Hence, further studies need to test and control for these contextual elements in order to reach cross-cultural generalizability.

Because this study adopted a qualitative approach, no attention was paid to possible interactions between relational resilience and operational resilience dimensions. In further studies, whether the survival of relationships influences the survival of operations and whether the sustainability of relationships influences the sustainability of operations could offer an interesting line of research.

REFERENCES

Allen, J. (2011), "Measures for managing operational resilience", *EDPACS: The EDP Audit, Control, and Security Newsletter*, Vol. 44 No.6, pp. 1-6.

Armenakis, A. and Harris, S. (2009), "Reflections: our journey in organizational change research and practice", *Journal of Change Management,* Vol.9 No.2, pp. 127– 142.

Beck, N., Brüderl, J. and Woywode, M. (2008), "Momentum or deceleration? Theoretical and methodological reflections on the analysis of organizational change", *Academy of Management Journal,* Vol.51 No.3, pp. 413–435.

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.

Blau, P. M. (1964), *Exchange and power in social life*, *John Wiley & Sons,* New York, NY.

Brown, C., Seville, E., and Vargo, J. (2017), "Measuring the organizational resilience of critical infrastructure providers: A New Zealand case study", *International Journal of Critical Infrastructure Protection,* 10.1016/j.ijcip.2017.05.002

Burnard, K. and Bhamra, R. (2011), "Resilience: the concept, a literature review and future directions", *International Journal of Production Research*, Vol.49 No.18, pp. 5581-5599.

Chang-Richards, Y. S., Wilkinson, S., Seville, E., and Brunsdon, D. (2013), *Resourcing of the Canterbury rebuild: Case studies of construction organisations.* The University of Auckland, BRANZ, Resilient Organisations: Auckland.

Chang-Richards, Y. S., Wilkinson, S., Seville, E., and Brunsdon, D. (2014), *Workforce behavior and business responses: Case studies of construction organisations.* Resilient Organizations Research Report 2014/03.

Chang-Richards, Y. S., Wilkinson, S., Seville, E., and Brunsdon, D. (2017), "An organizational capability framework for earthquake recovery", *Earthquake Spectra, Vol. 33, No: 4, pp. 1257-1278.*

Cropanzano, R., & Mitchell, M. S. (2005), "Social exchange theory: An interdisciplinary review", *Journal of Management*, Vol.31, pp. 874–900.

Dutton, J. E., Worline, M. C., Frost, P. J., and Lilius, J. (2006), "Explaining compassion organizing", *Administrative Science Quarterly*, Vol.51, pp. 59–96.

Ganesan, S. (1994), "Determinants of Long-Term Orientation in Buyer-Seller Relationships", *Journal of Marketing*, Vol.58 (April), pp. 1-19.

Gatignon, A. and Capron, L. (2013), "Building capabilities in emerging markets: How firms integrate relational and operational resources", *Academy of Management Proceedings, January*, DOI: 10.5465/AMBPP.2013.13841.

Gouldner, A. W. (1960), "The norm of reciprocity: A preliminary statement", *American Sociological Review,* Vol. 25, pp. 161-78.

Hamel, G., & Valikangas, L. (2003), "The quest for resilience", *Harvard Business Review*, Vol. 81 No. 9, pp. 52−63.

Hobfoll, S. E., Johnson, R. J., Ennis, N., & Jackson, A. P. (2003), "Resource loss, resource gain, and emotional outcomes among inner city women", *Journal of Personality and Social Psychology*, Vol. *84*, pp. 632–643.

Holling, C. S. (2001), "Understanding the complexity of economic, ecological and social systems", *Ecosystems*, Vol. *4*, pp. 390–405.

Kahn, W.A. (1998), "Relational systems at work", *Research in Organizational Behavior*, Vol.20, pp. 39–76.

Kahn, W.A., Barton, M. A. and Fellows, S. (2013), "Organizational crises and the disturbance of relational systems", *Academy of Management Review*, Vol.38 No.3, pp. 377–396.

Kohtamäki, M. and Bourlakis, M. (2012), "Antecedents of relationship learning in supplier partnerships from the perspective of an industrial customer: the direct effects model", *Journal of Business & Industrial Marketing*, Vol. 27 No. 4, pp. 299 – 310.

Kuntz, J., Naswall, K., and Malinen, S. (2016), "Resilient employees in resilient organizations: Flourishing beyond adversity", *Industrial and Organizational Psychology, Vol.9, pp. 456-462.*

Lee, A. V., Vargo, J., and Seville, E. (2013), "Developing a tool to measure and compare organizations' resilience", *Naatural Hazards Review,* Vol. 14, No. 1, pp. 29-41.

Lengnick-Hall, C. A. and Beck, T. E. (2009), "Resilience capacity and strategic agility: Prerequisites for thriving in a dynamic environment", in Nemeth, C., Hollnagel, E., and Dekker, S. (Eds.), *Resilience Engineering Perspectives*, Ashgate Publishing, Aldershot, UK.

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, pp. 243-255.

Nilakant, V., Walker, B., van Heugten, K., Baird, R., and de Vries, H. (2013), "Research note: Conceptualising adaptive resilience using grounded theory", *New Zealand Journal of Employment Relations*, Vol. 39, No:1, pp. 6-18.

Ponomarov, S.Y. (2009), "Understanding Operational and Relational Resilience in Buyer-Supplier Dyads", *Society for Marketing Advances (SMA) Conference Proceedings*, November 2009.

Ponomarov, S.Y. and Holcomb, M. (2009), "Understanding the concept of supply chain resilience", *The International Journal of Logistics Management*, Vol.20 No.1, pp. 124-143.

Powley, E. H. (2009), "Reclaiming resilience and safety: Resilience activation in the critical period of crisis", *Human Relations,* Vol.62, pp. 1289–1326.

Ridder, H. G., C. Hoon, and A. McCandless. 2009. "The Theoretical Contribution of Case Study Research to the Field of Strategy and Management." In Research Methodology in Strategy and Management, edited by D. Donald and D. J. K. Bergh, 12–34. London: Emerald Group Publishing Limited.

Seville, E. (2018), "Building resilience: How to have a positive impact at the organizational and individual employee level", *Development and Learning in Organizations: An International Journal*, Vol. 32, No. 3, pp. 15-18.

Seville, E., Stevenson, J. R., Brown, C. O., Giovinazzi, S., and Vargo, J. (2014), "Disruption and resilience: How organisations coped with the Canterbury earthquakes", *GNS Science*

Sutcliffe, K.M. and Vogus, T.J. (2003), "Organizing for resilience", in Cameron, K., Dutton, J.E. and Quinn, R.E. (Eds.), *Positive Organizational Scholarship*, Berrett-Koehler Publishers, San Francisco, CA, pp. 94-110

Tuomi, I. (2002), *Networks of Innovation: Change and Meaning in the Age of the Internet*, *Oxford University Press*.

Thompson, B. S., and E. C. Ravlin. 2010. "Interpersonal Forgiveness and Relational Exchange: Forging a Framework of Dyadic Resilience." Paper presented at the annual meeting of the Academy of Management, Montreal.

Yilmaz Borekci, D., Rofcanin, Y. and Gurbuz, H. (2015), "Organizational resilience and relational dynamics in triadic networks: a multiple case analysis", *International Journal of Production Research,* 53, 6839-6867.

Yilmaz Borekci, D., Iseri Say, A., Kabasakal, H. and Rofcanin, Y. (2014), "The quality of relationships with alternative suppliers: The role of supplier resilience and perceived benefits in supply networks", *Journal of Management and Organization*, 20. 808-831.

Deconstructing Organizational Resilience: A Multiple-Case Study

Table 1 Analytical dimensions

Dimensions	Conceptualization of the Dimensions
Operational resilience (Allen, 2011; Ponomarov, 2009; Yilmaz Borekci et al., 2015)	1 Survival of operations Continuity of critical organizational activities and processes and presence of necessary assets such as human, machine, knowledge, technology and factory
	2 Sustainability of operations Adaptation and transformation of organizational and inter-organizational activities and processes as well as necessary assets as required
Relational resilience (Ponomarov, 2009; Kahn, 2013; Yilmaz Borekci et al., 2015)	1 Survival of relations Mutual trusting behaviors, long-term orientation, commitment
	2 Sustainability of relations New combinations of relational parties, new relational dynamics, new relational parties
Organizational resilience (Glassop, 2007; Yilmaz Borekci et al., 2015; Sutcliff & Vogus, 2003)	1 Survival of organization Preserving necessary resources and capabilities, reciprocity experiences and efficacy for organizations' survival
	2 Sustainability of organization Dynamics and processes that create organizational resources and competencies, combination/ recombination of experiences and increase efficacy

Table 2 Case site information

Pseudonyms of cases	Case details
Kerkes	An old manufacturing company, once leader of Turkey in its sector and one of the ten biggest producers in the world in its sector, once employing above 2500 employees then operating by subcontracting.

Phoenix	Operating for over thirty years, manufactures and sells outdoor sporting equipment and cloths in Istanbul. Have 30 full-time employees.
Simurg	Twenty years old human resources consultancy firm and has served leading companies from various industries. Have 5 full-time employees and utilize free-lance consultants and trainers.
Anka	Over twenty years old department of one of the biggest faculties of an old university. Have 15 full-time staff and utilizes additional 10 instructers from other faculties of the university.

Table 3. Procedure Followed During Multi-Design Case Study

Phase 1: Semi-Structured Questions (operational survival/ sustainability)

- Did your firm achieve continuity of critical organizational activities in crises?
- Did your firm achieve continuity of critical organizational processes in crises?
- Did your firm achieve maintenance of necessary assets such as human, machine, knowledge, technology and factory in crises?
- Did your firm achieve adaptation/ transformation of critical organizational activities in crises?
- Did your firm achieve adaptation/ transformation of critical organizational processes in crises?
- Did your firm achieve adaptation/ transformation of necessary assets such as human, machine, knowledge, technology and factory as required in crises?

Phase 2: Critical Incident Technique (operational survival/ sustainability)

- Please give us examples of incidents when your firm achieved continuity of critical organizational activities in crises and tell us about how these examples influenced the operations of your firm/ your organization in general.
- Please give us examples of incidents when your firm achieved continuity of critical organizational processes in crises and tell us about how these examples influenced the operations of your firm/ your organization in general.
- Please give us examples of incidents when your firm achieved maintenance of necessary assets such as human, machine, knowledge, technology and factory in crises and tell us about how these examples influenced the operations of your firm/ your organization in general.
- Please give us examples of incidents when your firm achieved adaptation/ transformation of critical organizational activities in crises and tell us about how these example influenced the operations of your firm/ your organization in general.
- Please give us examples of incidents when your firm achieved adaptation/ transformation of critical organizational processes in crises and tell us about how these examples influenced the operations of your firm/ your organization in general.
- Please give us examples of incidents when your firm achieved adaptation/ transformation of necessary assets such as human, machine, knowledge, technology and factory in crises and tell us about how these examples influenced the operations of your firm/ your organization in general.

Phase 3: Content analyses of written documents and reports

Phase 1: Semi-Structured Questions (relational survival/ sustainability)

- Did your firm foster mutual trusting behaviors and long-term relational orientation within your organization?

- How these relational behaviors demonstrated within your organization influenced your firm's relations in crises?

- Did your firm foster mutual trusting behaviors and long-term relational orientation towards your organization's relational parties (suppliers, customers, service providers)?

- How these relational behaviors towards third parties influenced your firm's relations in crises?

- Did your firm foster usage of new combinations of relational parties (departments, groups and employees), new relational dynamics (competitive, cooperative and co-opetitive), new relational parties (departments, groups and employees)?

- How these relational behaviors demonstrated within your organization influenced your firm's relations in crises?

- Did your firm foster usage of new combinations of relational parties (suppliers, customers, service providers and own employees), new relational dynamics (competitive, cooperative and co-opetitive), new relational parties (suppliers, customers, service providers)?

- How these relational behaviors towards third parties influenced your firm's relations in crises?

Phase 2: Critical Incident Technique (relational survival/ sustainability)

- Please give us examples of incidents when your firm demonstrated mutual trusting behaviors within your organization and tell us about how this behavior influenced relations of your firm in crises/ your organization in general.

- Please give us examples of incidents when your firm demonstrated long-term relational orientation within your organization and tell us about how this behavior influenced relations of your firm in crises/ your organization in general.

- Please give us examples of incidents when your firm demonstrated mutual trusting behaviors towards third parties and tell us about how this behavior influenced relations of your firm in crises/ your organization in general.

- Please give us examples of incidents when your firm demonstrated long-term relational orientation towards third parties and tell us about how this behavior influenced relations of your firm in crises/ your organization in general.

- Please give us examples of incidents when your firm demonstrated usage of new combinations of relational parties (departments, groups and employees) and tell us about how this behavior influenced relations of your firm in crises/ your organization in general.

- Please give us examples of incidents when your firm demonstrated usage of new relational dynamics (competitive, cooperative and co-opetitive) and tell us

about how this behavior influenced relations of your firm in crises/ your organization in general.

- Please give us examples of incidents when your firm demonstrated usage of new relational parties (departments, groups and employees) and tell us about how this behavior influenced relations of your firm in crises/ your organization in general.

- Please give us examples of incidents when your firm demonstrated usage of new combinations of relational parties (suppliers, customers, service providers and own employees) and tell us about how this behavior influenced relations of your firm in crises/ your organization in general.

- Please give us examples of incidents when your firm demonstrated usage of new relational dynamics (competitive, cooperative and co-opetitive) and tell us about how this behavior influenced relations of your firm in crises/ your organization in general.

- Please give us examples of incidents when your firm demonstrated usage of new relational parties (suppliers, customers and service providers) and tell us about how this behavior influenced relations of your firm in crises/ your organization in general.

Phase 3: Content analyses of written documents and reports

Table 4. Case site interviews

Case organizations	Number of interviews	Total length (hh)	Key informants	Supplementary sources
Kerkes	3	6	Business Development Director	One journal interview with CEO, a newspaper article, Ekşisözlük (wiki), Kerkes web site, other web sources
Phoenix	2	7.5	Partner, Managing Partner	Phoenix web site, other web sources
Simurg	2	4	Assistant General Manager, Consultant-Trainer	Simurg web site, other web sources
Anka	3	6	Department Head, Professor	Anka web site, other web sources

Table 5. Summary of the Kerkes findings-1

Crisis 1 (2008): Kerkes experienced funding problems. Due to debts, Kerkes had to halt its production.				
			Organizational resilience	
			Organizational Survival	Organizational Sustainability
Relational resilience	Relational Survival	*committed dealers network *loyal dealers network *long-term oriented dealers network	*retained dealers network	
	Relational Sustainability	* old and high trust dealers' formation of a new firm to fund Kerkes *increased relational repertoires of Kerkes and its dealers	*solution of Kerkes's funding problem and debt payment	*Kerkes's production with its own brand name *dealers' distribution of new products *dealers' and Kerkes's improved efficacies
Operational resilience	Operational Survival	*debts (-) *funding problems (-) *halted production (-) *suppliers not delivering raw materials, parts and components (-) *most of the employees left the company (-) *production equipment seized by payees (-)		
	Operational Sustainability			

Table 6. Summary of the Kerkes findings-2

Crisis 2 (2008): Licensor did not give any more licenses.				
			Organizational resilience	
			Organizational Survival	Organizational Sustainability
Relational resilience	Relational Survival	*long-term licensor terminated licensee relationship and became rival (-) *having a few committed employees with high competencies	*retained competent engineers and workers	
	Relational Sustainability			
Operational resilience	Operational Survival	*Kerkes couldn't use licensed components in production (-) *due to Kerkes's ERP implementation, well-done and active production know-how	*production know-how maintenance	
	Operational Sustainability	*transfer and adaptation of product and production know-how from the licensee period *Kerkes's production of all major components in-house	*preserving necessary resources and know-how *re-attracting suppliers *retaining core work force	*Kerkes's production of its own branded products *Kerkes's selling its own branded products

Table 7. Summary of the Phoenix findings-1

Crisis 1 (2008-2010): Phoenix faced export challenges due to internal market pressures and wanted to utilize external market opportunities.				
			Organizational resilience	
			Organizational Survival	Organizational Sustainability
Relational resilience	Relational Survival	*maintenance of geographic kinship relations with business related third parties *maintenance of relations with monopolistic Far East raw material suppliers	*achieved a steady material supply	
	Relational Sustainability	*taking part in communities having members in foreign countries *taking part in international organizations *employing people who are members of important communities, clubs and political parties. *achieving timely withdrawal from communities with negative potential	*achieved restructuring of its debts with the help of its network	*entrance to new international markets and selling in those markets *selling via other local retail networks
Operational resilience	Operational Survival	*unbearable debts (-) *closing own retail stores due to costs		
	Operational Sustainability			

Table 8. Summary of the Phoenix findings -2

Crisis 2 (2012): Phoenix's vulnerability due to seasonality of its products				
			Organizational resilience	
			Organizational Survival	Organizational Sustainability
Relational resilience	Relational Survival	*retaining its employees and not using seasonal employees	*maintaining a steady work force	
	Relational Sustainability			
Operational resilience	Operational Survival	*produced for next seasons in off seasons in lower amounts	*decreased inventory cost and obsolesence risk	
	Operational Sustainability	*adapted and customized products		*overcome seasonality problems *increased product variety and expanded customer base

Table 9. Summary of the Simurg findings -1

			Organizational resilience	
			Organizational Survival	Organizational Sustainability
Crisis 1 (2008): Simurg faced economic crisis with huge debts.				
Relational resilience	Relational Survival	*fired some employees and retained only some operational staff *lost some customer accounts (-)	*maintenance of core operational staff	
	Relational Sustainability	*utilized free-lancers and university professors in consultancy and training projects *offered training and consultancy services in technical and managerial areas in specific headings		*more focused in terms of the services provided and thus became known for those specific services. *new consultant and trainer groups brought their own customers
Operational resilience	Operational Survival	*sold training centre and some other assets due to huge debts *started home-office operation	*maintenance of core operational activities	
	Operational Sustainability			

Table 10. Summary of the Simurg findings -2

Crisis 2 (2011-2013): Simurg faced repositioning challenges				
			Organizational resilience	
			Organizational Survival	Organizational Sustainability
Relational resilience	Relational Survival	*late payments to suppliers (-) *priority of short–term concerns and behaviors (-) *tensions in supplier relations (-) *fired some employees *received customer payments but didn't pay employees (-)	*worsened inter-organizational and intra-organizational relations hinder its operational capabilities	
	Relational Sustainability	*utilized free-lancers and university professors in consultancy and training projects		*new consultant and trainer groups brought their own customers
Operational resilience	Operational Survival	*moved to a more economical place *improved accounts receivables.	*continues its core operations	
	Operational Sustainability	*started to operate in separate management and hr consultancy lines *improved its processes in terms of cycle time and cost *implemented ERP		*more focused in terms of the services provided and thus became known for those specific services.

Table 11. Summary of the Anka findings -1

			Organizational resilience	
Crisis 1 (2014-2015): Anka had difficulty to attract high quality and high entrance exam ranking students and faced the possibility of losing its top rank in its faculty.				
			Organizational Survival	Organizational Sustainability
Relational resilience	Relational Survival	*giving more importance to managing alumni relations and increasing new graduates' recruitment rates *using high recruitment rates as leverage in attracting new good students	*regained top ranking in the faculty *attracted high quality and high ranking students	
	Relational Sustainability	*agreement with an American university regarding dual degree programs *university wide programs to advertise the department		*attracted high quality graduate students *attracted high quality and high ranking students
Operational resilience	Operational Survival	*updated all of its current course contents in all of its degree programs *updated its web page and made it attractive and explanatory	*regained its top ranking in the faculty *attracted high quality and high ranking students *attracted high quality graduate students	

	Operational Sustainability	*adapted all of its course contents in all of its degree programs in line with the worldwide high ranking universities' programs *additional courses included in respective programs *updated softwares in new laboratories *started giving nearly half of its courses in English *moved to a new building	*re-attracted current students	*higher ranking in national universities leauge *attracting international students

Table 12. Summary of the Anka findings-2

			Organizational resilience	
			Organizational Survival	Organizational Sustainability
Relational resilience	Relational Survival	*extension of staff's visiting positions in other universities *extension of staff's contracts at the end of their contract periods *extension of staff's contracts in evening programs	*retained core academic staff *staff well-being	

Crisis 2 (2014-2015): Anka had difficulty to retain its academic staff and attract new ones due to low rewards.

			Organizational Survival	Organizational Sustainability
	Relational Sustainability	*started two new evening programs in cooperation with a related department of a different faculty in the university for its staff's enrollment *organized and urged joint book writing, joint research and joint article writing among its staff *tried to achieve a balanced distribution of master and doctorate students among the staff *recruited young and mostly woman staff and so increased diversity *employed interdisciplinary staff who can complement each other in various projects		*increased its relational repertoire *attracted new qualified staff *inreased based for learning and innovation
Operational resilience	Operational Survival	*tried to balance course loads of its staff to enable even distribution and free some of the staff's loads	*staff well-being	
	Operational Sustainability	*tried to add courses to its degree programs to enable some of its new staff to achieve the minimum course requirements to earn additional money	*retained core staff	*improved and enlarged course lists *higher staff payments and attraction

Table 13. Summary of the case findings

			Organizational resilience	
			Organizational Survival	Organizational Sustainability
Relational resilience	Relational Survival	*maintaining loyal, committed, trustful, long-term oriented bases of competent core employees/ dealers/ suppliers	*retaining core competent work force *maintaining steady resource supply *maintaining core dealer and supplier networks	

	Relational Sustainability	*utilizing flexible work force for noncore activities and projects *utilizing alternative suppliers *utilizing diversified work force *collaboration with diversified internal and external network parties *utilizing internal and external network parties with high social capital	*new funding and debt restructuring arrangements via networks *increased survival related crisis management repertoires	*new product, production and process arrangements via networks *increased learning and innovation capacity *increased efficiacies *increased change related crisis management repertoires *increased relational repertoires *increased market opportunities
	Operational Survival	*having information systems storing and processing quality management, process management, product and production management knowledge *maintaining facilities, assets, resources and equipment	*production know-how maintenance *maintenance of core operations *maintaining staff well-being	
Operational resilience	Operational Sustainability	*transfer, adaptation and transformation of product and production know-how *improving, redesigning and designing processes	*retained core staff *preserving necessary resources and know-how	*increased product variety *sustainable processes *increased operational repertoires *increased change related crisis management repertoires