

What can Business scholars learn from highly adaptive criminal organizations?

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ABSTRACT

Criminal organizations are able to exploit any environment and therefore survive high amounts of environmental change. On the other end of the spectrum, legal organizations are confronted with an increasing amount of changes in their environments. The dynamic and demanding environment of today, causes an interest among Business Administration researchers into the concept adaptability. The aim of this study is to identify insights into the criminal organizations' adaptive process, which can strengthen the knowledge about the adaptive process and the adaptive organization in Business Administration research. A systematic literature review is conducted to extract insights into the criminal organizations' adaptive process from Criminology articles. Furthermore, a Theoretical Model and a Conceptual Model are proposed. The models summarize the current knowledge about adaptiveness in Business Administration research. The comparison of the criminal insights with the models lead to additions to the models and interesting implications for practice. The additional concepts extracted from Criminology articles are networking capability, collaboration and power & influence. Networking capability can be described as a dynamic capability, collaboration as part of the transformation process, and power & influence as an outcome of the adaptive process. The hypothesized relationships between the concepts should be tested in further research.

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Keywords

Criminology, Criminal organization, Business Administration research, Organized crime, Cross-disciplinary research, Adaptive Organization, Adaptability, Environmental change, Ambidexterity, Dynamic capabilities, Networking, Collaboration and Firm survival.

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Introduction

Criminal organizations are able to exploit any environment according to Shelley (1995). For example the Cosa Nostra, the Sicilian Mafia, is able to move around as a Chameleon – like organization. The Cosa Nostra is able to survive, even under the most adverse and unfavourable circumstances (Scaglione, 2016). This survival is caused by the great flexibility (Adamoli, Di Nicola, Savona, & Zoffi, 1998) and adaptability (Shelley, 1995) found in criminal organizations. On the other end of the spectrum, legal organizations are confronted with increasingly dynamic and demanding environments in the fast-changing world of today (Uhl-Bien & Arena, 2018). The pressure makes it even more important for a successful legal organization to anticipate the need for change (Cross, 2013). When confronted with this dynamic environment flexibility, agility and adaptability are of great importance for survival of legal organizations (Uhl-Bien & Arena, 2018) (Doz & Kosonen, 2010) (Keister, 2014) (Reeves & Deimler, 2011) (Uhl-Bien, Marion, & McKelvey, 2007) (Worley & Lawler, 2010). Taking into account the increasing dynamic and demanding environments surrounding legal organizations it is no surprise that the phenomenon “Adaptive Organization” is studied for some time now within Business Administration research (Song, Peko, & Sundaram, 2017). Surprisingly, however, the comparison between drivers of adaptability in criminal organizations and legal organizations has not yet been conducted. Even while, adaptability as a concept is used in multiple disciplines (Lints, 2010) and criminal organizations are known for their great adaptability (Adamoli, Di Nicola, Savona, & Zoffi, 1998).

Looking through cross-disciplinary glasses to the concept adaptability as a process and the phenomenon adaptive organization is interesting, because real-world problems do not come in disciplinary-shaped boxes (Jeffrey, 2003). By looking at a concept or theory in two disciplinary lights it is possible to compare both insights into the concept or theory. This comparison can lead to mutual learning and theoretical inspiration (Kersbergen & Waarden, 2004). Furthermore, Marrin (2017) argues that comparing processes of knowing and understanding of a phenomenon to similar processes in other disciplines, fields and professions can help us understand the phenomenon as a function as well as identifying best practices.

Summarizing, criminal organizations being highly adaptive and legal organizations dealing increasingly with highly dynamic environments combined with the benefits of looking through a cross-disciplinary glass, drives the interest for a comparison. Further development of the knowledge about the adaptive process and adaptive organizations is possible and necessary. The author therefore aims to answer the following research question; *Which insights into criminal organizations can strengthen the knowledge about adaptiveness as a process and the phenomenon adaptive organization in Business Administration research?*

This research question entails different steps. First, all concepts need to be defined in the literature background. Secondly, the process of adaptability in criminal organizations needs to be studied. Thirdly, a summary needs to be made of the data found about adaptability in criminal organizations. Followed by introducing a theoretical model and a conceptual model that summarizes the existing knowledge within Business Administration research about adaptiveness. These models then enable the author to compare existing knowledge with the insights into criminal organizations. The comparison between knowledge about adaptiveness in the discipline Business Administration and the discipline Criminology can lead to mutual learning and theoretical inspiration (Kersbergen & Waarden, 2004).

This study will continue by first defining the two important phenomena. Followed by conceptualizing the stimuli, reactions and outcomes of an Adaptive Organization in a framework. The framework is then used to systematically review criminal organizations and how they adjust to their environment. The results are compared with a theoretical model and a conceptual model of the knowledge about adaptability in Business Administration research and conclusions will be drawn on how insights into criminal adaptability have strengthened the knowledge about the adaptive process and adaptive organization.

Literature background

In this chapter, the two important phenomena of this study will be defined: Adaptive Organizations and Criminal Organizations.

Adaptive Organization

First, it is important to define the phenomenon Adaptive Organization. Organizational adaptability was already emphasized in early organizational studies from Bernard (1938), Simon (1947), Selznick (1957), and Thompson (1967), emphasizing that organizations must adapt in accordance with their environment to be able to survive (Schumpeter, 1949). The importance of the topic caused it to be studied in a range of fields all generating snapshots of findings (Uhl-Bien & Arena, 2018). For example, in the field of innovation management (Yu, 2017), entrepreneurship (Duchesneau & Gartner, 1990), leadership (Uhl-Bien & Arena, 2018) and business process management (Rosemann, Recker, & Flender, 2008) the concept of adaptability has been studied.

For this research, a more general definition of the phenomenon Adaptive Organization is suitable, not focusing on one particular field but on Business Administration in general. There are many definitions of adaptability described by Lints (2010), from for example biology research. Lints (2010) general conclusion is that adaptation as a process is about changing something (itself, others, or the environment) in a way that it would be more suitable or fit for some purpose than it would have been otherwise. This emphasises the importance of a purpose and that the change should result in more suitability and fit. The Institute of Electrical and Electronics Engineers (IEEE) gives the following definition of adaptability; “the ability of a device or system to self-adjust to better meet the varying conditions it faces or the ability for a device or system to be adjusted to make it more suitable for a specific use or situation”. This definition also acknowledges the importance of more suitability and meeting varying conditions. Cross (2013) partly follows the definition from the IEEE and creates the following definition for organizations; “adaptation is the ability of an organization to modify its behaviours and actions in order to cope with change in its environment” (Cross, 2013, p. 1). In accordance with Cross (2013), the definition of adaptability in an organization within this research is the ability of a firm to modify its behaviour and actions in order to cope with the changes in its environment.

Since the concept of adaptability is emphasised in terms of its meaning in general and for organizations, it is possible to focus on defining an Adaptive Organization. According to Song, Peko and Sundaram (2017) adaptive organizations maintain competitive advantage by adjusting their strategies, organizational structure, business processes and information systems. “A successful adaptive organization is driven by leadership, strategy, networks, capability and communication. In order to be adaptive in a dynamic business environment, an adaptive organization also needs to be lean and flexible and be aware of the external environment” (Song, Peko, & Sundaram, 2017, p. 152). The goal of an Adaptive Organization according to this description is to maintain competitive advantage by adjusting. However, this description does not illustrate when to adjust. It only describes what drives the ability of an organization to adjust and what can be adjusted in an organization. Yu (2017) states that adaptive organizations use the understanding of the need to develop flexible and sustainable structures and a ditto culture, to effectively adapt to changes in the environment as well as challenges in the organization while it grows and matures. Consequently, adaptive organizations understand the need for flexible and sustainable structures and a ditto culture which enables adjustments of the organizational structure as mentioned by Song, Peko and Sundaram (2017). Furthermore, Yu (2017) describes that an Adaptive Organization adapts to changes in both the external and the internal environment. As a consequence, the stimuli to adapt is a change in the environment. Peng, Liu and Tao (2009) acknowledge that the need for an Adaptive Organization was born by the increasing complexity of the environments surrounding organizations, described as a turbulent environments.

This need of changing faster and more frequent, because of the environment, was already acknowledged in early studies. Barnard (1938) states:

“The initial existence of an organization depends upon a combination of these elements appropriate to the external conditions at the moment. Its survival depends upon the maintenance of an equilibrium of the system. This equilibrium is primarily internal, a matter of proportions between the elements, but it is ultimately and basically an equilibrium between the system and the total situation external to it. This external equilibrium has two terms in it: first, the effectiveness of the organization, which compromises the relevance of its purpose to the environmental situation; and, second, its efficiency, which compromises the interchange between the organization and individuals.” (Barnard, 1938, pp. 82-83).

This indicates that for the survival of an organization it is important to effectively cope with the environmental situation. Additionally, Peng, Liu and Tao (2009) described the complexity of the environment is increasing and therefore adaptiveness is key for survival. Therefore, an Adaptive Organization is interrelated with the changing environment. The change within the environment is the stimuli. Hereafter, an adjustment in the organization follows with the goal to cope with the changing environment. As a result, the adjustment maintains or increases competitive advantage and therefore strengthens the chance on survival in a disruptive environment.

Cross (2013) introduces a model for an Adaptive Organization, which is presented in Figure 1. The key idea of this model is the alignment of vision and strategy, culture and beliefs, processes, plans, people, and desired outcomes. According to, Cross (2013) this alignment fosters the adaptiveness of an organization. This means that alignment between attributes in an organization is important for quick responses to environmental changes. Cross (2013) also identifies that these attributes in an Adaptive Organization should be able to change to be more adaptive. The premise of the paper from Cross (2013) is that organizations can become more adaptive through a continuous process improvement approach. In addition, Peng, Liu and Tao (2009) acknowledge the need for continuous study to strengthen adaptability. Thus, adaptability in an organization is an ongoing process, striving with every organizational change towards operation efficiency and to enhance the compatibility and flexibility (Peng, Liu, & Tao, 2009).

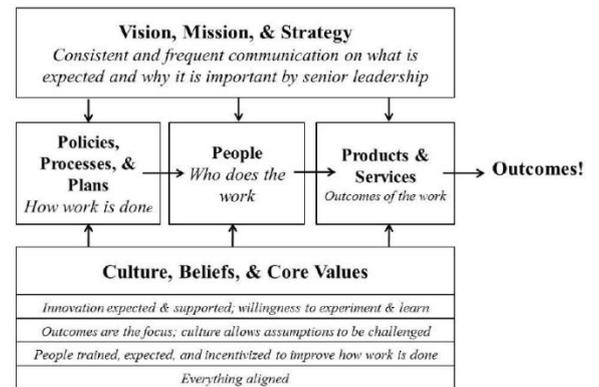


Figure 1: Model for an Adaptive Organization. Reprinted from “A Model to Guide Organizational Adaptation” by S.E. Cross, 2013, *International Conference on Engineering, Technology and Innovation*, p. 3. Copyright 2013 by the IEEE.

A condition for adaptability is flexibility. The concept of flexibility can be described as the capability to change without the loss of identity (Regev, Bider, & Wegmann, 2007) (Rosemann, Recker, & Flender, 2008). Continuing, *“The identity of an enterprise can be analyzed as a set of norms and beliefs about these norms held by its stakeholders”* (Regev, Bider, & Wegmann, 2007, p. 65). This means that flexibility is thus the ability to change (willingness) on organizational level but also on individual level. The description of Peng, Liu, and Tao (2009) also gives the indication that organizational change leads to more compatibility with the environment, one of the main goals of an Adaptive Organization. Which leads to the following conclusion, adjusting or modifying “things” is a form of change in the organization which is necessary for adaptation in an organization.

Another concept related to adaptiveness is resilience. This is the capability to rebound from disruptive changes (Luthans, Vogelgesang, & Lester, 2006) (Horne & Orr, 1998) as well as the capability to adapt to risk environments (Starr, Newfrock, & Delurey, 2003). Bodin and Wiman (2004) describe resilience as elasticity or the speed to return to equilibrium after displacement. The goal is continuity and survival after adversity.

According to Reeves and Deimler (2011) organizations need to create internal environments that encourage the knowledge flow, diversity, autonomy, risk taking, sharing, and flexibility on which adaptation thrives. In contrast with classical strategic thinking, strategy follows organization in an adaptive organization (Reeves & Deimler, 2011). Also, Peng, Liu and Tao (2009) emphasise the importance to stimulate self-organization and emergence, promoting the self-renewal ability, in order that the organization can achieve a long-term sustainable development. *“With the network in the turbulent environment, the goal and the structure of organizations are no longer determined by the superintendent in advance. He must understand the external environment and his own work by the mutual mechanism, besides the simple rule is helpful. With self-organization, the organization can emerge the successful activities and procedures. Moreover it can adapt to the environment, and reach a higher adaptability.”* (Peng, Liu, & Tao, 2009, p. 466). Self-organization or autonomy is of most importance in an Adaptive Organization according to these authors. Self-organization is a good example of an attribute that fosters the adaptability. According to Song, Peko and Sundaram (2017), general drivers of adaptability are leadership, strategy (self-organization for example), networks (how much are you connected with other agents (Peng, Liu, & Tao, 2009) and what kind of network is the organization in), capabilities (for example; flexibility, agility and being lean) and communication (communicating goals and expected outcomes e.g. (Cross, 2013)). These drivers foster the organizational change that helps coping with the environmental changes (adaptiveness) to maintain or increase the fitness of the organization (thus, higher survival rate). When an organization becomes more adaptive it also becomes more agile, proactive, and innovative (Cross, 2013). *“Agility is a dynamic organization design capability that can sense the need for change from both internal and external sources, carry out those changes routinely, and sustain above-average performance”* (Worley & Lawler, 2010, p. 196). Thus, being more agile makes the organization more adaptive; it is a capability of an Adaptive Organization.

To conclude, an Adaptive Organization is an organization that effectively copes with changes in the environment by adjusting/modifying their inputs, processes and outputs. However, the different authors are not in agreement what the drivers of adaptability are and in which subsystems of the organization adjustments are made, therefore a more general outlook is taken for the description of an Adaptive Organization.

Criminal Organization

The second phenomenon which needs clarification is a “Criminal Organization”. Organized crime is an ambiguous and confused concept (Paoli, 2002). It is common to observe that there is no uniform understanding or generally accepted definition (Levi, 1998) (Finckenauer, 2005). *“The literature has produced an endless list of definitions as a result of disciplinary, geographical, regional, cultural and legal differences”* [...]. *“In most of the cases, in fact, the concept has developed inductively, through prototypical case studies, or the adoption of definitions taken from legal frameworks at national and international levels”* [...]. *“If we handle the problem by considering the methodological issues encountered in other fields of research – such as security studies, democratic theory or political mobilization – we would notice that there are no concepts in social sciences whose definitions have not been contested or considered ambiguous. Nonetheless, no one would question the comparability of democracy, for instance, as a concept able to travel across countries, even though many different measurement strategies have been proposed.”* (Sberna, 2014, p. 4). Therefore, it is assumed that the definition of the concept “Criminal Organization” has in some extent the same meaning for researchers around the world, only different measurement strategies are used.

This study will focus on a criminal organization in an economic light, “*criminals commit crimes in order to earn profits, and in order to do so they require a stable organisation*” (Adamoli, Di Nicola, Savona, & Zoffi, 1998, p. 22), which is in line with the trend in criminology where the “Enterprise Model” became dominant (Liddick, 1999). In the Enterprise Model organized crime is viewed as an economic activity that happens to be illegal. The primary assumption underlying the enterprise approach is that organized crime is merely a business activity which exists at the illegal end of the market spectrum (Liddick, 1999). Adamoli et al. (1998) also emphasise the importance of the economic-component in organized crime.

The traditional view towards organized crime embraced by many public officials was based on the “Conspiracy theory”. This theory is also called the alien conspiracy/bureaucracy/corporate model. From this perspective, organized crime is seen as a formal, rigidly structured, and bureaucratic organization. According to Liddick (1999) organized crime within the Conspiracy theory is viewed as a monolithic conspiracy of national proportions that is perpetuated by minority ethnic groups. The Conspiracy theory has been discredited by many researchers (Liddick, 1999). For example, organizational groups have broadened their operational range and have the willingness and ability to work collaboratively (Adamoli, Di Nicola, Savona, & Zoffi, 1998). Another example for the Enterprise Model is from more-recent international crime groups, including the Russian Business Network, South America’s Superzonda, and the worldwide ShadowCrew. These organizations have become especially adept at expropriating legitimate business tactics to create highly efficient global teams and set new best practices in adaptive strategy, supply chain management and the use of incentives (Goodman, 2011). Additionally, Williams and Godson (2002) argue that criminal organizations will behave and think according to rational business needs. Therefore, it is only logical to follow the Enterprise Model in relation to criminal organizations. Besides that, this assumption enables the study to make a comparison with legal organizations on adaptive practices.

According to Barnard (1938), an organization has the following components (1) communication (there are persons able to communicate with each other) (2) willingness to serve (who are willing to contribute action) (3) common purpose (to accomplish a common purpose). Fickenauer (2005) describes criminal organizations as being arrayed across a spectrum based upon having a greater or lesser degree of the following features: “(a) *Criminal sophistication, and in particular the degree of planning is used in carrying out crimes. The persistence across time of these illegal activities and skill and knowledge required in carrying out these crimes;* (b) *Structure, in regard to the existence of a division of labor with clearly defined lines of authority and leadership roles, and if this structure maintains itself over time and over crimes;* (c) *Self-identification, thus the participants in criminal activities see themselves as being members of a defined organization, relying on some specific type of bonding, such as the use of initiation rites, tattoos, blood ties.*” (Finckenauer, 2005, pp. 67-70). To define a “Criminal Organization” within this research, the definition of an organization from Barnard (1938) is used with the addition that a criminal organization has a high criminal sophistication. A high criminal sophistication reassures that the difference between legal organizations and criminal organizations is significant and corporate crime is taken out of the picture. To conclude, a “Criminal Organization” in this study has the following components in accordance with Barnard (1938) and Finckenauer (2005): (1) communication (there are persons able to communicate with each other) (2) willingness to serve (who are willing to contribute action) (3) common purpose (to accomplish a common purpose) (4) high criminal sophistication (planning is used in carrying out crimes also a persistence across time and developed skills and knowledge for carrying out crimes is present).

Method

Since the imported concepts of this study are defined, this chapter will describe the method of the remainder of this study. The first step is to develop a framework for data extraction in the systematic literature review. Second, the systematic literature review is used to find, extract and summarize the interesting insights into the criminal organizations' adaptive processes. The choice to conduct a systematic literature review is later explained. Subsequently, five review articles are selected that contributed to the knowledge about adaptiveness within Business Administration research. Hereafter, the selected articles are summarized in a theoretical model explaining the concepts and process. Followed by translating the theoretical model into a conceptual model to deepen the understanding about the relations between the different concepts. The developed understanding is then used to compare with the insights into the criminal organizations adaptiveness. This comparison leads to the strengthening of the knowledge within Business Administration research about the adaptive process and Adaptive organizations. An overview of the research process is presented in Figure 2.

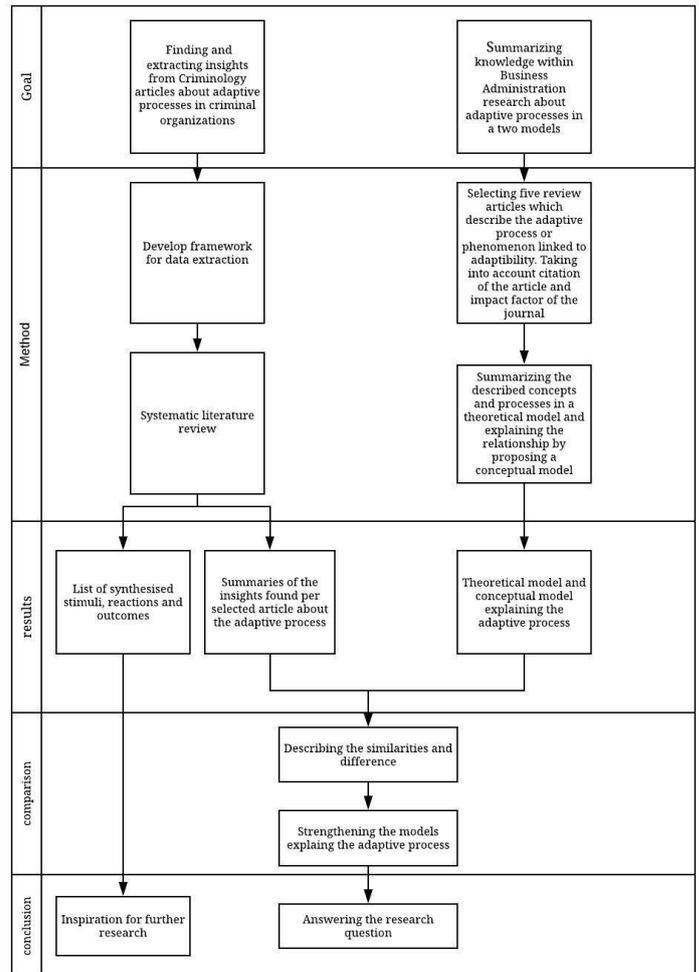


Figure 2 Research process model

Explaining the method decision

To extract the stimuli, reactions and outcomes of adaptability in criminal organizations a systematic literature review is a fitting method. According to Kitchenham and Charters (2007) the need for a systematic review arises when researchers require to summarise information about a phenomenon in a thorough and unbiased manner. As a result, general conclusions about a phenomenon or as a prelude to further research can be drawn (Kitchenham & Charters, 2007). A systematic review has been argued by Mulrow (1994) to provide the most efficient and high-quality method for identifying and evaluating extensive literatures. A systematic review in comparison to a traditional narrative review is a more comprehensive and unbiased search (Tranfield, Denyer, & Smart, 2003). Another benefit of a systematic literature review is that it strengthens the validity and reliability of the study, because the search strategy enables other researches to repeat the steps in the review and come to comparable conclusions. The search strategy also makes sure that the outcomes are concepts that were intended to be measured by the research question, whereas a traditional review had no clear search strategy (Denyer & Neely, 2004) (Thorpe, Gold, Holt, & Clarke, 2006) (Wang & Chugh, 2014) (Pittaway, Robertson, Munir, Denyer, & Neely, 2004). Lastly, a systematic literature review enhances the generalizability of the results by allowing the accumulated knowledge in the field to be systematically synthesized and analysed (Wang & Chugh, 2014).

Although a systematic literature review takes a considerable amount of time and almost always requires perseverance and attention to detail (Tranfield, Denyer, & Smart, 2003), it is the most suitable research technique to summarize the stimuli, practices and outcomes of adaptiveness in criminal organizations, since it is an unbiased, comprehensive, efficient and high quality manner of reviewing current knowledge on a phenomenon (high adaptability in criminal organizations).

Framework for extracting data from Criminology articles

To structure the stimuli, reaction and outcomes of adaptability in criminal organizations, a framework is proposed. This framework can be used in the SLR to structure the data that is found in the articles. The framework will be based on the open-system approach for describing an organization. According to Covington, Jr. (1998) system theory enables a holistic view of human activity and therefore takes into account not only the phenomenon, in this case an organization, but also the environment. Systems theory is therefore useful in providing a framework in which one is able to studies complex variables influencing one another (Covington Jr., 1998). Within this research, the variables are the adjustments made in the criminal organization to cope with the environmental change which makes it an Adaptive Organization. This holistic view enables the study to make first a general overview of the adaptive practices following environmental change in criminal organizations. Due to the differences between Criminology and Business administration a more general approach of mapping the organization and the changes seems suitable.

General system theory was first introduced by Ludwig von Bertalanffy (1950) and Kenneth Boulding (1956) who have written articles that have created the modern basis (Johnson, Kast, & Rosenzweig, 1964). Bertalanffy's (1950) focused on how to use system theory in biology and mathematics but also acknowledged the opportunity to use system theory for organizations as it is perceived as a social system. This interdisciplinary use of the system approach was also mentioned in his later written book (Bertalanffy, 1968). Furthermore, Boulding (1956) described the interdisciplinary possibilities of the system approach. Before the introduction of general system theory, organizations were viewed as closed systems (Katz & Kahn, 1966).

Katz and Kahn (1966) were the first to apply this open system approach on organizations. This approach begins by identifying and mapping the repeated cycles of input, transformation, output and renewed input which compromised the organizational pattern (Katz & Kahn, 1966), they believe in an energetic input-output system with energy streams through the system. For this research we will map the adjustments in input, transformation process and output of criminal organizations to cope with environmental change, this enables the study to extract adaptive practices in a structured manner and later categorize the adjustments in an inductive way.

Katz and Kahn (1978) have developed a model for the interpretation of organizational actions in terms of input, throughput and output (Ramosaj & Berisha, 2014), which is presented in Figure 3. As described in the literature background the stimuli for adaptation is an environmental change internal as well as external, so the stimuli can come from the environment and the feedback stream in this model because both streams ask for modification in the system to cope with the changes in the environment.

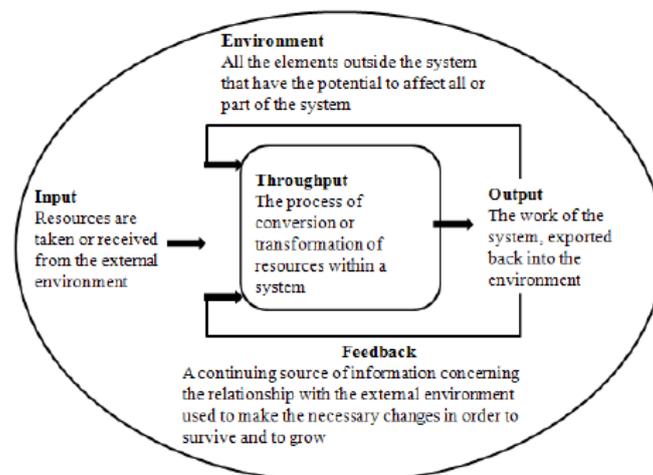


Figure 3: Open-system model. Reprinted from "The Social Psychology of Organizations" by D. Katz & R.L. Kahn, 1978, New York, London and Sydney: John Wiley & Sons, INC. Copyright 1978 by John Wiley & Sons, INC.

Meyer (2010) made a simplified representation based on the theory from Katz and Kahn (1978), this figure was modified for the paper from Meyer and O’Brien-Pallas (2010), see Figure 4. This figure shows the subsystems that are discussed by Katz and Kahn and a general idea of what inputs and outputs of the open-system are. The description of the subsystems give an idea of what kind of processes belong in the throughput of the system. For this study Figure 3 gives a too narrow view of the open-system and the interpretation of inputs and outputs. For example, finance is also a possible input as well as waste and reputation are possible outputs (Paton, 2011). Therefore, the definitions given in Figure 3 for input, throughput and output will be followed. These definitions, give a more general view which is more applicable on criminal organizations and how they are described in the discipline Criminology. The feedback and environment streams will be taken into account as stimuli, as earlier described in this chapter.

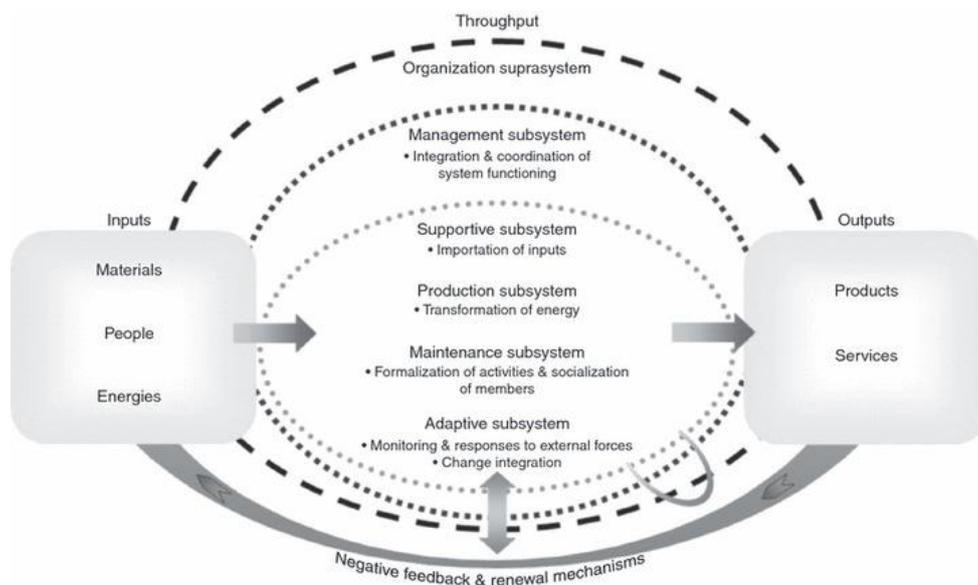


Figure 4: Simplified representation of the organization as an open system based on Katz & Kahn. Reprinted from “Nursing Services Delivery Theory: An open system approach” by R. Meyer & L. O’Brien-Pallas, 2010, *Journal of Advanced Nursing* 66(12), p. 2832. Copyright 2010 by Blackwell Publishing Ltd.

Furthermore, the framework will map the intended outcome(s) of the adjustment made in the system and the realized outcome(s), to better understand the success of the adaptive practice performed. Also, the framework will have a section that summarises relevant information about the selected studies. Figure 5 gives an overview of the framework.

Article information							Stimuli	Reaction			Outcomes:		
Article number	Author(s)	Year of publication	Journal	Title	Objective of the paper	Criminal organization(s) described in the article	Setting	Environmental change and/or negative feedback	Input	Throughput	Output	Intended outcome(s)	Realized outcome(s)
1													
2													
3													

Figure 5: Framework for reviewing adaptiveness in criminal organizations

Explaining the steps of the Systematic Literature Review

Iskandar et al. (2017) introduce a SLR research model following the guidelines from Kitchenham and Charters (2007), Tranfield, Denyer and Smart (2003) and Okoli and Schabram (2010). This research model is presented in Figure 6. Based on the work from Okoli and Schabram (2010) and Kitchenham and Charters (2007) a SLR has several activities; planning (determining the research questions), conducting (search literature, study selection, and data synthesis), and reporting (report writing). This study follows the steps explained in the SLR research model by Iskandar et al. (2017).

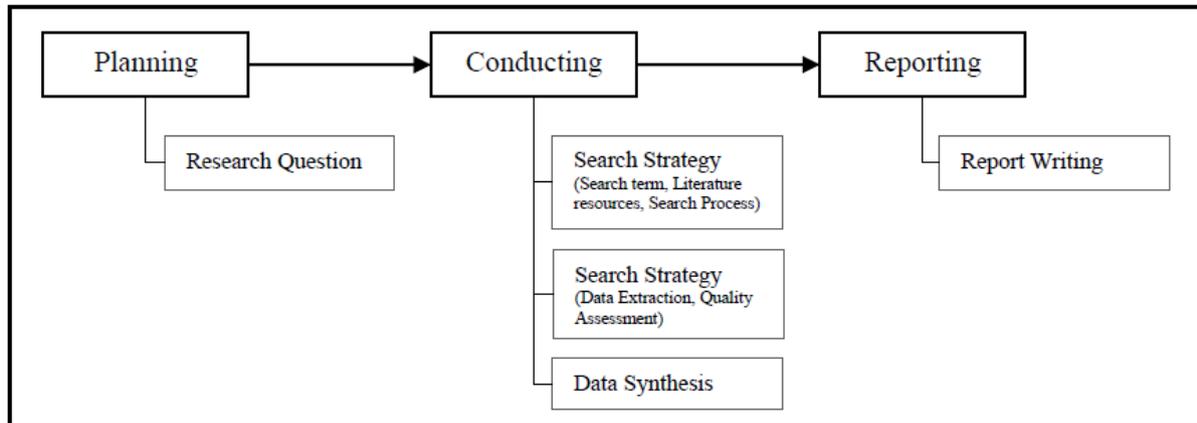


Figure 6: SLR Research Model. Reprinted from “Current Issue on Knowledge Management System for future research: a Systematic Literature Review” by K. Iskandar et al., 2017, *2nd International Conference on Computer Science and Computational Intelligence 2017*, p. 70. Copyright 2017 by Iskandar et al.

Report of the systematic literature review

This report explains every step taken in the systematic literature review. Furthermore, it will introduce the results of the systematic literature review.

Planning

When planning the SLR first the scope of the phenomenon needs to be clear (Tranfield, Denyer, & Smart, 2003). The phenomena are explained and defined in the literature background where information is given about adaptiveness, Adaptive Organization, organizations and criminal organizations. Furthermore, it is argued that in the current trend of defining a criminal organization as an economic force a legal organization is comparable in structure with a criminal organization (Goodman, 2011) (Adamoli, Di Nicola, Savona, & Zoffi, 1998). Following the literature background and the proposed framework the questions for the SLR are formulated;

RQ1: What are stimuli for adaptiveness in criminal organizations?

RQ2: What are reactions that foster adaptiveness in criminal organizations?

RQ3: What are outcomes of adaptiveness in criminal organizations?

Conducting

Conducting activities are the search strategy and data synthesis. Search strategy part 1 comprises of the search terms, literature resources, and search process. The second part of the search strategy focusses on data extraction and quality assessment.

Search Strategy part 1

According to Iskandar et al. (2017) the search term can be defined by derivation from the research question. Hereafter, one needs, to identify the synonyms of the terms to create the search string. The initial search string for the RQ's is the combination of adaptiveness and criminal organizations. Boolean operators (AND and OR) are used in the search string to answer the research question. The search string determined for the research is the following: (adaptive OR adapt OR adaptiveness OR adaptation OR adaptability OR "adaptive organization" OR "adaptive organisation" OR AO OR adjust OR adjusting

OR adjustability OR modify OR modifying OR modified OR "organizational change" OR flexibility OR flexible OR agile OR agility OR resilience OR resilient) AND ("criminal organisation" OR "criminal organisations" OR "criminal organizations" OR "criminal organization" OR "criminal firm" OR "criminal firms" OR "criminal company" OR "criminal companies" OR "criminal cooperation" OR "criminal cooperations" OR "criminal enterprise" OR "criminal enterprises" OR "organized crime"). Using the combination of adaptiveness and criminal organisation, followed by synonyms of both phenomena.

The review refers to three electronic database resources including; Scopus, SAGE journals, and Web of Science. The articles are extracted by advanced search within the title, abstract and keywords for the terms in the search string.

This process is different for the three search databases;

- Scopus: TITLE-ABS-KEY('search string') is added to the search string, which enables Scopus to scan the title, abstract and keywords for the search terms.
- SAGE journals: Title, abstract and keywords were searched separately for the search terms and after these combinations were made to include everything (for example criminal organizations in the title and adaptability in the abstract).
- Web of Science: A 'topic search' was done, this includes title, abstract, keywords and keywords plus.

In total, N:288 articles were found: Scopus N:172, SAGE journals N:14 and Web of Science N:102. Unfortunately, not all articles were available with the 'student credentials utwente'. For Scopus N:59 articles are not available, for SAGE journals N:1, and for Web of Science N:20, a list of the unavailable articles is provided in Appendix A. The total of available articles is N:208 (Scopus N:113, Web of Science N:82 and SAGE journals N:13), after deleting all duplicates N:155 articles remain to be reviewed (studies found). The second stage of the search strategy is to read the abstract when it describes stimuli, reactions or outcomes of environmental change/adaptability or indicates it will be described (matching one or more of the RQ's), the article will be included in the next step. N:57 articles remain and are candidate studies. The candidate studies are read in detail, when the articles have valuable information which answers one or more of the RQ's it is selected to be included in this research. The total number of selected studies is N: 32. An overview of the steps can be found in Figure 7.

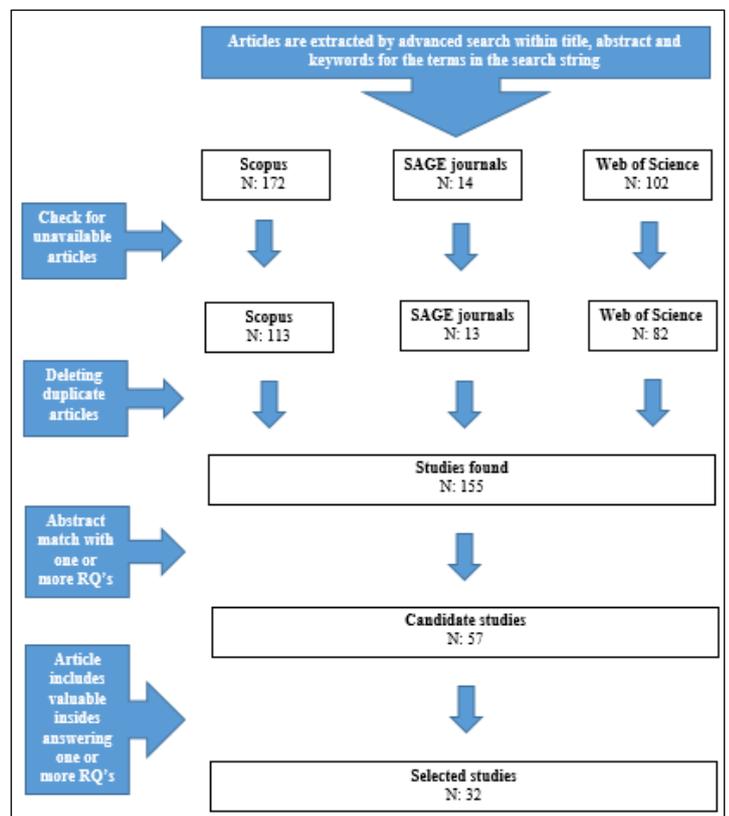


Figure 7: Steps for selecting articles and data extraction

Search strategy part 2

The data extraction method and the quality assessment are described in this part. For this research, data extraction from the selected articles means filling in the earlier proposed framework for reviewing adaptiveness in criminal organizations. These results are raw material which are later transformed in categories and summaries per article. The following data is extracted, see Table 1.

Table 1 Raw data in framework

Article information								Stimuli	Reaction			Outcomes	
Article number	Author(s)	Year of publication	Journal	Title	Objective of the paper	Criminal organization(s) described in the article	Setting	Environmental change and/ or negative feedback	Input	Throughput	Output	Intended outcome(s)	Realized outcome(s)
1	Bottazzi & Me.	(2015)	Communications in Computer and Information Science	A Survey on Financial Botnets Threat	The objective is to describe by Zeus and other botnet examples, the revenue model and its related costs as cybercrime, focusing on the concerning evolution of this threat and proposing some strategies to cope with it	Organized crime in general	-World -Cyber crime	Increasing demand for malware customization and buying/renting services	Money from renters and buyers of tools, infrastructure and services	Shifting of business model to 'Cybercrime as a service'. Mixing already existing techniques and strategies for customization. Using their technical expertise as a service for other organizations	Services	Maximize return on effort and increase profit	
2	Arsovska & Temple	(2016)	Crime, Law and Social Change	Adaptation, rationality, and advancement: ethnic Albanian organized crime in New York City	The objective of this research is to understand the expansion and advancement of ethnic Albanian organized crime groups in New York City	Albanian organized crime groups in New York	-New York → World -Drugs supply	RICO cases enforced against the Lucchese and Gambino crime families illustrated that hierarchical structures were vulnerable to identification and infiltration		Albanian organized groups diversified into multiple criminal ventures (fluid leadership) with various other ethnic groups and started networking more which established international structures and influence within government. Also, through time they were flexible in their core activities moving from ATM frauds, burglary, high value car theft, money laundering and medium level drug supply towards being marijuana suppliers and facilitators	Higher authority Higher profits	Harder to identify and infiltrate by police officers	Increasing international power and profits
3	Densley, McLean, Deuchar, Harding	(2018)	International Journal of Drug Policy	An altered state? Emergent changes to illicit drug markets and distribution networks in Scotland	Constructing an overview of various aspects of illicit drug distribution to further inform police and practitioners about the evolving nature of drug distribution in Scotland.	Glasgow drug gangs	Scottish drug market	Increased law enforcement scrutiny and more successful police intervention, increasing competition, globalisation, digitization, internet, rise in interest in body image, market saturation in big cities.	Risk mitigation by multiple importers. Sourcing profitable drugs that carry lesser punishment	Risk mitigation by modifications to distribution networks with 24h front door delivery and 'Digital dealing' (Drug dealing via online apps and social media platforms). Commuting to provincial markets	Market diversification of both product and demand (Selling steroids and tanning injections for other customers than 'junk balls')	Increasing drug sales	Diversification in sources, products and markets. Decreased risks, increased sales.
4	Shukla, Crump, Chrisco	(2012)	International Journal of Drug Policy	An evolving problem: Methamphetamine production and trafficking in the United States	Analyze the dynamic production and supply of methamphetamine in the U.S.	Mexican transnational criminal organizations	- Mexico/ U.S. - Methamphetamine market	Restricting access on precursor chemicals.	Obtain precursor chemicals from South Asia	New production processes with other chemicals which are easier to obtain. Production in Mexico. Centralizing production.		Continue supply of methamphetamine. Yielding more profit	Continued supply. Enrichment of powerful drug trafficking organizations

(continued)

Table 1 (continued)

Article information								Stimuli	Reaction			Outcomes	
Article number	Author(s)	Year of publication	Journal	Title	Objective of the paper	Criminal organization(s) described in the article	Setting	Environmental change and/ or negative feedback	Input	Throughput	Output	Intended outcome(s)	Realized outcome(s)
5	Zhilla & Lamallari	(2015)	Trends in Organized Crime	Albanian criminal groups	Describing and defining Albanian criminal groups	Albanian criminal groups	Albania, 2005-2014			Criminal groups forming criminal networks while preserving group autonomy. Dissemination of drug/money transport.		Ensuring continuity	A criminal network which is more efficient, flexible, harder to discover and attack
6	Scaglione	(2016)	Global Crime	Cosa Nostra and Camorra: illegal activities and organisational structures	Develop an introductory reflection about the most recent trends of the Cosa Nostra and the Camorra	Cosa Nostra	Sicily, Italy, 1996-2006	Arrests of male members at the top.		Wives and daughters are fundamentally involved in a wide range of activities.		Guarantee continuity within the families.	
7	Duijn & Sloot	(2015)	Digital Investigation	From data to disruption	Discuss the opportunities and the limitations of a data-driven approach and its implications.	Organized crime in general	- World - Criminal networks	The rise of the Darknet		Anonymously selling illegal commodities in large quantities to worldwide online marketplaces		Increase sales	
8	Gilbreath	(2015)	Geographical Review	From Soda Bottles to Super Labs: An Analysis of North America's Dual Methamphetamine Production Networks	Analyze the organization and operation of small toxic labs and Mexican drug-trafficking organizations in the U.S.	Mexican drug-trafficking organizations	-Mexico/ U.S. - Methamphetamine market	New regulations (CMEA/CDTA) to limit supply of chemicals Indication that precursor chemicals are scheduled to go off the market.	'Smurfing' (Going from store to store to buy from each the permissible amount). Supply of unregulated forms of precursor chemicals. Seeking other precursors (Planning for the scarcity of current precursors)	Moving production to Mexico. Testing new production processes with other precursors.		Continue and increase supply	Increasing dominance of DMTO meth in the U.S.
9	Hall, Koenraadt, Antonopoulos	(2017)	Trends in Organized Crime	Illicit pharmaceutical networks in Europe: organising the illicit medicine market in the United Kingdom and the Netherlands	Demonstrate that actors and networks involved in the trade are highly flexible and complex structures that straddle the categories of licit and illicit, online and offline, and global and local	Illicit pharmaceutical networks	United Kingdom and the Netherlands	High demand for various illicit drugs and cheaper medicines or medical supplements Increasingly innovative and accessible ICT.		Online illicit medicine markets (Online pharmacies, business-to-business websites, social media sites, darknets).	Introduction of new pharmaceutical products. Wide product range (illicit sedatives, opioid analgesics, antibiotics, lifestyle medicines, psychiatric drugs, fertility drugs and stimulants).		Flourishing illicit medicine market

(continued)

Table 1 (continued)

Article information								Stimuli	Reaction			Outcomes	
Article number	Author(s)	Year of publication	Journal	Title	Objective of the paper	Criminal organization(s) described in the article	Setting	Environmental change and/or negative feedback	Input	Throughput	Output	Intended outcome(s)	Realized outcome(s)
10	Spapens	(2011)	Global Crime	Interaction between criminal groups and law enforcement: the case of ecstasy in the Netherlands	Examining the behaviour of criminal groups producing and trafficking ecstasy in the Netherlands.	1. the Caviar Network 2,4,5. Ecstasy producing criminal groups 3. A ecstasy producing criminal group	1. Montreal 2,3,4,5. The Netherlands 1997-2006	1. Increased law enforcement pressure. 2. New police investigative methods. 3. Police apprehended their business partners in the U.S. 4. Apprehension of drug couriers. 5. Discovery of surveillance		1. Replacement of network members and changes in the structure of the network. 2. Disperse different stages of the process of ecstasy production over different locations. Look for communication devices that the police are unable to tap. Use different vehicles/cell phones. Early adoption of cell phones, pre-paid sim cards, VoIP, GPS jammers. 4. Alter smuggling routes. 5. Immediately stopping all illegal activities.	3. Started to smuggle pills to Australia	2,3,4,5. Reduce the impact of accidental or deliberate discovery	1. Criminal activity largely continued. 5. Still getting arrested when resuming illegal activities.
11	D'Andria	(2011)	Policy Studies	Investment strategies of criminal organisations	The objective is to obtain guidelines to better target public spending against organised crime, and to evaluate how effective a rise in generic police activity may prove to be against such criminal behaviours	Organized crime in general	- World - Financial crime	Strengthening of anti-money laundering rules		Changing the investment strategies, by shifting their investments between legal and illegal assets without facing transaction costs. Using the mobility of electronic tools and gaps in regulation	Stable or growing reserves and capital	Still laundering money for reserves and capital	Adaptable investment portfolio which stays ahead of changing regulations
12	Telesetsky	(2015)	Ecology Law Quarterly	Laundering Fish in the Global Undercurrents: Illegal, Unreported, and Unregulated Fishing and Transnational Organized Crime	Describing Illegal Unreported and Unregulated (IUU) fishing and the transnational organized crime practicing IUU fishing. Proposing suggestions to strengthen the capacity of domestic government networks.	Transnational organized crime practicing IUU fishing.	- World - IUU fishing	A lack of effective governance Ports close due to surveillance. Vessels are included on a IUU list		Vessels redeploy to another port Vessels 'reflag'/'flag-hop' (Changing the flag state of the vessel in order to dodge the IUU list)		Increasing profit while remaining undetected	

(continued)

Table 1 (continued)

Article information								Stimuli	Reaction			Outcomes	
Article number	Author(s)	Year of publication	Journal	Title	Objective of the paper	Criminal organization(s) described in the article	Setting	Environmental change and/ or negative feedback	Input	Throughput	Output	Intended outcome(s)	Realized outcome(s)
13	Rajamäki & Viitanen	(2012)	6th GNSS Vulnerabilities and Solutions Conference	Law enforcement authorities' special requirements for GNSS	Describe the operational and technological challenges for law enforcement authorities with regard to the global navigation satellite systems.	Organized crime in general	- Europe - Technological solutions against criminal organizations	Law enforcement authorities constantly seeking new technological recording, retrieving and monitoring solutions		New electronic counter-surveillance, jamming and constant changes in behaviour		Preventing eavesdropping or physical surveillance	
14	Martynov & Moloeznik	(2017)	MGIMO Review of International Relations	Mexico on a Criminal Traffic Scenario	Describe the problem of organized crime in modern Mexico. Propose a new approach to the problem of organized crime in Mexico.	Mexican criminal cartels	- U.S. and Mexico 1. in the second half of the 1920's and early 1930's. 2. Present	1. Alcohol prohibition in the U.S. 2. Demand of children originating from Central and South America countries to cross the US border.		1. Smuggling of alcohol from Mexico to the U.S. 2. 'Juvenile traffic' (Smuggling children cross the border without parents and documents)	Increasing profit		
15	Rajamäki & Kämpfi	(2013)	2013 International Conference on Information Networking	Mobile Communications Challenges to Cross-border Tracking Operations Carried out by Law Enforcement Authorities		Organized crime in general	- Europe - Technological solutions against criminal organizations	Law enforcement authorities constantly seeking new technological recording, retrieving and monitoring solutions		Start using advanced detection and signal jamming technologies, constant changes in behaviour		Preventing eavesdropping or physical surveillance	
16	Lambrechts & Goga	(2016)	Politikon South African Journal of Political Studies	Money and Marginalisation : The Lost War Against Abalone Poaching in South Africa	This article investigates the link between state capacity and the abalone poaching industry in South Africa.	Abalone poaching industry	- South Africa - Post-apartheid society	- Police arrest one or two of the big players - After effects of apartheid policies, such as economic, social and political marginalisation, continue to this day (lack of development)		- They rely on flexibility and networking to continue to conduct their crimes - Increasing abalone poaching activities	Profit	Illicit industry of abalone poaching continues to grow.	

(continued)

Table 1 (continued)

Article information								Stimuli	Reaction			Outcomes	
Article number	Author(s)	Year of publication	Journal	Title	Objective of the paper	Criminal organization(s) described in the article	Setting	Environmental change and/ or negative feedback	Input	Throughput	Output	Intended outcome(s)	Realized outcome(s)
17	Glazkova, Grudinina, Mironova, Burmistrov, Prudnikov	(2016)	Man In India	Network-based organized criminal groups and associations: Conceptualization	Analyzing new tendencies in formation of organized crime structures and their transition from hierarchical to network forms, in order to ensure efficiency of criminal law standards.	Development of organized crime	- Russia since late 1980's	Globalization, new information and communication technology and increasing competition.		- The management began transforming from single-handed to collective control structures - A significant management component was shifted to computerization	- Solving more complex problems - Faster interaction of criminal group elements		- Overcoming the limited capacity of one individual in solving complex problems. - Accelerating the process of interaction of the criminal group elements
18	Xia	(2008)	Journal of Contemporary China	Organizational Formations of Organized Crime in China: perspectives from the state, markets, and networks	Offering a classification of organizational formations of organized crime in today's China	(Structures of) organized crime in general	- China	Overseas capitalist economy and local political system. Desire to be safer from detection (negative feedback).	Information from within the government.	Triads turn into business-like entities or adopt the form of a modern political party Adopting a network form of organization Infiltration in governments.		Power and influence. Easier coordination and not getting detected. Survival.	Both flexible and effective organizations with high power and influence.
19	Bequai	(2001)	Computers & Security	Organized Crime Goes Cyber	Description of how American organized crime adapted to cyberspace	- Mafia - Organized crime in general	- America - Cyber illicit trade, financial frauds, gambling, blackmail and extortion/	Invention of the Internet, cell phones, electronic money/banking, e-commerce. Upcoming high-tech sectors demanding fast capital injections. Increasing amount of sensitive data on the internet. Increase of brokers with drug and gambling problems	Use of internet and technology. Retrieving sensitive data from cyberspace. Access to financial data, client accounts and insider information. Loansharking in Silicon Valley and Wall Street (replacing Hollywood and Las Vegas)	Fast employment of technology to assist their endeavours. E-commerce to sell illicit drugs, stolen goods and other valuables. Carrying out embezzlements electronically and overseas. Trading in securities. Counterfeit electronic money. Internet gambling.	Increase and diversification of services (E-commerce, electronic embezzlements/counterfeits, trading)	Exert control and power. Profit. Evade detection.	Conversion to a formidable opponent for the law enforcement.

(continued)

Table 1 (continued)

Article information								Stimuli	Reaction			Outcomes	
Article number	Author(s)	Year of publication	Journal	Title	Objective of the paper	Criminal organization(s) described in the article	Setting	Environmental change and/ or negative feedback	Input	Throughput	Output	Intended outcome(s)	Realized outcome(s)
20	Ruth, Matusitz, and Wan	(2015)	<i>Social Change</i>	<i>Understanding Predatory Organised Crime through Network Governance Theory</i>	<i>The objective of this article is twofold: first, to examine the meaning of predatory organised crime (POC), which is defined according to the network governance theory, and, second, to identify the key elements that POC groups need in order to start, grow and expand</i>	<i>Predatory organized crime</i>	<i>-failing nation-states -POC networks</i>	<i>Colonial rule dwindled and was replaced by economic dominance over small nation-states by way of debt. The nation-states borrowed and owed vast amounts of money to ruling global powers. This began a trajectory towards failure and left a leadership vacuum within the failed nation-states. Also globalisation lead to fast changing global networks.</i>	<i>Increase in labour needed</i>	<i>Expanded businesses at the expense of weak governments. Penetrating markets in neighbour failed nation-states and exploiting low costs for labour and trafficking. Crime lords employed workers who can think on their feet and adroitly adjust to swift change, because criminal leaders retain the right to reduce the workforce at any instance for the benefit of the criminal Network → they move from a more bureaucratic structure towards less perceptible forms of control. Autonomy for employees stays low. Employees need to change job skill sets throughout their illegal careers in favour of flexibility</i>	<i>Additional products and services</i>	<i>More profit and power</i>	<i>High interconnected power</i>
21	Lavorgna & Sergi	(2014)	<i>International journal of Law, Crime and Justice</i>	<i>Types of organised crime in Italy. The multifaceted spectrum of Italian criminal associations and their different attitudes in the financial crisis and in the use of Internet technologies</i>	<i>This paper discusses the opportunity to differentiate four different criminological types of organised crime in Italy by drawing on a subset of case studies and interviews to law enforcement officers and experts collected for two on-going research projects.</i>	<i>Mafia and network groups</i>	<i>-Italy -since 2008</i>	<i>Economic crisis</i>		<i>Increasing or beginning with counterfeiting → because of the low risks and high demand for cheap products (In collaboration with other crime groups). Increasing or beginning with usury as a response to higher demands for loans. Adding and increasing core business due to the change in the environment. New forms of usury are developed for example daily usury. To serve a wider range of customers</i>	<i>Additional products and services</i>	<i>Maximizing profit</i>	<i>Higher profits</i>

(continued)

Table 1 (continued)

Article information								Stimuli	Reaction			Outcomes	
Article number	Author(s)	Year of publication	Journal	Title	Objective of the paper	Criminal organization(s) described in the article	Setting	Environmental change and/ or negative feedback	Input	Throughput	Output	Intended outcome(s)	Realized outcome(s)
22	Hughes & Denisova	(2001)	Trends in Organized Crime	The transnational political criminal nexus of trafficking in women from Ukraine	Throughout the 1990s, tens of thousands of Ukrainian women were trafficked into prostitution. This phenomenon was researched by collecting data through interviews and surveys in Ukraine, media reports, governmental and non-governmental (NGO) reports on trafficking, and participant observation in conferences.	Criminal organizations in Ukraine	-Ukraine -Human trafficking and prostitution	High unemployment rates		In the earlier years, victims were recruited from the cities, but more recently, the recruiters are moving into the countryside to small towns and villages to recruit women for work abroad. In agricultural areas, often there are no wages at all. The pimps often use former victims of trafficking to recruit new victims. Friends and acquaintances that return from abroad with stories of how much money they made recruit women for pimps.	Increase in services	More women to work in prostitution	Higher profits
23	Basu	(2013)	Journal of Transportation Security	The role of transnational smuggling operations in illicit supply chains	The purpose of this paper is to analyze the role of international smuggling operations within illicit supply chains	-Medellin cartel -Sinaloa -Los Zetas -Tijuana -La Familia	-Colombia -Mexico -US -drug trafficking	During the late 1990s, drug interdiction rates increased and key members of drugs cartels like Pablo Escobar and Carlos Lehder were captured or killed		Mexican Cartels took over the ownership of product an distribution of narcotics from Colombian drug traffickers. They changed the smuggling routes to utilize Mexican transshipment hubs into the U.S. A new supply chain for the narcotics was shaped. Smuggling routes are more often changed to reduce the risk of detection	Increase in different products	Power	Adaptive supply chain and power for the cartels
24	Dua & Menkhaws	(2012)	Journal of International Criminal Justice	The Context of Contemporary Piracy	In this article, they argue that external efforts to thwart piracy have been only partially successful to date. Global counter-piracy initiatives have made piracy more difficult, but still very much worth the effort	-Pirates	-Asia -Africa -around 2007	In Southeast Asia, a strong commitment by regional governments to combat piracy	Shift in financial backers	Moving business to the coast of Somalia. Somalia was chosen as an economy of protection were penetration and collaboration with government was possible	More incidents → increase in money	Continuity	Continuity

(continued)

Table 1 (continued)

Article information								Stimuli	Reaction			Outcomes	
Article number	Author(s)	Year of publication	Journal	Title	Objective of the paper	Criminal organization(s) described in the article	Setting	Environmental change and/ or negative feedback	Input	Throughput	Output	Intended outcome(s)	Realized outcome(s)
25	Kemey	(2007)	<i>Global Crime</i>	<i>The Architecture of Drug Trafficking: Network Forms of Organisation in the Colombian Cocaine Trade</i>	<i>Supporting the interpretation that instead of being run by a handful of massive, price-fixing 'cartels', the Colombian drug trade, then and now, was characterized by a fluid social system where flexible exchange networks expanded and retracted according to market opportunities and regulatory constraints</i>	<i>Medellin cartel</i>	<i>-Colombia -Peru -Mexico -Bolivia -drugs trafficking</i>	<i>Pablo Escobar, surrendered to Colombian officials in 1990</i>		<i>Leader in prison is safer than as a refugee. Due to their sophisticated communications Network he was able to lead the organization out of the prison. By pay phones and influence in the prison</i>		<i>continuity</i>	<i>Continuity</i>
26	<i>Tzvetkova, Pardal, Disley, Rena, Talic & Forberger</i>	(2016)	<i>International Journal of Drug Policy</i>	<i>Strategies for a risky business: How drug dealers manage customers, suppliers and competitors in Italy, Slovenia and Germany</i>	<i>A growing body of literature aims to improve understanding of the operations of drug trafficking markets through conducting interviews with dealers and traffickers. Insight into how these individuals conduct business can provide evidence to inform the efforts by policy makers, law enforcement and practitioners to disrupt illicit markets. This paper aims to contribute to this evidence base by extending the number of European countries in which interviews have been conducted with incarcerated drug dealers and traffickers.</i>	<i>Dealers</i>	<i>-Italy -Slovenia -Germany -Drugs trafficking</i>	<i>Supply of bad quality drugs</i>	<i>Returning or not buying a bad quality product. Possible by using more than one regular supplier which keeps inflows stable</i>			<i>Keeping the trust of customers → reputation</i>	<i>Flexible and adaptive market</i>

(continued)

Table 1 (continued)

Article information								Stimuli	Reaction			Outcomes	
Article number	Author(s)	Year of publication	Journal	Title	Objective of the paper	Criminal organization(s) described in the article	Setting	Environmental change and/ or negative feedback	Input	Throughput	Output	Intended outcome(s)	Realized outcome(s)
27	Leuprecht, C., Aulthouse, A., Walther, O.	(2016)	Police Practice and Research	The puzzling resilience of transnational organized criminal networks	Analyze why the Shower Posse is so difficult to dismantle and describe the network structure of the organization.	Shower Posse	- Drug trafficking in Jamaica, Panama, New York and Toronto.	Jamaican elections JLP extradited coke due to international pressure		Separating operations by creating 'franchises' in Toronto and New York. Decentralization towards a hub-and-spoke network with a small number of brokers as hubs.	Financially supporting the Jamaican Labour Party (JLP)	Continuity. Headquarters safe from law enforcement. Reducing vulnerability to law enforcement.	Free reign to operate.
28	Duijn, P.A.C., Kashirin, V., Sloom, P.M.A.	(2014)	Scientific Reports	The Relative Ineffectiveness of Criminal Network Disruption	Modelling the behavior of Dutch cannabis networks to analyze the effectiveness of law enforcement operations.	Dutch cannabis networks	- Cannabis networks - The Netherlands	Loses of 'human capital'		'Redundancy' in the network enables to take over tasks of lost members. The diversity of different ties allows the network to function. Also, strong ties offer reciprocated trust, which is essential within the uncertain and hostile criminal environment. Replacements with a reliable reputation are often found in short social distances. 'Non-redundancy' and 'compartmentalization' to prevent leadership/complete network exposure.		Continuity, not getting exposed.	Often a more effective, but less secure network → better people to perform the task, but some exposure necessary to find these replacements.
29	Calderoni, F.	(2012)	Crime Law Soc Change	The structure of drug trafficking mafias: the 'Ndrangheta and cocaine	Analyzing the social organization and structure of two drug trafficking groups.	Two drug trafficking mafia groups belonging to the 'Ndrangheta (mafia from Calabria)	- Italy - Drug trafficking	Removal of central individuals in the networks		Replaced individuals with little effort → The most important individuals were not the most central in the network, this strategic positioning minimized risks and enables effective management.		Continuity	Effective management of smuggling operations. Minimized risks of leadership exposure.

(continued)

Table 1 (continued)

Article information								Stimuli	Reaction			Outcomes		
Article number	Author(s)	Year of publication	Journal	Title	Objective of the paper	Criminal organization(s) described in the article	Setting	Environmental change and/or negative feedback	Input	Throughput	Output	Intended outcome(s)	Realized outcome(s)	
30	Eilstrup-Sangiovanni, M., Jones, C.	(2008)	International Security	Assessing the Dangers of Illicit Networks: Why al-Qaida May Be Less Threatening Than Many Think	Probe deeper into the consequences of the network structure and the difficulty of states in combating network-based criminal organizations.	Criminal networks in general	- World	Advances in ICT Globalization of transportation, communication and finance.		<ul style="list-style-type: none"> - The decentralized yet tightly interconnected nature of networks means communication can flow unhindered from one part of the network to another, enabling actors to acquire, process, and act on local information fast. - Information flows between trustworthy people rather than the chain of command, which makes information more reliable. - A loose organizational structure allows to add freely new links to adapt to new requirements or problems. - As information flows and transfers of funds become quicker, cheaper, and more secure, the construction of complicated networked organizations over long distances becomes more feasible. - Transnational, networked actors use the internet to raise funds, coordinate activities, and recruit new members. - Easily redefinable network boundaries can adapt rapidly to changes and prevent locking in ineffective relationships. - Lack of physical infrastructure enables networks to relocate operations and changing transportation routes. - The personal nature of network relationships (often based on ties of kinship, loyalty, and trust) ensure that networks are resistant to temptations of voice and exit. - Minimal interaction and dependency among individuals means that state authorities cannot use a compromised unit to roll up an entire network. - 'Redundancy', the existence of many structurally equivalent individuals, means that a lot of individuals can be removed without causing a network to fragment → Bypass links can be established to continue business. - A flat decision-making structure allows ideas and methods to be tested more readily, without having to wait for approval from above, thereby allowing wider sets of lessons to be learned - By promoting rapid transfers of information, it is said, networks allow participants to learn quickly about new events, opportunities, and threats. - Networks also encourage learning through experimentation. 			Continuity	<ul style="list-style-type: none"> - Efficiency of information and communication, and hence ability to learn, often comes at the expense of covertness and security. - Expansion through recruitment based on informal weak ties may enhance a network's potential impact, but it can also reduce trust and security, trigger internal strife and intensify collective-action problems. - A more decentralized structure may often be worse at dealing with complex tasks.

(continued)

Table 1 (continued)

Article information								Stimuli	Reaction			Outcomes	
Article number	Author(s)	Year of publication	Journal	Title	Objective of the paper	Criminal organization(s) described in the article	Setting	Environmental change and/ or negative feedback	Input	Throughput	Output	Intended outcome(s)	Realized outcome(s)
31	Jones, N.P.	(2018)	Journal of Strategic Security	The Strategic Implications of the <i>Cártel de Jalisco Nueva Generación</i>	Exploring the strategic/security implications of the rise of the CJNG in Mexico by providing an in-depth historical case study.	<i>Cártel de Jalisco Nueva Generación (CJNG)</i>	- Mexico - 2010-present - Mainly drug trafficking	US and Mexican kingpin strikes which fragmented existing OCGs. Geographic location near pacific ports. <i>La Familia Michoacana</i> marketed itself as protectors of people. <i>Los Cuinis</i> had sophisticated financial networks. <i>Guadalajara</i> and <i>Flores</i> were excellent money launderers. <i>La Linea</i> was an armed wing of the <i>Carillo Fuentes Organization</i> .	Import chemical precursors for methamphetamine from pacific ports.	Adopt and ally with independent local cells. Including local groups with specific skills. The CJNG also copied working strategies of groups, like the marketing of protectors as <i>La Familia Michoacana</i> .	Ship methamphetamine to the European and Asian markets where profits were higher.	Increase profit	Expanding criminal network
32	Daniel, J.	(2015)	Central Europe an Journal of International and Security Studies	Criminal Governance and Insurgency: The Rio de Janeiro Experience	Addressing the issue of governance by non-state armed groups and the insurgents which establish a resilient system of control for criminal groups.	Criminal groups and criminal insurgency in Brazil	- Brazil - Criminal insurgency	The inability of Brazil to effectively maintain security, law enforcement and provide basic public services and goods in certain areas.		Applying insurgency to gain more control over a territory to carve out space for their illegal business activities.		Operate free of state influence. Continuity of drug related activities.	

Table 1 Raw data in framework

The quality assessment normally includes a criteria list for the methods used to get results in the selected studies (Tranfield, Denyer, & Smart, 2003). However, this research is not focusing on the results of the selected studies, it focuses on the descriptions given in the article about criminal organizations and how they deal with the adaptive process. Mostly, these insights originate from interviews and police reports which makes it impossible to validate the source and retrieving method completely due to confidence boundaries of the information used. Therefore, the quality criteria are focussed on the insights that are extracted from the article, the insides quality and the concern that the definition of a criminal organization is homogenous. All insights used were referenced correctly to conducted interviews, police reports and earlier studies, which was the main quality criteria for the selected studies. Furthermore all selected studies had a concrete description of what a criminal organization/ organized crime entailed in their study, and was fitting with the description used in this research. The two described criteria were used to find high quality insights from the Criminology articles.

Data synthesis

Data synthesis in most cases is executed by using a meta-analysis (Tranfield, Denyer, & Smart, 2003). Tranfield, Denyer and Smart (2003) describe the following about management research; *“Researchers are less concerned with the effectiveness of certain classes of intervention, and rather more concerned with understanding organizations and management processes. Therefore, it is unlikely that meta-analysis will be appropriate in management research.”* (Tranfield, Denyer, & Smart, 2003, p. 217). Indeed, this research is interested in the process of adaptiveness in criminal organizations and therefore a meta-analysis provides not the most optimal fit. Another point to take into consideration is that most selected studies make use of qualitative methods. Meta-synthesis is a fitting approach because it is not limited by synthesizing strictly comparable studies. It is, done by constructing interpretations and revealing the analogies between accounts (Noblit & Hare, 1988). In a meta-ethnography, strongly related to meta-synthesis, which is analogous with a grounded theory approach, open coding and categories emerging from the data are extracted by making constant comparison between individual accounts (Beck, 2001). The categories are linked interpretively to provide a holistic account of the whole phenomenon (Suri, 1999). This method will be followed to get a holistic view on the insides found in the raw data of the SLR about adaptiveness in criminal organizations. All insides are generalized and clustered into categories, by comparing all individual accounts. The categories that are found in the stimuli, reactions and outcomes can be an inspiration for further research. The specific categories and components can be found in Appendix B

Results of the Systematic Literature Review

Besides data synthesis to extract categories another method is used to display the insights into adaptability in criminal organizations. For every selected study a short summary of the adaptive process is given. These summaries give a better feel for the process and not only disconnected categories summing up generalized findings. The summaries are numbered accordingly with the framework and are used to compare to the created model based on existing knowledge of adaptiveness in Business Administration research.

Summaries of the selected studies from Criminology

1. Bottazzi and Me

Cybercrime is a global multibillion dollar growth industry, which is moving huge amounts of capitals from the system operating within the law to the criminal systems operating outside the law. Different transnational actors are located in the different circles of the crime supply chain. Increasing availability of powerful internet connectivity and hosts, wide spread unsecured targets, the increasing demand for malware customization and buying or renting these services creates lots of opportunities for organized crime groups. Criminal groups are shifting their business model to 'Cybercrime as a service'. Mixing already existing techniques and strategies for customization. Using their technical expertise as a service for other organizations. Hence, they receive money from renters and buyers of tools, infrastructure and services. As a result, organized crime groups are maximizing their return on efforts and increase profit.

2. Arsovska and Temple

Albanian organized crime groups are depicted as dangerous due to their ability to overcome obstacles, their tendency to use violence and they are evolved from simple service providers to working within the highest levels of international organized crime. RICO cases enforced against the Lucchese and Gambino crime families threatened the hierarchical structures, which turned out to be vulnerable to identification and infiltration. They learned from threatening law enforcement activities to develop decentralized criminal ventures (fluid leadership) with various other ethnic groups and were often involved in multiple criminal activities. To some extent, Albanian crime groups specialize in a specific part of a criminal network, such as transport, and often act as subcontractors in international smuggling networks. They started networking more through the years which established international structures and influence within government. Through time they were flexible in their core activities; Moving from ATM frauds, burglary, high value car theft, money laundering and medium level drug supply towards being marijuana suppliers and facilitators. They managed to gain higher authority, increasing their international power and profits, while also being harder to identify and infiltrate by police officers.

3. Densley, McLean, Deuchar and Harding

Illicit drug distribution in Scotland has been largely excluded from the conversation. The level of supply, drug types and actors involved only add to confusion. Increasing competition, market saturation in big cities and the tendency to increase profits, has Glasgow led gangs to start commuting to provincial markets to expand their business. Technological developments and the through internet increasing interest in body image creates opportunities for Glasgow drug gangs. They started to provide 24h front door delivery and digital dealing (Drug dealing via online apps and social media platforms). Gangs diversified their product range and customer base by selling steroids and tanning injections instead of drugs. These products are more profitable and carry lesser punishments. Also, the increased law enforcement scrutiny and more successful police intervention are threatening the illicit drug market. These factors also promoted products with lesser punishments and lower risk digital dealing. On top of that, Glasgow drug gangs mitigated their risks by sourcing from multiple importers. All in all, Scottish drug gangs have managed to increase their sales while decreasing risks.

4. Shukla, Crump and Chrisco

Methamphetamine is a serious illicit drug problem in the United States and globally. Manufacturing and trafficking of methamphetamine have undergone significant changes over the past several decades and Mexican transnational criminal organizations control much of the U.S. supply. Due to their networking capabilities, they have used the threat of restricting access on precursor chemicals to explore new opportunities. Mexican groups obtained precursor chemicals from South Asia, explored new production processes with other chemicals to continue supply of methamphetamine and moved their production to centralized locations in Mexico. The production of methamphetamine and the enrichment of powerful Mexican drug trafficking organizations continues.

5. Zhilla and Lamallari

Organized crime in Albania appears increasingly more complicated and dynamic. Certain criminal groups began to form criminal networks, while preserving group autonomy. Social or family ties are present in the beginnings of these networks, because of the trust they provide. Over time, the new ties are created, even including foreign citizens. Albanian organized crime groups also started to collaborate with other organized crime groups, while choosing to remain independent. The network collaboration is currently indispensable to maximize criminal incomes. Networks seem to be more efficient, flexible and harder to discover and attack by law enforcement. To secure their operations, they divide cash and drugs into certain parts for two or more couriers. Hence avoiding the possibility of complete loss and ensuring continuity of criminal activity.

6. Scaglione

One of the major Italian mafia organizations, the Sicilian Cosa Nostra, has in recent years moved towards a flexible and less centralised organization to reduce its exposure to law enforcement investigations. Law enforcement agencies threatened the Cosa Nostra by arresting male members at the top. Considering the importance of blood ties, men their wives and daughters are not confined anymore to just their traditional roles, but are fundamentally involved in a wide range of activities. Thereby, women are the only ones able to guarantee continuity within the families.

7. Duijn and Sloot

Organized crime groups and law enforcement agencies are caught in a complex system, like a continuous game of cat-and-mouse, in which the latter frequently remains two or more steps behind. The rise of the Darknet has created opportunities for criminal networks, such as anonymity and access to worldwide online marketplaces for selling illegal commodities in large quantities. Criminal organizations quickly adapted to these opportunities and increased the number of online marketplaces and serves to outweigh the limited capacity of law enforcement to target them all effectively. They have managed to continue their criminal activities and increase sales.

8. Gilbreath

Methamphetamine is a growing problem in the United States. To threaten and reduce the production of methamphetamine, new regulations (such as the CMEA and the CDTA) limit the supply of precursor chemicals. Mexican drug trafficking organizations anticipated in early stages of these regulations by seeking and testing other precursors and production processes. Furthermore, they responded by sourcing unregulated forms of precursor chemicals and they used 'smurfing' (going from store to store to buy from each the permissible amount). Due to the limited access of precursors, Mexican drug trafficking organizations moved the production to Mexico to continue and increase production. Hereby, they show flexibility in their resources and they have managed to increase their dominance in the U.S. methamphetamine market.

9. Hall, Koenraadt and Antonopoulos

It has been widely suggested that the global market in illegally traded medicines has expanded at a tremendous rate in recent years. The increasingly innovative and accessible information and communication technologies created opportunities for illicit pharmaceutical networks. Together with a high demand for various illicit drugs and cheaper medicines and medical supplements, illicit pharmaceutical networks could expand their operations with online illicit medicine markets. These criminal networks exploit online pharmacies, business-to-business websites, social media sites and darknets. Their wide product range and the introduction of new pharmaceutical products resulted in a flourishing illicit medicine market.

10. Spapens

A large-scale drug-dealing network in the area of Montreal (the Caviar Network) showed that by increased law enforcement pressure, they adapted the structure of their network and replaced network members to continue criminal activity. Dutch criminal groups producing and trafficking ecstasy show similarities. New police investigative methods led to the use of different vehicles and cell phones, early adoption of technological developments (e.g. VoIP and new communication devices) and the dispersion of the ecstasy production steps over different locations. Apprehension of drug couriers and business partners in the U.S. led to new smuggling routes and smuggling ecstasy to Australia. All in all, ecstasy producing criminal groups reduced the impact and risk of discovery while continuing their criminal activity.

11. D'Andria

Law enforcement policies have effects on a criminal organization's investment choices, because criminal organizations do not only invest in illegal activities, but also in legal activities to launder money. The strengthening of anti-money laundering rules, higher level of police controls and more severe sanctions trigger organized crime to act. Organized crime is changing the investment strategies by shifting their investments between legal and illegal assets without facing transaction costs, using the mobility of electronic tools and gaps in regulation. They manage to have stable or growing reserves and capital by still laundering money. Their investment portfolio is adaptive and stays ahead of changing regulations.

12. Telesetsky

Accounting for the removal of nearly one out of eight fish from the oceans, Illegal, Unreported, and Unregulated (IUU) fishing is a problem of global proportion. This is the result of the expansion of transnational organized criminal groups. Unregulated access to flags of convenience, little regulation of transshipments, the existence of ports of convenience, and an active business in offshore shell companies and tax havens creates favourable circumstances for IUU fishing. For example, a port is not accessible anymore for IUU vessels due to surveillance is not a threat, vessels adapt by redeploying to another port. And when vessels are included on a IUU list, they can 'reflag'/'flag-hop' (changing the flag state of the vessel) online without bringing the ship to any port in a flagging state and hereby they dodge the IUU list. Hence, the pressure from the environment with surveillance and a IUU list cannot stop the IUU fishing. Due to a lack of effective governance, IUU fishing can continue to increase profits.

13. Rajamäki and Viitanen

Organised crime is a real threat in Europe with the emergence of international warehouses of crime. Law enforcement authorities constantly seeking new technological recording, retrieving and monitoring solutions. However, organized crime groups tend to stay ahead with new electronic counter-surveillance, jamming tools and constantly changing their behaviour. Hereby they prevent eavesdropping of physical surveillance.

14. Martynov and Moloeznik

The level of organized crime in Mexico is unbelievably high. Trafficking of all kind began in the 19th century. During the Prohibition years in the second half of the 1920's and early 1930's, Mexican criminal cartels made use of this opportunity and began smuggling alcohol from Mexico to the U.S. This contributed to the growth of the Mexican cartels. Currently there is a growing number of children originating from Central and South America which cross the U.S. border. Mexican cartels led them cross the border without documents and not accompanied by parents. Trafficking in humans (and drugs) to the U.S. is the most profitable business for Mexican criminal groups.

15. Rajamäki and Kämppi

Organised crime is a real cross-border threat with the emergence of international warehouse of crime. To facilitate their combat against criminal organizations, law enforcement authorities are constantly seeking new technological recording, retrieving and monitoring solutions. However, with the increasing criminals' counter measure activities (e.g. using advanced detection and signal jamming technologies and are constantly changing their behaviour) they prevent eavesdropping or physical surveillance.

16. Lambrechts and Goga

Abalone poaching is a highly lucrative environmental crime in South Africa. Abalone poaching developed due to the policies of the apartheid state in South Africa. After effects of apartheid policies, such as economic, social and political marginalisation continue to this day. This lack of development enforced criminality. Also, law enforcement activities did not diminish the problem. Arrests of one or two big players had no significant effect. Instead, abalone poaching groups rely on flexibility and networking capabilities to continue to conduct their crimes and increase their poaching activities. Hence, the illicit industry of abalone poaching continues to grow and increase profits.

17. Glazkova, Grudin, Mironova, Burmistrov and Prudnikov

The history of organized crime in Russia demonstrates the inextricable connection of the formation of the structural forms of crime and the state of economic, political and social processes in the society. By the end of the XX century, threatened by competition, organized crime adopted new information and communication technologies, creating opportunities for globalization. Organized crime developed transnational features, entailing the complication of the criminal groups' structure and growing number of participants. The groups transformed their management from single-handed to collective control structures to overcome the limited capacity of one individual in solving complex problems. Also, due to the new information and communication technologies, they could shift a significant management component to computerization allowing to accelerate the interaction process of criminal group elements.

18. Xia

The capitalist economy in Southeast Asia provided the opportunity for Triads to turn into business-like entities. And the local political system encouraged some of them to adopt the form of a modern political party. Under the pressure of a strong state and dynamic markets, organized crime groups adopted a network form of organizations. This provided them with easier coordination and safer cooperation. Therefore, triads managed to survive and formed a both flexible and effective organization with high power and influence.

19. Bequai

Organized crime has learned to master the new technologies fast and now employs cyber-space in its commercial endeavours. With the invention of the internet, and e-commerce following, organized crime groups use the internet for online gambling and selling illicit drugs, stolen goods and other valuables. Electronic banking and money also created opportunities for online criminal activities. The mafia and other criminal organizations exploit these opportunities by online and overseas embezzlements, online trading in securities and counterfeit electronic money. Another interesting trend is the increasing amount of sensitive data on the web. Organized crime groups make grateful use of this data (and also make use of brokers with drug and gambling problems) for extortion, blackmailing, confidential financial data and insider information for trading. Existing techniques are also applied in new markets: Loansharking is introduced by organized criminal organizations in the upcoming high-tech sectors and Wall Street, which demand fast capital injections. Criminal organizations are converted into formidable opponents for law enforcement. They have utilized the opportunities of the internet to exert control and power, increase profits, while evading detection.

20. Ruth, Matusitz and Wan

Colonial rule dwindled and was replaced by economic dominance over small nation-state. These states borrowed and owned vast amounts of money to ruling global powers. This began a trajectory towards failure and lefts a leadership vacuum within the failed nation-states. At the expense of weak governments, organised crime groups used the opportunity to expand their businesses. They penetrated markets in neighbour failed nation-states and exploited low costs for labour and trafficking. Globalisation has changed the demands and expectations of organizations, even criminal organizations. Crime lords employed workers who can think on their feet and adroitly adjust to swift change, because criminal leaders retain the flexibility to reduce the workforce at any instance for the benefit of the criminal network. Employees need to change job skill sets throughout their illegal careers in favour of flexibility, while autonomy stays low. Organizations formed more flexible networks with less perceptible forms of control. This resulted in more profit and a high interconnected power of the predatory organized crime groups.

21. Lavorgna and Sergi

The economic crisis has provoked a drastic reduction of cash flows and market value in the Western World. One of the effects of the crisis is the identification of new opportunities exploited by established organised criminal groups. For example, low risks and increasing demand for counterfeit products is increasingly exploited by mixed criminal networks. Italian mafia networked and interacted opportunistically with other (foreign) groups and the legitimate entrepreneurial world to carry out their business-like activities. The high demand for loans and credit promoted usury. Also, new forms are developed, for example daily usury, to serve a wider range of customers. Besides profits and increasing cash flows, benefits of usury by the mafia were to keep links with legal activities and usury represents a valid alternative to usual money laundering. By offering entrepreneurs with difficulties what they need (i.e. credit), mafia members have become reliable and welcomed business partners. By offering these additional products and services, they managed to maximize their profits during the economic crisis.

22. Hughes and Denisova

Due to the high unemployment rates in Ukraine, a lot of women were at home. This made them more susceptible for human traffickers, because of the employment and high payoff. In the earlier years, victims were recruited from the cities, but more recently, the recruiters are moving into the countryside to small towns and villages to recruit women for work abroad. In agricultural areas, often there are no wages at all. The pimps often use former victims of trafficking to recruit new victims. Friends and acquaintances that return from abroad with stories of how much money they made recruit women for pimps. About 70 percent of trafficked women travel on authentic documents, such as tourist visas. As a result, more women are trapped to work in the prostitution and pimps gain more profits with low risks.

23. Basu

During the late 1990s, drug interdiction rates increased and key members of drug cartels like Pablo Escobar and Carlos Lehder were captured or killed. Mexican cartels used this as an opportunity and took over the ownership of product a distribution of narcotics from Colombian drug traffickers. They changed the smuggling routes to utilize Mexican transshipment hubs into the U.S. A new adaptive supply chain for the narcotics was shaped. Smuggling routes are more often changed to reduce the risk of detection. The structure of the criminal organizations reflected a two-tiered network structure, whereby the core conducts the organizing activities and the periphery members perform the actual operations. This made it very difficult for law enforcement to strike at the core of the network and the cartels can continue their business.

24. Dua and Menkhaus

In the 1990's, virtually all piracy incidents occurred in Southeast Asia and East Asia. Due to a strong commitment by regional governments to combat piracy led to a significant drop-off in piracy there. At the same time, the piracy off the coast of Somalia skyrocketed due to the state weakness, the never fully developed fishery sector, large number of armed youth seeking some means of livelihood in a context of very high unemployment and poverty and the 'Robin Hood' narrative among those who engage piracy. Anti-piracy responses have not eliminated the criminality and violence. Instead, practices have pushed some pirates into new ventures such as on-land kidnapping, carjacking and other predatory militia activity and the anti-piracy practices have also forced Somali pirates far beyond their original zones (towards the Indian coast and the Maldives). Currently, piracy in Somalia has involved a global network of Somali financial backers and the activities continue.

25. Kenny

The notorious 'kingpin' of the Medellín cartel, Pablo Escobar, was threatened by law enforcers which wanted him to arrest. By surrendering to Colombian officials in 1990, he turned this threat into an opportunity. After surrender, he was imprisoned in a correctional facility of his own design, where Pablo Escobar was clearly safer and could operate more comfortably than he could as a fugitive. He could lead the organization with a sophisticated communications network they could run through a pay phone at the prison. Surrendering provided Pablo Escobar stability and safety to continue his criminal operations.

26. Tzvetkova, Pardal, Disley, Rena, Talic and Forberger

Drug dealers in Italy, Slovenia and Germany have interesting strategies related to the distribution or sales of heroin or cocaine. Most dealers were able to respond to periods of over and under supply without losing customers and maintaining good quality of the drugs. By using more than one regular supplier and varying arrangements in terms of frequency and quantities bought, dealers could cope with undersupply and bad quality. By keeping the inflows of good quality drugs, they kept the trust of customers and could build a reputation to maintain their profits and position in the market. This resulted in a flexible and adaptive drug market.

27. Leuprecht, Aulhouse and Walther

The Shower Posse is a violent international organized crime syndicate based in Jamaica. With the Jamaican elections coming, the Shower Posse used this as an opportunity to support the Jamaican Labour Party (JLP) with all the extra revenue made from the drug trade. The JLP reciprocated by giving the Shower Posse free reign to operate in Jamaica. It allowed the Shower Posse to endure and rebuild international networks when they were disrupted by law enforcement, because its headquarters would remain intact. Due to international pressure, the JLP extradite coke in Jamaica, which threatened the Shower Posse network. The Shower Posse separated operations by creating 'franchises' in Toronto and New York. It was a decentralization towards a hub-and-spoke network with a small number of brokers as hubs. With this network, they supplied local gangs with narcotics, but had little connection to street-level crime. And without being connected to all the actors in the network, the Shower Posse reduced vulnerability to law enforcement and could continue their drug trade.

28. Duijn, Kashirin and Sloot

In contrast to common belief, criminal networks might even become 'stronger' after targeted law enforcement activities. Losses in human capital do not seem to decrease the power and effectiveness of criminal organizations. They adapt to these threatening events with redundancy in the network to take over tasks of lost members. Also, strong ties offer reciprocated trust, which is essential within the uncertain and hostile criminal environment. The diversity of different ties allows the network to function and replacements with a reliable reputation are often found in short social distances. Often a more effective network emerges with better people to perform the task. On the other side, 'non-redundancy' (a few connections within the network) and compartmentalization of the network prevent leadership exposure and guarantee continuity.

29. Calderoni

Two drug trafficking mafia groups, belonging to the 'Ndrangheta, a mafia from Calabria, show a particular organizational structure. This structure may explain the strong adaptability of mafias towards law enforcements. Law enforcement threatened these groups by the removal of central individuals in the criminal networks (individuals with a lot of connections within the network). Nevertheless, the mafia groups replaced these individuals with little effort. This was possible because the most involved individuals (with a lot of connections) were not the most important leaders. These leaders are strategic positioned with a few connections, to minimize risks of leadership exposure. This structure provides the mafia groups continuity of smuggling operations and effective leadership.

30. Eilstrup-Sangiovanni and Jones

Criminal organizations formed networks to improve and continue their activities. Advances in ICT and the subsequent globalization of transportation, communication and finance supported this transformation. Criminal organizations have become decentralized yet tightly interconnected. Therefore, communication can flow unhindered from one part of the network to another, enabling actors to acquire, process, and act on local information fast. By promoting rapid transfers of information, it is said, networks allow participants to learn quickly about new events, opportunities, and threats. Information flows between trustworthy people rather than the chain of command, which makes information more reliable. As information flows and transfers of funds became quicker, cheaper, and more secure, the construction of complicated networked organizations over long distances became more feasible. Transnational, networked criminal groups use the internet to coordinate activities, raise funds, and recruit new members. The expansion through online recruitment may enhance a network's potential impact, but it can also reduce trust and security, trigger internal strife and intensify collective-action problems. An easily redefinable organizational structure allows to add freely new links to adapt to new requirements or problems and prevent locking in ineffective relationships. Networks also encourage learning through experimentation; a flat decision-making structure allows ideas and methods to be tested more readily, without having to wait for approval from above, thereby allowing wider sets of lessons to be learned. Nevertheless, the ability to learn often comes at the expense of covertness and security. The personal nature of network relationships (often based on ties of kinship, loyalty, and trust) ensure that networks are resistant to temptations of voice and exit. Minimal interaction and dependency among individuals means that state authorities cannot use a compromised unit to roll up an entire network. 'Redundancy', the existence of many structurally equivalent individuals, means that a lot of individuals can be removed without causing a network to fragment, because bypass links can be established to continue business.

31. Jones

Most security analysts now view the *Cártel de Jalisco Nueva Generación* (CJNG) as the most powerful organized crime group in Mexico. They expanded due to U.S. and Mexican kingpin strikes which fragmented existing organized crime groups. The CJNG used this as an opportunity to expand their network by adopting and allying with independent local cells, especially groups with specific skills (e.g. Los Cuinis with sophisticated financial networks, and the Guadalajara and Flores as excellent money launders). The CJNG also copied working strategies of groups, like the marketing of protectors as *La Familia Michoacana*. The geographic location near pacific ports was exploited by the CJNG to import chemical precursors for methamphetamine and to ship produced methamphetamine to the European and Asian markets where profits were higher. In the past decade, the CJNG has managed to increase its profits and expand the criminal network.

32. Daniel

Brazil is unable to effectively maintain security, law enforcement and provide basic public services and goods in certain areas. In the favelas of Rio de Janeiro, non-state armed groups exploit this situation by applying insurgency to gain more control over a territory to carve out space for their illegal business activities and operate free of state influence. This is necessary in the drug trade for safe storage and dealing and the groups can continue their activities

Summarizing knowledge about adaptiveness in Business Administration research

This chapter will aim to give a short summary of adaptability in organizations: what is already studied and found in Business Administration research? First, five review articles are selected, taking into account the citations of the articles and impact factor of the journals. Multiple search engines were consulted (Scopus, Google Scholar, Web of Science and SAGE journals), but a review merely on adaptiveness was not found. The article from Uhl-Bien and Arena (2018) comes closest by describing leadership for organizational adaptability and integrating different research fields. Being published this year, the article is already cited and provides a current view on adaptability. Therefore, the article from Uhl-Bien and Arena (2018) is selected despite the low citation number. The other selected articles all describe phenomena linked to adaptability in organizations and are highly cited. Four out of the five articles also provide a model based on their review of existing literature. An overview of the selected articles can be found in Figure 8. The models as well as the information within the articles are compared and afterwards summarized within a new model. After proposing a theoretical model, this model is translated into a conceptual model for better understanding of the causal relationships between the concepts. These new created models enable the study to compare the knowledge found within Business Administration research with the data about adaptiveness in criminal organizations in the following chapter.

Journal	Title	Authors	Year Published	Impact Factor Journal	Citations Article	Main Focus
<i>The Academy of Management Annals</i>	<i>Exploration and Exploitation Within and Across Organizations</i>	<i>Lavie, Stettner and Tushman</i>	2010	9.281 according to 2017 Journal Citation Report released in 2018	396 CrossRef 320 Web of Science and 358 Scopus according to publisher	Critically reviewing the growing literature on exploration and exploitation
<i>Research in Organizational Behavior</i>	<i>Ambidexterity as a dynamic capability: Resolving the innovator's dilemma</i>	<i>O'Reilly and Tushman</i>	2008	3.238 according to 2017 Journal Citation Report released in 2018	403 CrossRef 531 Scopus according to publisher	Identifying a set of propositions that suggest how ambidexterity acts as a dynamic capability
<i>Journal of Management</i>	<i>Organizational Ambidexterity: Antecedents, Outcomes, and Moderators</i>	<i>Raisch and Birkinshaw</i>	2008	8.080 according to 2017 Journal Citation Report released in 2018	642 CrossRef and 626 Web of Science according to publisher	Developing a comprehensive model that covers research into antecedents, moderators, and outcomes of organizational ambidexterity
<i>The Leadership Quarterly</i>	<i>Leadership for organizational adaptability: A theoretical synthesis and integrative framework</i>	<i>Uhl-Bien and Arena</i>	2018	3.307 according to 2017 Journal Citation Report released in 2018	1 CrossRef and 2 Scopus according to publisher	Providing a theoretical synthesis and integrative review of research from strategy, organization theory, innovation, network, and complexity to result in a framework of leadership for organizational adaptability
<i>International Journal of Management Reviews</i>	<i>Dynamic capabilities: A review And research agenda</i>	<i>Wang and Ahmed</i>	2007	6.489 according to 2017 Journal Citation Report released in 2018	536 Dimensions according to publisher	Clarifying the concept of dynamic capabilities

Figure 8 Overview of selected review articles

Proposing a theoretical model for adaptability in Business Administration Research

Underlying the question if and how organizations survive in the face of change lies a rich debate whether organizations can adapt. One research stream, organizational ecology, finds evidence that suggests that organizations are inert and ultimately fail. The second research stream argues that some firms do learn and adapt to changing environmental conditions (O'Reilly & Tushman, 2008). When following the second research stream, two main phenomena linked to adaptability become clear. The first phenomenon studied are dynamic capabilities, the ability of a firm to reconfigure assets and existing capabilities (O'Reilly & Tushman, 2008). The second phenomenon studied is ambidexterity, the ability of firm to simultaneously explore and exploit (O'Reilly & Tushman, 2008). Therefore review articles focussing on one of these phenomena are selected for the summary of adaptability.

The model summarizing theoretical information, relations and the process of adaptability according to the selected articles can be found in Figure 9. The model will be discussed step by step and the relations with the findings of the selected articles are explained.

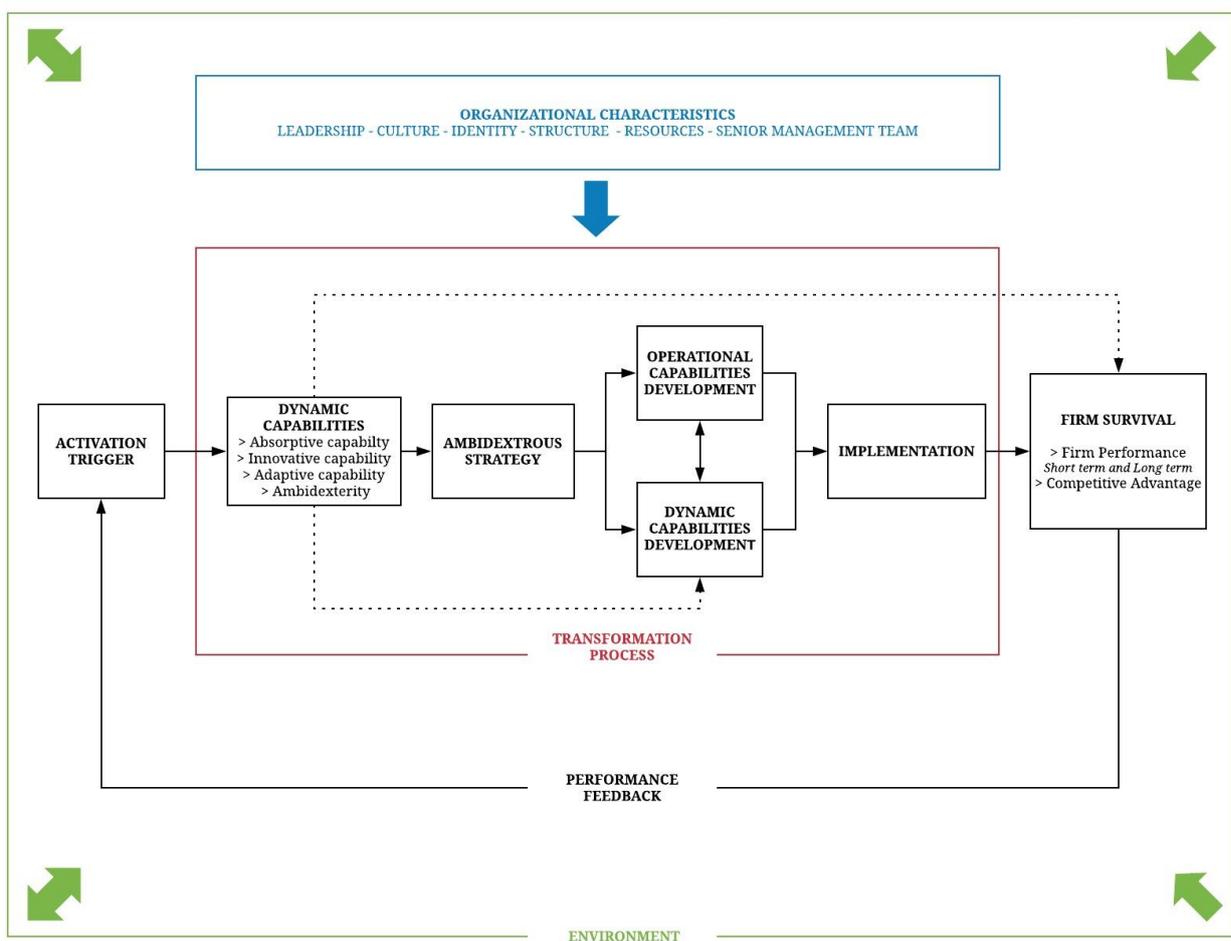


Figure 9 Theoretical model explaining the adaptability process

Environment

Adaptive processes are most necessary in dynamic and demanding environments, due to the fast and high amount of changes a high adaptability of the organization is needed to survive (Uhl-Bien & Arena, 2018) (Lavie, Stettner, & Tushman, 2010). Therefore, the need for more transformation processes will be triggered within a dynamic environment. Consequently, the environment and its attributes influence the amount of activation triggers and the survival chance of an organization.

Wang and Ahmed's (2007) model for dynamic capabilities acknowledged the stimulating relation between market dynamism and dynamic capabilities. This is taken into account in the theoretical model by interpreting the market as an attribute of the environment. Factors of market dynamism described by Wang and Ahmed (2007) include technological developments, regulations, the competitive nature of an industry and the economic cycle. Lavie, Stettner and Tushman (2010) describe environmental dynamism, which is broader than the market and is rooted in unpredictable changes in customer preferences, technologies, or market demand. Innovative technologies, emerging markets, competition and regulations are described by O'Reilly and Tushman (2008) as environmental factors which can induce pressure on a firm. A dynamic environment will increase the amount of activation triggers and therefore increases the need for dynamic capabilities in the transformation process. On the other hand, a stable environment will have lower amounts of activation triggers and therefore less need for dynamic capabilities in the transformation process.

Raisch and Birkenshaw's (2008) framework for understanding organizational ambidexterity research places environmental dynamism and competitive dynamism as environmental attributes influencing the process of: Organizational antecedents → Organizational ambidexterity → Performance outcome. Firms within an environment with high dynamism and competitiveness are more likely to pursue ambidexterity. Lavie, Stettner and Tushman (2010) describe that intensifying the competitive pressure calls for more exploration and when the competitive tension is dampened organizations are more drawn to exploitation. For this model it means that when competitive tension is damped less competitors will infiltrate the market and thus environment, lowering the amount of changes which means lowering the amount of activation triggers.

Concluding, the environment has several attributes in this model such as; market dynamism, technological innovations and competitive intensity. The arrows in the theoretical model pointing toward the adaptive process entails the linkage between the environment and the activation trigger as well as the original attributes of the environment influencing the survival chance of an organization on their own. The survival rates of companies in a dynamic and demanding environment are influenced negatively, when companies are not able to transform and adapt to fit their environment (Uhl-Bien & Arena, 2018) (O'Reilly & Tushman, 2008). Differently, the influence of a more stable environment has a positive influence on the firm survival. Less effort is needed to fit the environment, and fitting the environment is crucial for survival (Lavie, Stettner, & Tushman, 2010) (Raisch & Birkenshaw, 2008).

The arrows in the theoretical model pointing from the activation trigger toward the environment can be described as the influences of the environmental changes on the attributes in the environment. For example, when a new competitor penetrates the market this is an activation trigger for the transformation process (Raisch & Birkenshaw, 2008) as well as an increase of the attribute competitive intensity in the environment (Lavie, Stettner, & Tushman, 2010).

Activation trigger

The activation trigger is described by Uhl-Bien and Arena (2018) as 'something', that requires a firm to respond to pressure from the environment for change. Wang and Ahmed (2007) give various examples of triggers in the environment, for example radical technological innovations. The relation between the activation trigger and the dynamic capabilities is explained by the more activation triggers the stronger the drive for firms to exhibit dynamic capabilities (Wang & Ahmed, 2007). Activation triggers also need to be detected by the dynamic capabilities (absorptive capacity) (Uhl-Bien & Arena, 2018), another layer to the relation. According to Uhl-Bien and Arena (2018), the transformation process starts with the pressure of an activation trigger.

Transformation process

The transformation process is the process of transforming the firms capabilities to be able to cope with environmental change in an effective way (Uhl-Bien & Arena, 2018). The theoretical model tried to incorporate both dynamic capabilities and ambidexterity in this process, to summarize both phenomena linked to adaptability in the discipline Business Administration (O'Reilly & Tushman, 2008) (Uhl-Bien & Arena, 2018).

Dynamic capabilities

Dynamic capabilities are defined by Wang and Ahmed (2007) "as a firm's behavioural orientation constantly to integrate, reconfigure, renew and recreate its resources and capabilities and, most importantly, upgrade its core capabilities in response to the changing environment to attain and sustain competitive advantage" (Wang & Ahmed, 2007, p. 35). Uhl-Bien and Arena (2018) describe dynamic capabilities as the firm's ability to build, integrate and reconfigure internal and external competencies in rapidly changing environments. O'Reilly and Tushman (2008) describe dynamic capabilities as the ability of a firm to reconfigure assets and existing capabilities. The definition for dynamic capabilities from Wang and Ahmed (2007) is followed within this research because it entails most of the attributes mentioned by the other authors.

Wang and Ahmed (2007) describe adaptive capability, absorptive capability and innovative capability as the most important components of dynamic capabilities and underpin the organization's ability to integrate, reconfigure, renew and recreate its resources and capabilities. Therefore, these components are mentioned in the theoretical model within the box of dynamic capabilities. According to Wang and Ahmed (2007), these components are common across several industries. The following is explained about the three components; "The three factors are correlated, but conceptually distinct. Each has a particular emphasis: adaptive capability stresses a firm's ability to adapt itself in a timely fashion through flexibility of resources and aligning resources and capabilities with environmental changes. Hence, the focus of adaptive capability is to align internal organizational factors with external environmental factors. Absorptive capability highlights the importance of taking in external knowledge, combining it with internal knowledge and absorbing it for internal use. Innovative capability effectively links a firm's inherent innovativeness to marketplace-based advantage in terms of new products and/or markets. Thus, innovative capability explains the linkages between a firm's resources and capabilities with its product market" (Wang & Ahmed, 2007, p. 39).

Raisch and Birkenshaw (2008) describe the possibility of ambidexterity being a dynamic capability. This assumption is underpinned by O'Reilly and Tushman (2008) mentioning that ambidexterity acts as a dynamic capability. Therefore it is described as an important component of dynamic capabilities in the theoretical model.

The indirect effect of dynamic capabilities on dynamic capability development in the theoretical model is explained by Wang and Ahmed (2007); "The higher the dynamic capabilities a firm demonstrates the more likely it is to build particular capabilities over time" (Wang & Ahmed, 2007, p. 41). Also, the indirect effect of dynamic capabilities on firm performance is explained by Wang and Ahmed (2007) in the following section; "Dynamic capabilities are conducive to long-term firm performance, but the relationship is an indirect one mediated by capability development which, in turn, is mediated by firm strategy; dynamic capabilities are more likely to lead to better firm performance when particular capabilities are developed in line with the firm's strategic choice" (Wang & Ahmed, 2007, p. 42).

Ambidextrous strategy

After sensing and seizing the opportunity and/or threat for the firm caused by the activation trigger, strategic choices need to be made using dynamic capabilities (O'Reilly & Tushman, 2008). The strategic choices are ambidextrous in nature because both exploration and exploitation are needed to overcome traps and survive short term and long term (O'Reilly & Tushman, 2008). Lavie, Stettner and Tushman (2010) conceptualize exploration as a continuum, due to resource boundaries. The strategy follows dynamic capabilities according to Wang and Ahmed (2007), this is followed in the theoretical model.

Capability development

The strategic choice influences the development of the capabilities (Wang & Ahmed, 2007), is there enough time, money etc. to further develop operational and dynamic capabilities. Capability development is important to translate the dynamic capabilities into actual performance (Wang & Ahmed, 2007). When further developing (reconfiguring, renewing and recreating) the capabilities, an organizational mechanism is needed (Uhl-Bien & Arena, 2018). The organizational mechanism, is an interaction between the operational capabilities, facilitating efficient and effective use of resources, and the dynamic capabilities resulting in reconfigurations and learning according to Uhl- Bien and Arena (2018). By learning at operational capability level (product development), capturing the learning at the dynamic capability level (new ideas, shaping, innovation) and reconfiguration of the operating capabilities (getting the change into the new system 'new order') (Uhl-Bien & Arena, 2018).

Implementation

All changes needed to cope with the activation trigger and deal with the opportunities and threats for the company are now accepted and integrated in the company. This is described by Uhl-Bien and Arena (2018) as new configuration of resources and operating routines. It is the outcome of the capabilities (development/ building) integrated in the firms processes (Wang & Ahmed, 2007).

Firm survival

When implemented properly, all before mentioned phenomena together will lead to survival (Uhl-Bien & Arena, 2018) improving the firm performance (Wang & Ahmed, 2007) (Lavie, Stettner, & Tushman, 2010) (Raisch & Birkenshaw, 2008) and long-term competitive advantage (O'Reilly & Tushman, 2008) (Wang & Ahmed, 2007).

Performance feedback

Lavie, Stettner and Tushman (2010) take performance feedback as an antecedent for balancing exploration and exploitation. This means that performance feedback is needed in order to make ambidextrous strategic choices performance. Furthermore, internal activation triggers can drive the transformation process because adaptation is an ongoing process (Uhl-Bien & Arena, 2018).

Organizational characteristics

Organizational characteristics moderate the whole transformation process and indirectly the relation between the activation trigger and the transformation process and the relation between the transformation process and the firm survival. Uhl-Bien and Arena (2018) raise the importance of leadership in the adaptive process of an organization. Leaders should help capture the learning and integrate it into the operating system to generate adaptive outcomes (Uhl-Bien & Arena, 2018). Furthermore, they should engage effort and energy that promotes and facilitates adaptation from within (Uhl-Bien & Arena, 2018). When leadership is not build up out of these attributes it has a negative effect on the transformation process alignment (Uhl-Bien & Arena, 2018). While having a positive effect when leadership consists out of the described attributes.

Raisch and Birkenshaw (2008) describe antecedents of organizational ambidexterity; organizational structure and leadership processes can be promoters of ambidexterity. These should provide for both aspects of ambidexterity (Raisch & Birkenshaw, 2008). Organizational structure according to Lavie, Stettner, and Tushman (2010) defines the distribution of power, resources and responsibilities across different functions and units and categorizes it as an organizational antecedent of ambidexterity. Structure in the proposed theoretical model has a moderating role. In specific forms, structure can facilitate exploitation and exploration in an organization (Lavie, Stettner, & Tushman, 2010).

Culture and identity are organizational antecedents in the framework from Lavie, Stettner, and Tushman (2010). Lavie, Stettner and Tushman (2010) describe identity as the distinctive and enduring organizational attributes that define the nature of an organization, and culture as the attitudes, experience, beliefs, and values that guide the behaviour of organizational members. Accordingly, O'Reilly and Tushman (2008) emphasise the importance of common vision and values that provide for a common identity increases the likelihood of ambidexterity. In the theoretical model culture and identity both have a moderating role, because identity increases or decreases the likelihood of ambidexterity in the transformation process and culture guides behaviour and therefore influences the development of capabilities from organizational members.

The senior management team is also an important characteristic in coping with ambidexterity (O'Reilly & Tushman, 2008) (Raisch & Birkenshaw, 2008). A clear consensus among the senior management team and relentless communications of the strategy is of most importance for ambidexterity (O'Reilly & Tushman, 2008). Lavie, Stettner, and Tushman (2010) acknowledge the importance of senior management as an antecedent of ambidexterity with the main components being; risk aversion, performance feedback and past experience. Senior management with the attributes mentioned can facilitate ambidexterity but also block ambidexterity. Therefore, senior management is an organization characteristic moderating the transformation process.

Resources or the lack of resources is an opportunity or limitation for developing new dynamic capabilities (Wang & Ahmed, 2007). Lavie, Stettner, and Tushman (2010) use slack resources as an organizational antecedent for ambidexterity, which have a positive effect on exploration when used properly. In the created theoretical model, resources are an organizational characteristic moderating the transformation process. For example, choices made in the ambidextrous strategy are influenced by the amount of resources available, as described by Wang and Ahmed (2007).

When all organizational characteristics behave as positive moderators, they facilitate a well-functioning transformation process. Indirectly, the relations between the activation trigger → transformation process and the transformation process → firm survival are strengthened. Because, further developed dynamic capabilities can identify activation triggers faster (Uhl-Bien & Arena, 2018) (Wang & Ahmed, 2007) and better implementation of the developed capabilities lead to more adaptive power (Wang & Ahmed, 2007) followed by higher survival chance for the organization. To summarize, the organizational characteristics presented in the theoretical model are; leadership, culture, identity, structure, resources and senior management team.

Translating the Theoretical Model into a Conceptual Model

To deepen the understanding about relations between the concepts in the theoretical model, a conceptual model is created. The conceptual model explains the role of the different variables and the kind of relationships between the variables. Proposing a conceptual model can help explain the differences in the relationships between the concepts of an adaptive process within a criminal organization and a legal organization. Furthermore, a conceptual model can lead to inspiration for testing hypothesized relationships between variables in further research.

Independent and dependent variable

First, it is important to establish which concept is the independent variable and which concept is the dependent variable. The independent variable in the theoretical model is the activation trigger, which is an internal or external change within the environment (Uhl-Bien & Arena, 2018). In the conceptual model this concept is therefore labelled as environmental change. Environmental change has the following effect on firm survival: Higher amounts of environmental change lower the chance of a firm to survive, because only when they intelligently adapt and maintain the fit with their environment the firm will survive (O'Reilly & Tushman, 2008) (Uhl-Bien & Arena, 2018). Based upon these findings, relationship A is hypothesized to be a negative relationship; when the independent variable increases the dependent variable decreases and when the independent variable decreases the dependent variable increases.



Figure 10 Causal relationship between the independent and dependent variable

In an environment with high amounts of (unexpected) changes the chance to survive would be really low, based on the proposed relationship in Figure 10. Therefore, a firm should be able to adapt to the dynamic and demanding environments of today to survive (Uhl-Bien & Arena, 2018). In the theoretical model, all concepts within the transformation process are expected to mediate this relationship and enable the firm to adapt.

Mediator: transformation process

Based on the findings, the concept transformation process is labelled as a mediator. Mediation can be described as an indirect effect of an independent variable on a dependent variable that passes through a mediator variable (Shrout & Bolger, 2002). Baron and Kenney (1986) describe the following conditions for an mediator; "(a) variations in levels of the independent variable significantly account for variations in the presumed mediator (i.e., Path a), (b) variations in the mediator significantly account for variations in the dependent variable (i.e., Path b), and (c) when Paths a and b are controlled, a previously significant relation between the independent and dependent variables is no longer significant, with the strongest demonstration of mediation occurring when Path c is zero." (Baron & Kenny, 1986, p. 1176). As described in the description of the theoretical model, an increase in the independent variable (environmental change) accounts for variations in the presumed mediator (transformation process) by for example influencing the amount and quality of the dynamic capabilities. Variations in the mediator (transformation process) accounts for variations in the dependent variable (firm survival). This is because a well-functioning transformation process will increase the chance for survival of the firm while a disconnected or no transformation process will have a negative effect on the firm survival (O'Reilly & Tushman, 2008). Path B and C explain the relation of Path A in Figure 11.

Alternatively, these relations can be compared with an example from the epidemiology. The mediator, the transformation process, can be seen as a medicine. Environmental change is the exposure and firm survival the disease. When environmental change takes place, the organization will get 'sick', because the fit with the environment decreases which lowers the chance to survive. If the organization has a transformation process as medicine, the exposure is still there. However, the transformation process enables the organization to deal with the exposure and to stay healthy. Remaining healthy means firm survival. Concluding, the presence or absence of a transformation process in a firm mediates the effect of relationship A as presented in Figure 11.

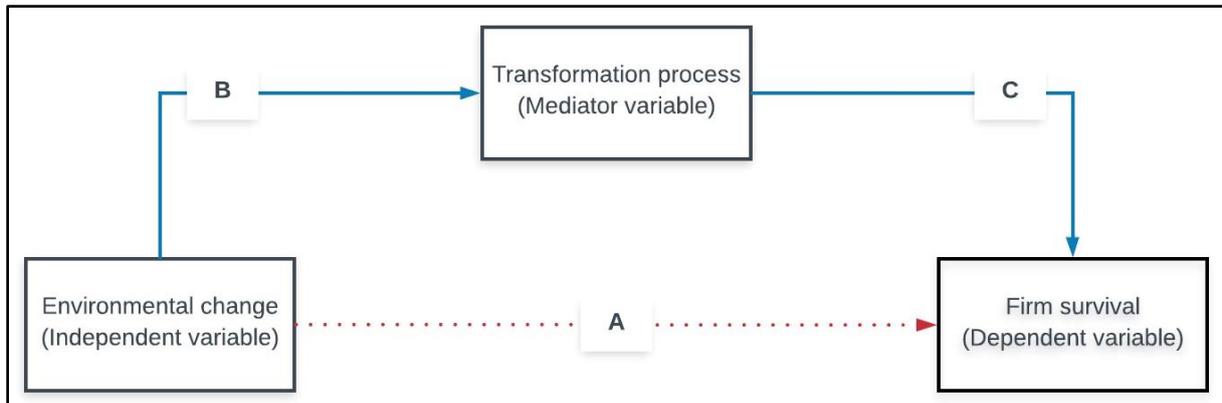


Figure 11 Causal path mediation

The specific relationships between the concepts within the transformation process are presented in Figure 12. These relationships are hypothesized based on theory. When the amount of environmental changes increases, the need for more and developed dynamic capabilities rises (Wang & Ahmed, 2007). Therefore, the relationship between environmental change and dynamic capabilities is hypothesized as a positive relation. When more dynamic capabilities are available, this increases the ability of a firm to have an ambidextrous strategy since, dynamic capabilities facilitate ambidextrous thinking (O'Reilly & Tushman, 2008). This relationship is hypothesized to be positive.

An ambidextrous strategy leads to development of both the operational capabilities and in the dynamic capabilities (Lavie, Stettner, & Tushman, 2010). Following, when an organization only focuses on exploitation, the operational capabilities will develop more than the dynamic capabilities and when an organization only focuses on exploration, the dynamic capabilities will develop more than the operational capabilities (Uhl-Bien & Arena, 2018). The more ambidextrous the strategy is the more it leads to dynamic capability development as well as operational capabilities development. As a consequence, hypothesising a positive relationship.

How much interaction there is between the capabilities and the separate development of dynamic and operational capabilities influences the implementation of the adjusted behaviours and actions within the organization. When capabilities are not developed, it will lead to no implementations of adjusted behaviours and actions, while developing the existing capabilities will lead to implementation (Wang & Ahmed, 2007). The relationship is hypothesized to be positive, because increasing the development of capabilities will mostly lead to more and better implementation of the adjustment to the environment.

Implementing the outcomes of the transformation process will enable an organization to cope with change and consequently the organization will survive (Uhl-Bien & Arena, 2018). Excellent implementation will lead to a higher chance of survival for the organization, making it a hypothesized positive relationship. Considering the benefits of a simplified, easy to understand conceptual model, all the concepts within the transformation process are not separately displayed but aggregated as one large mediator. This mediator was already displayed in Figure 11.

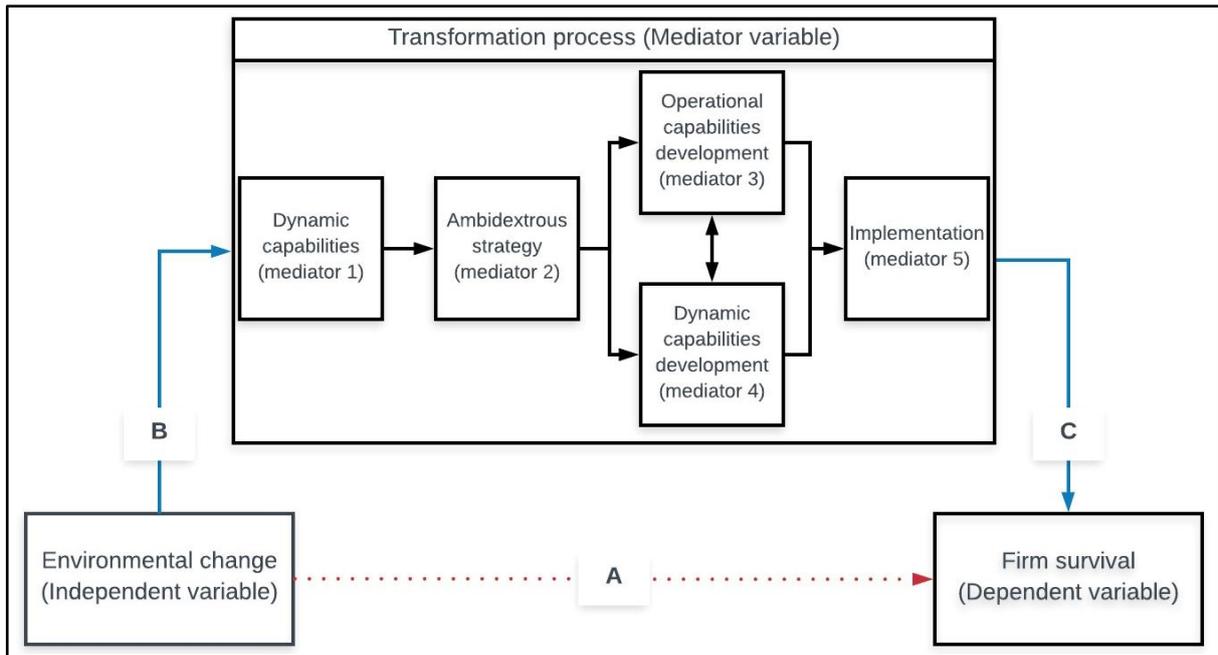


Figure 12 Explaining the relationships between the concepts within the transformation process

Moderator organizational characteristics

As described in the previous chapter, organizational characteristics have influence on the transformation process. Organizational characteristics can be labelled as moderators for the transformation process. Baron and Kenny (1986) describe a moderator as a variable that affects the direction and/or strength of the relation between an independent variable and a dependent variable. This was acknowledged by Edwards & Lambert (2007) who write that moderation is involved in the research on situational conditions or individual differences that influence the strength of the relationship between a predictor and outcomes. Some examples are given to show that organizational characteristics moderate within the whole transformation process. These relations are named D and are visualised in Figure 13.

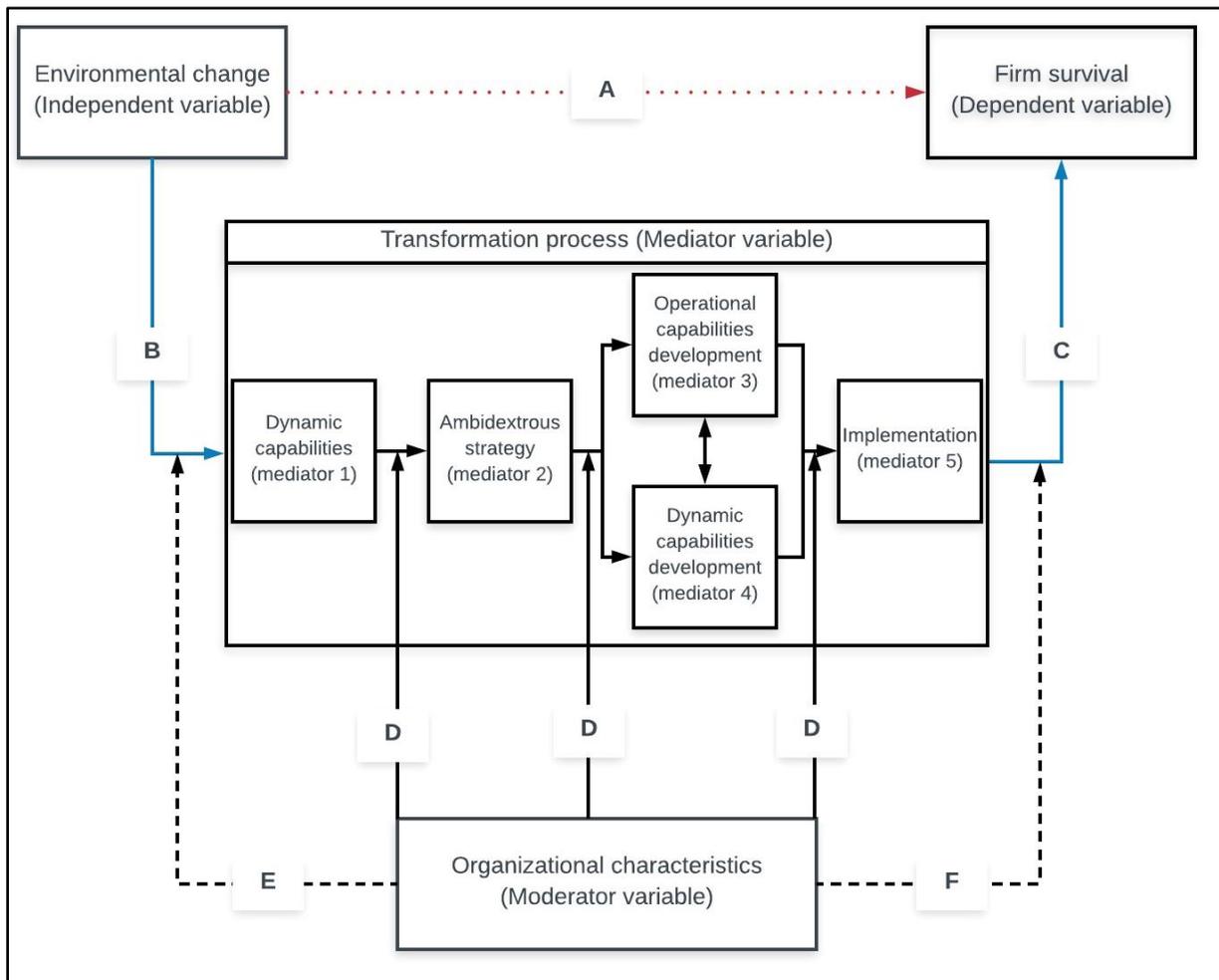


Figure 13 Explaining the moderating effect within the transformation process

At first, alignment by leadership contributes to the direction of the dynamic capabilities towards an ambidextrous strategy of a firm (Uhl-Bien & Arena, 2018). Secondly, senior management influences the tendency towards exploration or exploitation (Lavie, Stettner, & Tushman, 2010), which strengthens (or weakens) the relation of the ambidextrous strategy towards the development of operational or dynamic capabilities. Thirdly, the organizational structure should also facilitate both exploration and exploitation (Raisch & Birkenshaw, 2008), to translate the ambidextrous strategy into capability development. Without a suitable organizational structure, this translation would be hardly possible and the relation between the strategy and development would be weakened.

Fourthly, resources need to be available for development (Lavie, Stettner, & Tushman, 2010), otherwise an ambidextrous strategy cannot lead to the development of capabilities. Therefore, also resources have a moderating role in the relationship between the ambidextrous strategy and the capability development. Lastly, culture guides the behaviour of organizational members (Lavie, Stettner, & Tushman, 2010) and thus influences the development of capabilities and implementation of change. Together with alignment by leadership (Uhl-Bien & Arena, 2018), they play a moderating role in translating the development of capabilities into accepted and integrated changes. Therefore, the right culture and alignment by leadership strengthens the relation between the capability development towards proper implementation. They provide direction for the developments towards implementation.

All in all, when organizational characteristics are designed for adaptability, they will positively moderate in multiple phases of the transformation process. With their presence, they can strengthen certain relations and direct the ambidextrous strategy and the implementation.

Since the transformation process is simplified as one aggregated mediator, the organizational characteristics are displayed as a direct moderator for the whole transformation process (Figure 14). Because the mediating effect (the transformation process) is thought to be moderated by the organizational characteristics, the relationship can be described as a moderated mediation (Baron & Kenny, 1986).

When the organizational characteristics are a moderator of the transformation process, they can indirectly strengthen or weaken relation B and C. The moderating role of the organizational characteristics can influence the transformation process positively, neutral or negatively. When the moderator has a positive effect on the transformation process it leads to a proper developed and aligned transformation process. This can lead to the absorption and transformation of more changes. Therefore, the organizational characteristics indirectly strengthen relation B by relation E. Additionally, such an aligned transformation process leads to more actual implementations. By implementing the adjustments, this increases the fit with the environment and thus positively influences firm survival. Then, the organizational characteristics indirectly strengthens relation C through relation F. Alternatively, a negative moderating role of the organizational characteristics can weaken the relationships within the transformation process and this indirectly weakens the relations B and C.

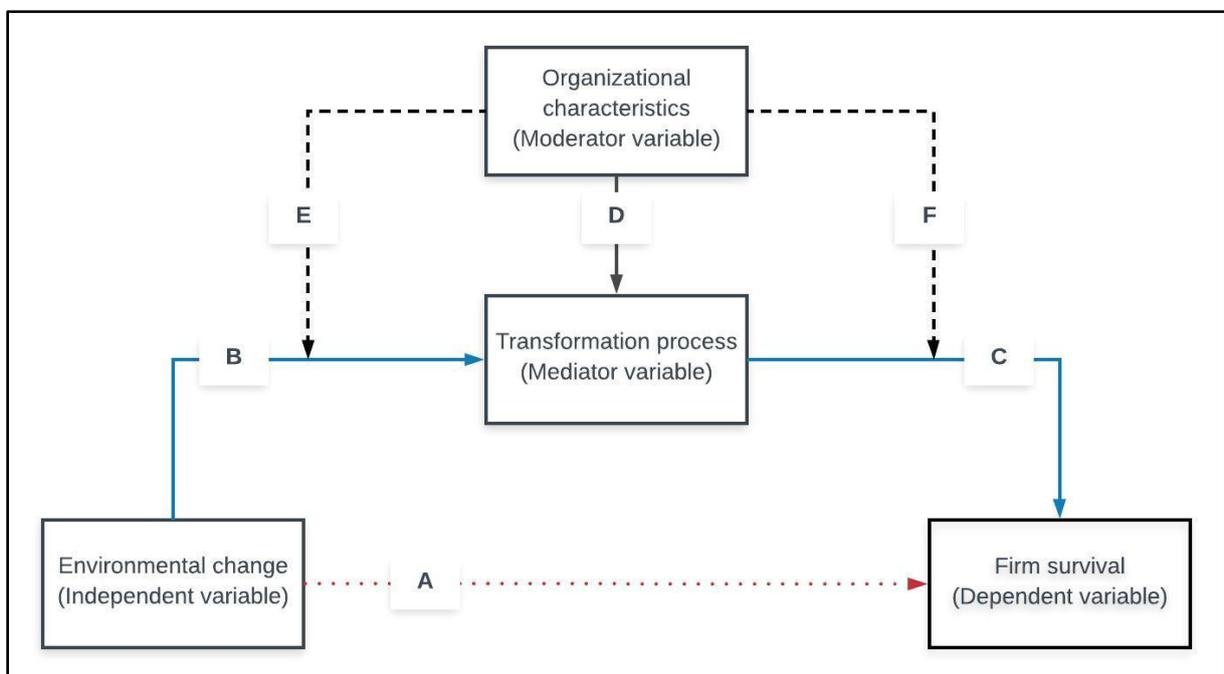


Figure 14 Moderated mediation of the causal relationship

Confounder: Environment

Another important factor is the environment. Based on the findings in theory, the environment can be labelled as a confounder variable (Figure 15). A confounder is associated with, but not equal to the independent and dependent variable (Jager, Zoccali, MacLeod, & Dekker, 2008). It can distort the true magnitude of effects (Bauman, Sallis, Dzewaltowski, & Owen, 2002). A confounder is some type of bias and therefore should be taken into account during the study design (Jager, Zoccali, MacLeod, & Dekker, 2008). As mentioned in the beginning of this chapter, the independent variable is environmental change and the dependent variable is firm survival. The environment is strongly associated with both the environmental change and the firm survival suggesting it to be a confounder. Jager, Zoccali, Macleod and Dekker (2008) describe that a confounder needs to have the following three properties: “(1) the variable must have an association with the disease, that is, it should be a risk factor for the disease; (2) it must be associated with the exposure, that is, it must be unequally distributed between the exposed and nonexposed groups; and (3) it must not be an effect of the exposure, nor (linked to this) be a factor in the causal pathway of the disease.” (Jager, Zoccali, MacLeod, & Dekker, 2008, p. 73). In their research, the exposure is the independent variable and the disease is the dependent variable.

In Figure 15 is shown that indeed the environment is a risk factor for firm survival. Attributes within the environment can make it harder or easier to survive. Figure 15 also illustrates the association between the environmental change and the environment. Some specific environments will cause more changes than others. Furthermore, when a change in the environment happens this will also influence the environment which changes towards a new status quo. An environment is not explained by one environmental change and the relation between the environmental change and firm survival is not explained by environment. Considering this environment has the properties of a confounder according to Jager, Zoccali, MacLoad and Dekker (2008). Further explanations of relationships G and H will follow now.

Relationship G is unequally distributed between ‘exposed’ and ‘nonexposed’ groups, since dynamic and demanding environments generate more change (‘exposed’ groups) and stable environments have smaller amounts of change (‘nonexposed’ groups) (Lavie, Stettner, & Tushman, 2010). Relationship H is a risk factor because when comparing firms in different environments relationship H could influence the findings about relationship A. For example, in environment A the purchasing power is higher relative to environment B. Following, the firm survival will be positively influenced in environment A and therefore making it easier to survive in environment A in comparison to environment B as an organization. Concluding, when more firms survive in environment A relative to environment B this can be caused by the presence of relationship A or the positive influence of relationship H on firm survival.

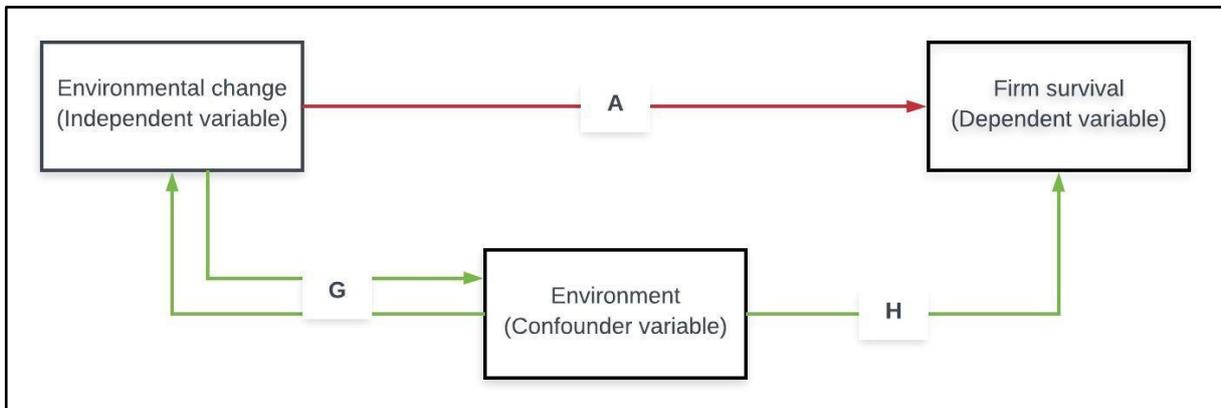


Figure 15 explaining the confounding variable

Introducing the Conceptual Model for adaptability

Proposing a conceptual model helps to explain the differences in the relationship between the concepts of an adaptive process in an organization. Environmental change and firm survival are labelled as, respectively, the independent and dependent variable. The transformation process as the mediator variable and the organizational characteristics as a moderator variable. Since the transformation process is moderated by the organizational characteristics, this is a moderated mediation. Lastly, the environment is labelled as a confounder variable. Following these explained relations, the comprehensive conceptual model based on the theory is introduced and displayed in Figure 16. Together with the theoretical model, this model is compared to the information found in Criminology in the following chapter. Furthermore, this model can lead to inspiration for testing hypothesized relationships between variables in further research.

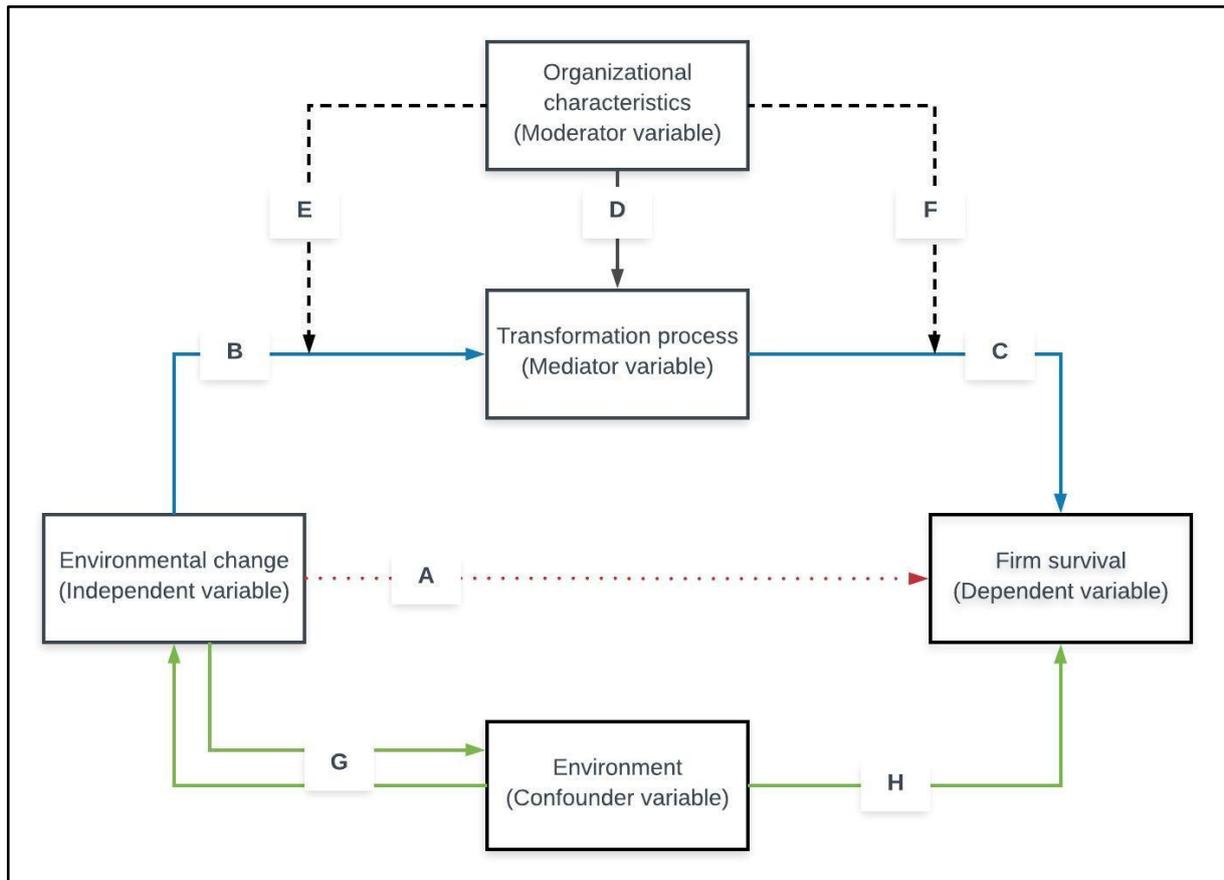


Figure 16 A Conceptual Model of adaptability in organizations

Conclusions about the findings concerning the adaptive process and the adaptive organization within Business Administration research

Increasing amounts of legal organizations need to deal with a demanding and dynamic environment. This raises the need for an adaptive process, which copes with the environmental change and ensures survival. This adaptive process entails ambidexterity and dynamic capabilities because both concepts influence adaptability positively according to current findings in Business Administration research. These concepts are described in the transformation process, which takes into account the causal relationships between the concepts. Considering, the theoretical model and conceptual model the adaptive process is as follows: Environmental change (input) activates the transformation process (process) which increases the chance for firm survival (output). The adjustment to increase or sustain the fit with the environment takes place in the transformation process.

The adaptive organization can be defined based on the created models as an organization with a well aligned transformation process and organizational characteristics that foster adaptability. This well aligned transformation process can be achieved by supportive organizational characteristics, far developed dynamic capabilities and an ambidextrous strategy. Creating an optimum to cope with environmental change, firm survival and even increasing competitive advantage and performance.

Comparing the findings in Criminology and Business Administration research about adaptability in organizations

Within this chapter, first the similarities and differences between the concepts mentioned in the theoretical model and the concepts found in the insights into criminal organizations that are related to the high adaptability are described per article. Afterwards, proposing additions to the theoretical model summarizing both concepts from the discipline Criminology and the discipline Business Administration that explain adaptability in an organization. Followed by an analysis about the implications for the relationship displayed in the conceptual model. How are the relationships effected by introducing new concepts into the model? An adjusted conceptual model is proposed explaining the new and changed relationships between the concepts. All in all, this will strengthen the knowledge about adaptability in Business Administration research and give new insights into how to achieve an adaptive organization.

Describing the similar and different concepts that are related to adaptability

1. Bottazzi and Me

The transformation process is triggered by an environmental change; the increase in the availability of powerful internet connectivity and increasing demand of malware. This leads to a transformation process in which operational capabilities were used for the development of dynamic capabilities and these developments are implemented in the operational capabilities. This interaction mixes existing techniques to create a new product: cybercrime as a service. Cybercrime organizations shift their business model by providing services to other people (adjusting operational capabilities). In collaboration with their customers, they adjust their services to fit the needs. With these services, they have adapted to the environmental changes and managed to increase their performance.

2. Arsovska and Temple

The adaptations of Albanian organized crime groups were triggered by threatening law enforcement activities. They noticed that they were vulnerable to identification and infiltration. To be more adaptive, they decentralized their structure and started fluid leadership (organizational characteristics). They also started to collaborate with other criminal organizations by acting as subcontractors and they expanded their network for increased influence within the government. With these adjustments, they had a better aligned transformation process. Dynamic capabilities needed to be developed to move their from burglary and car theft towards international marijuana suppliers and facilitators, Without the changes of the organizational characteristics and their networking activities, the Albanian organized crime groups could not have made these changes. This underlines the important role of organizational characteristics and the introduce the importance of a network outside the organization.

3. Densley, McLean, Deuchar and Harding

By the activation trigger technological developments and an increase in demand, the Glasgow drugs gangs were able to create business opportunities. With their dynamic capabilities, they sensed new opportunities and explored the possibilities of new ways of dealing and explored emerging markets. They did not only focus on operational capabilities, which shows ambidexterity. They managed to implement and exploit for example digital dealing and diversified their product range with products with higher profits and lower punishments. This shows how dynamic capability development led to the development of operational capabilities and successful implementation.

4. Shukla, Crump and Chrisco

Mexican transnational criminal groups have used their networking capabilities to change a threat into an opportunity and implement the needed change. They initiated import of chemicals in South Asia. This implies a role for networking capabilities in the adaptive process. They can explore new production processes at the same time as keeping the daily routine going, underlining the importance of ambidexterity. By this ambidextrous strategy, they managed to develop dynamic capabilities and operational capabilities and implemented these together in new production processes.

5. Zhilla and Lamallari

Albanian organized crime groups started to expand their network based on strong ties (such as family) which were based on trust. Later, they started to collaborate with other organized crime groups to quickly deal with the pressure from the environment. The collaboration made the Albanian organized crime groups to run current processes and initiate new projects with other groups. Both the networking capability and the collaboration makes it possible to be ambidextrous, efficient and flexible, which fosters the adaptive process. Network capability and collaboration are not yet acknowledged in the theoretical model.

6. Scaglione

Exposure to law enforcement investigations triggered the transformation of the structure of the Cosa Nostra. The hierarchical structure was a negative moderator and they turned it into a positive moderator with decentralization. The successful adjustment of their organizational structure underlines the importance of the moderating role of organizational characteristics. By the adjustment in the structure, the Cosa Nostra was able to cope with the arrests of male members. They used strong and trusted ties, their wives, to cope with the change and ensure firm survival. The wives managed to ensure continuity, which shows they were able to develop operational and dynamic capabilities quickly.

7. Duijn and Sloot

Criminal organizations show a high absorptive capacity, since the opportunities introduced by the upcoming Darknet were picked up fast. These opportunities are also turned into results quickly by criminal organizations, which show an aligned transformation process with well-developed dynamic capabilities.

8. Gilbreath

Mexican drug trafficking organizations were able to anticipate in early stages of regulation changes, which shows developed dynamic capabilities. They tested other precursors and production processes, which shows a tendency towards the exploration of new techniques. They take the threat of change seriously and proactively search for solutions. This demonstrates highly developed dynamic capabilities. Mexican drug trafficking organizations also show resource flexibility by moving production processes to Mexico. This flexibility had a positive effect on the transformation process.

9. Hall, Koenraadt and Antonopoulos

Criminal pharmaceutical networks introduced a wide product range of new and existing products to fulfil the demand of the changing environment. They expanded their network fast by collaborating with several online platforms and websites. Resulting in a flourishing illicit medicine market, underlining the need for ambidexterity in a highly dynamic environment. Additionally, networking capabilities and collaboration were necessary to achieve the resulting performances of the pharmaceutical networks.

10. Spapens

The Caviar Network adjusted their organizational structure. With this structure they could adapt by replacing members and they could continue criminal activity. This underlines the importance of structure on the transformation process and indirectly on firm survival. The early adoption of technological developments was necessary for Dutch criminal groups to survive. This underpins the importance of dynamic capabilities in the adaptive process for firm survival. The dispersion of production steps over different locations shows flexible resources, which were necessary to facilitate the transformation process. Collaboration with business partners in the US and later with Australia show well-developed networking capabilities by finding new partners. Furthermore, the collaboration resulted in flexibility in their demand channels.

11. D'Andria

Using gaps in the law to shift investments between illegal and legal assets without facing transactions costs, demonstrates the ability of absorbing knowledge. Early detection of triggers activating the dynamic capabilities to immediately act. The criminal organizations investment portfolio stays adaptive due to fast actions, profiting from both markets.

12. Telesetsky

Threats from the environment dealt with by flexibly in using ports and reflagging. Dynamic capabilities and the incentive to be flexible are very important in this adaptation process. Dynamic capabilities are used to absorb the threat and directly go to another port or reflag.

13. Rajamäki and Viitanen

Changing behaviour is used as a tactic to decrease the risk of detection. Since culture facilitates behavioural change, culture is an important organizational characteristic of organised crime in Europe. Quick adaptation of technology implies well-developed dynamic capabilities and a facilitating structure. As described in the theoretical model, culture and structure have influence on the transformation process.

14. Martynov and Moloeznik

Mexican cartels quickly jumped to the opportunity to not only use the smuggling routes for drugs supply but also for human trafficking as a lot of children wanted to cross the U.S. border illegally. Using their already acquired skills about smuggling to explore a new business, interaction between dynamic capabilities and operational capabilities. It also shows effective and flexible use of resources, by changing to human trafficking. Resources being an organizational characteristic of the adaptive process. By expanding from drugs to human trafficking, Mexican cartels increase their power and influence around the U.S. border.

15. Rajamäki and Kämpfi

Quick adaptation of technology implies well-developed dynamic capabilities and a facilitating structure. Changing behaviour is used as a tactic to decrease the risk of detection. Since culture facilitates behavioural change, culture is an important organizational characteristic of organised crime in Europe. Both the structure as the culture are described in the model as moderators of the transformation process.

16. Lambrechts and Goga

Abolone poaching groups rely on flexibility in operations and networking capabilities to be able to continue their business and adapt to the environment. Poaching groups collaborate with Asian crime groups. The flexibility shows ambidextrous behaviour by both poaching and searching for new options to continue their business. Again, networking capabilities and collaboration are used in the transformation process.

17. Glazkova, Grudin, Mironova, Burmistrov and Prudnikov

Organized crime in Russia show the inextricable connection between environment and crime developments. This implies the clear presence of the feedback loop of the theoretical model. When environment changes, adaptation of new threats and opportunities is processed, and the output than again influences the changes in the environment. Furthermore, the organized crime groups changed their management team from single handed towards collective control structures. This new form of structure and senior management enables them to solve complex problems quickly. Moreover, they use new technologies to enable faster decision making. All these changes result in a better alignment of the transformation process.

18. Xia

Triads adopted network structures, which provided the best fit within their environment. As a network structure, they could better align their processes and enable collaboration with legal businesses and politics. They expanded their business and network and as a result, they survived and gained power and influence. This underpins the importance of the structure as facilitating organizational characteristic. It also shows networking capabilities and collaboration as important processes for adaptation.

19. Bequai

Organized crime masters new technologies fast. Organized crime also managed to penetrate new markets and increasing their environment. These events show a high development of the dynamic capabilities. In this example adaptation also leads to power in the market. Power could be a promotor of adaptation. For example, signals for changes in the environment could be obtained earlier when organized crime has influence within the government.

20. Ruth, Matusitz and Wan

Organised crime groups penetrate markets in neighbour failed nation-states and exploit low cost. This implies the groups to be very aware of their environment and always searching for new opportunities. Networking is used as a dynamic capability to find these opportunities, different from the theoretical model. As a result of the adaptation, crime groups gain power in the failed-nation states.

21. Lavorgna and Sergi

The Italian mafia collaborates with other foreign groups and the legitimate entrepreneurial world to carry out their activities efficiently. The mafia is using its network in the transformation process to benefit from other people's knowledge and skills. Furthermore, they developed new forms of usury while also promoting existing products, underlining ambidexterity in the adaptive process.

22. Hughes and Denisova

Recruiters for human trafficking in Ukraine started to look for women in the countryside for work abroad. Finding women in these low-density area's shows that they can acquire a lot of knowledge from their environment. They use already recruited women to recruit new women. This shows that human traffickers use their network intelligently to continue business.

23. Basu

Mexican cartels move fast from threats towards opportunities, because they can absorb information of the environment and act on that. This indicates the importance of dynamic capabilities within the adaptive process to improve firm performance. The Mexican cartels adjusted their structure into a two-tiered network with an organizing core with strong ties and a flexible operating periphery with weak ties. This flexibility supported the continuity of the cartels.

24. Dua and Menkhous

Somalian pirates show knowledge about their environment and flexibility by going far beyond their original zones and starting on-land criminality and predatory militia activities. This shows high developed dynamic capabilities, including networking capabilities, by starting new activities at other locations.

25. Kenny

By surrendering, Pablo Escobar managed to control his criminal organization from within prison. He collaborated with the environment by commanding to be imprisoned in a prison of his own design. This collaboration increased the power and chance of survival of the organization of Pablo Escobar. This collaboration differs from the theoretical model.

26. Tzvetkova, Pardal, Disley, Rena, Talic and Forberger

Drug dealers designed their resources for flexibility. With this flexibility, they can maintain their reputation and position in the market when certain negative changes occur. They can keep the positive influence going with some simple adaptations. This underpins the importance of the facilitating role of resources for the transformation process.

27. Leuprecht, Aulthouse and Walther

By supporting the Jamaican Labour Party, the Shower Posse managed to get free reign to operate in Jamaica and the secure their headquarters. This shows devious networking capabilities, which were important for the adaptive process. Later, the Shower Posse decentralizes towards a hub-and-spoke network with a small number of brokers as hubs. With this structure and developing dynamic capabilities, they improve their performance and increase their power.

28. Duijn, Kashirin and Sloot

Criminal networks have a structure in which losses of human capital can be easily taken over by other members, which shows flexibility of resources. On the other hand, high level replacements are often found using strong ties (short social distances). This shows that criminal groups use their own people, but also uses its networking capabilities to find people outside the organization.

29. Calderoni

Two drug trafficking mafia groups show a structure in which leadership is protected. Since the exposure of leaders would be a thread for the firm survival, they adjusted their structure. This structure enabled stable senior management and flexible resources at critical positions of the organization. These characteristics have become better facilitators for adaptiveness.

30. Eilstrup-Sangiovanni and Jones

Criminal organizations form decentralized yet tightly interconnected network structures in which participants are encouraged to learn quickly through experimentation. Hence, structure and leadership promote to develop the dynamic capabilities of the organization. With their structure, information flows between trustworthy people and flat decision-making allows faster exploration of ideas. Criminal groups use the internet to collaborate with their environment, which is a difference with the theoretical model. Similarities are the explorative nature of development and influence of leadership and structure on the transformation process.

31. Jones

The Cártel de Jalisco Nueva Generación (CJNG) adapted during a period of fragmentation of criminal groups by adopting groups with specific skills and copying strategies from other groups. Due to these tactics, the CJNG manages to expand their network and increase profits. They used their networking capabilities to find other groups. They adopted or copied these groups for capability development. This is different from the theoretical model.

32. Daniel

With applying insurgency as a new type of crime, non-state armed groups try to gain power for their benefit. With the increase in power, they can better manage the coming environmental changes. Power resulting from the adaptive process is not yet included in the summarized model.

The conclusion of the comparison

The data from Criminology about adaptiveness in criminal organizations underlines most of the theoretical model based on knowledge from Business Administration research. The underlined concepts from the theoretical model are:

- The need for dynamic capabilities to drive the adaptive process.
- The need for ambidexterity to drive the adaptive process.
- The interaction between dynamic and operational capabilities for development of the capabilities.
- The process of identifying the activation triggers leading to the transformation process and the transformation process leading to performance outcomes.
- The organizational characteristics linked to moderating the transformation of criminal organizations are: Leadership – Culture – Senior Management – Structure – Resources.
- The environment interacting with the activation trigger and being a risk factor for the firm survival.
- The feedback loop from the outcomes of the adaptive process towards the activation trigger.
- The components of firm survival: Competitive advantage and Performance outcomes.

Almost all concepts within the theoretical model are backed by the data from criminal organizations except for the organizational characteristic: Identity. This can be caused by criminal organizations showing such a strong identity that Criminology researchers don't think it is necessary to mention. Another explanation can be that culture and identity are often linked and maybe Criminology researchers did not thought it necessary to mention separately. Therefore, identity is not left out in the theoretical model in the next chapter.

One of the concepts different from the theoretical model but strongly related to the adaptive process in criminal organizations according to the data is networking capabilities. 13 out of the 32 cases from criminology mention a positive link between networking capability and the adaptive process. Networking capability is described in the cases from Criminology as the ability of an organization to broaden their network by creating new information flows as well as strengthening the ties in the existing network. This leads to collaboration and earlier identification of activation triggers. Another benefit of networking capability is that it increases the power and influence of an organization by being connected to more parties in the environment. Networking capabilities therefore contribute to the firm's ability to build, integrate and reconfigure internal and external competences and is considered as a core component of the dynamic capabilities in the next chapter.

The other differences are closely related to the networking capabilities of criminal organizations. As described before in this chapter these concepts are Collaboration and Power & Influence. Networking capability can lead to more opportunities to collaborate and collaboration has an positive effect on developing dynamic capabilities by learning from others and using the expertise of other parties. Therefore, collaboration has a mediating role within the transformation process. Power & Influence is an outcome from networking capabilities and collaboration. Hence, Power & Influence can be integrated in the components to facilitate firm survival.

As a result of criminal organizations collaborating with other parties in the transformation process, the relation with the environment is influenced differently relatively to the theoretical model proposed in the previous chapter. Criminal organizations, while adjusting their behaviour and actions in the transformation process, change their environment. This interaction between the transformation and the environment has a positive effect on the fit with the environment and therefore is highly adaptive according to the Criminology cases.

Concluding, concepts within the theoretical model based on Business Administration research are not changed and mostly backed by the Criminology cases. Only additions are proposed of concepts that are linked to adaptability in Criminology research and their caused relations. These concepts are: Networking capability – Collaboration – Power & Influence. The main effect of adding these concepts to the theoretical model is an interaction between the transformation process and the environment.

Proposing adjustments to the Theoretical Model

The additions in the theoretical model are marked purple, presented in Figure 17. Following the conclusion of the comparison, networking capability is added to the list of components for dynamic capabilities. Networking capability is strongly linked to high adaptiveness in criminal organizations within Criminology research. This is found in 13 of the 32 cases analysed. The second addition in the theoretical model is the concept collaboration, this is a new mediator within the transformation process. Dynamic capabilities and specifically networking capability will facilitate collaboration with other parties. Collaboration is linked to the adaptive process of criminal organizations; therefore, the concept is integrated within the transformation process. Collaboration is described in the cases about criminal organizations as a positive influence on the dynamic capability development, since collaboration facilitates mutual learning and faster reconfiguration of capabilities.

Most cases acknowledged the importance of the adaptive process to guarantee continuity, firm survival. An interesting addition is the outcome power and influence which facilitates firm survival in criminal organizations. It is an output driven by the networking capabilities and collaboration. Especially useful for earlier identification of activation triggers, because power and influence as described in criminal organizations increases the knowledge about the environment.

Furthermore, due to the integration of collaboration within the transformation process the relationship between the environment and the transformation process changed. Collaboration can expand the environment in which the organization operates as well as changing the environmental attributes. For example, collaboration can lead to a less competitive intensity in the market.

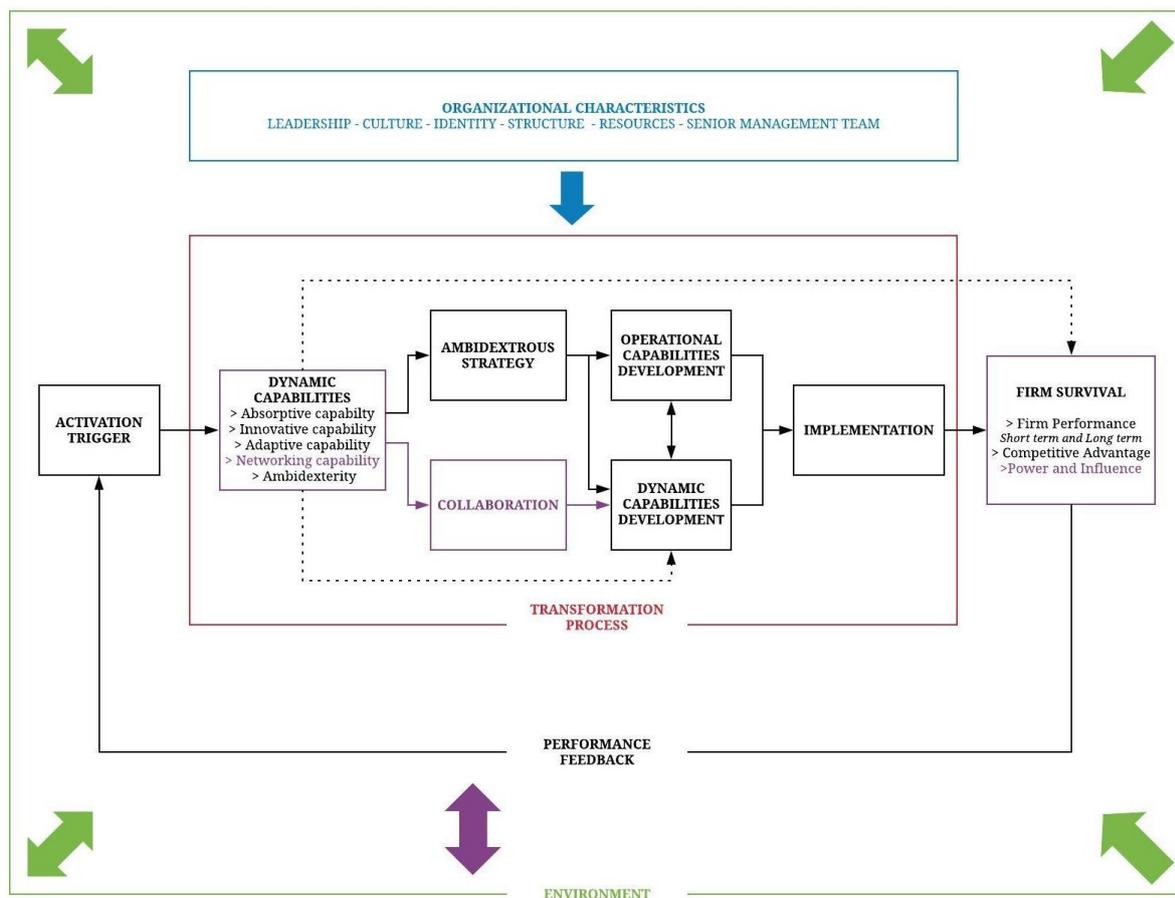


Figure 17 The Theoretical model with additions from Criminology

On the other hand, environment can moderate the relations between Dynamic capabilities → Collaboration and Collaboration → Dynamic capability development. More developed dynamic capabilities, especially networking capabilities, is hypothesized to have a positive relation with collaboration based on the found insights into criminal organizations adaptive process. Accordingly, more dynamic capabilities will lead to more collaborations. More collaboration will lead to more dynamic capability development according to the criminal insights, hypothesizing a positive relationship between collaboration and dynamic capability development.

The environment can moderate the relation ‘Dynamic capabilities → Collaboration’ by for example a market which is not eager to collaborate. Identifying parties willing to collaborate will be difficult thus the relationship between Dynamic capabilities and Collaboration is weakened. Taking the same example for the second relationship ‘Collaboration → Dynamic capability development’, it will cause a weakening of the relation as well. Since, if collaboration is established between parties which are still not eager to collaborate, the parties will be more reserved and therefore share less knowledge. This decreases the impact of collaboration on dynamic capability development.

Explaining the changed relationships by adjusting the Conceptual Model

To explain the changes in the conceptual model, it is first important to visualize the interaction between the transformation process and the environment. Figure 18 visualizes the concepts within the transformation process, adding the concepts discussed in the previous chapter in red as well as the relationships. The moderating role of environment on the relations between ‘Dynamic capabilities → Collaboration and Collaboration → Dynamic capability development’ is clearly presented in Figure 18. Furthermore, the feedback loop from collaboration back to environment is also visualized. Relation G and H are not changed by the additions from Criminology research.

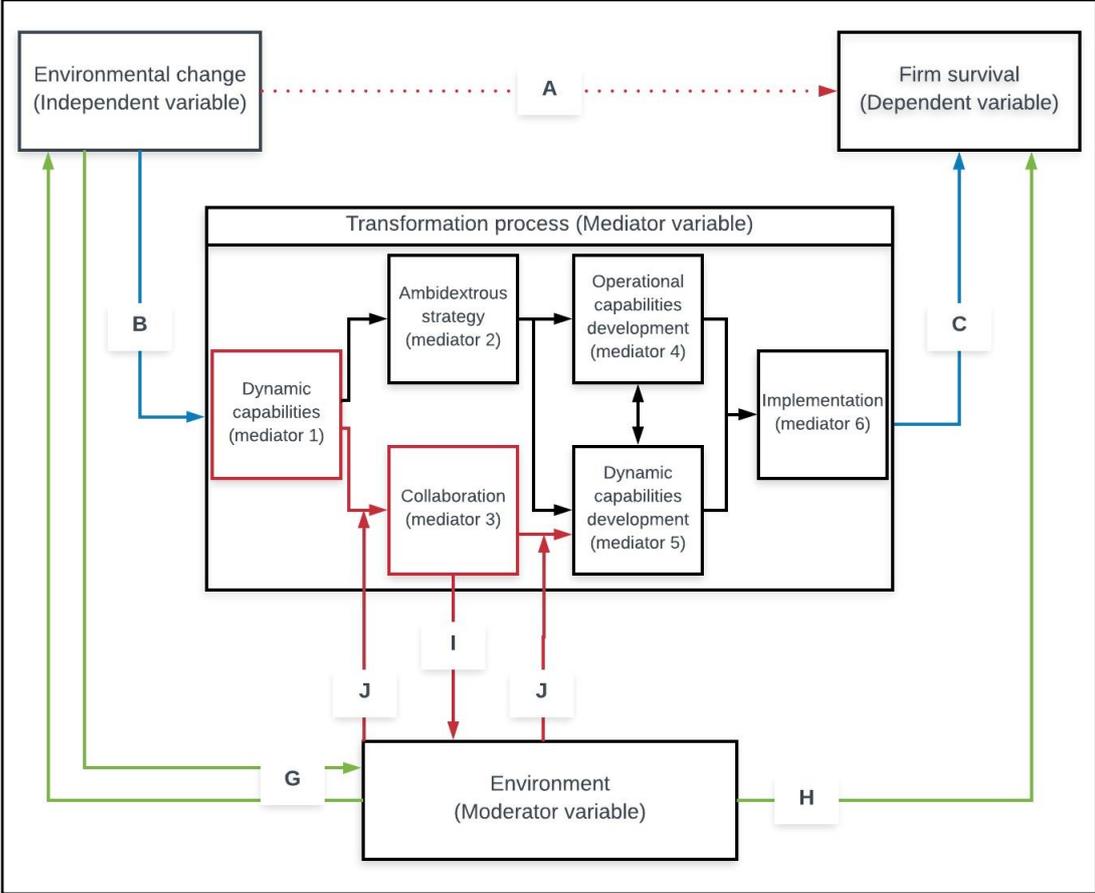


Figure 18 Environment as a moderator

Since the environment now interacts with the transformation process it does not satisfy the conditions of a confounder variable (Jager, Zoccali, MacLeod, & Dekker, 2008). The environment has a moderating role for the relations between concepts within the transformation process and interacts in both directions. Hence, it comes most close to be a moderator variable (Baron & Kenny, 1986). Although, not all conditions of a moderator are satisfied. The adjusted conceptual model is presented in Figure 19.

The organizational characteristics are unchanged in the conceptual model, but the organizational characteristics do moderate the relations between ‘Dynamic capabilities → Collaboration and Collaboration → Dynamic capability development’ as an addition to the other relations within the transformation process. For example, if senior management believes that the risk of collaborating is too high, it is less willing to collaborate, and it will weaken the relation between dynamic capabilities and collaboration. An example for the second relationship between ‘Collaboration → Dynamic capability development’; leadership needs to facilitate learning from collaboration to have a positive influence on dynamic capabilities. When leadership facilitates mutual learning, the relation between collaboration and dynamic capability development will be strengthened. Concluding, organizational characteristics still moderate the whole transformation process directly, as displayed in Figure 19.

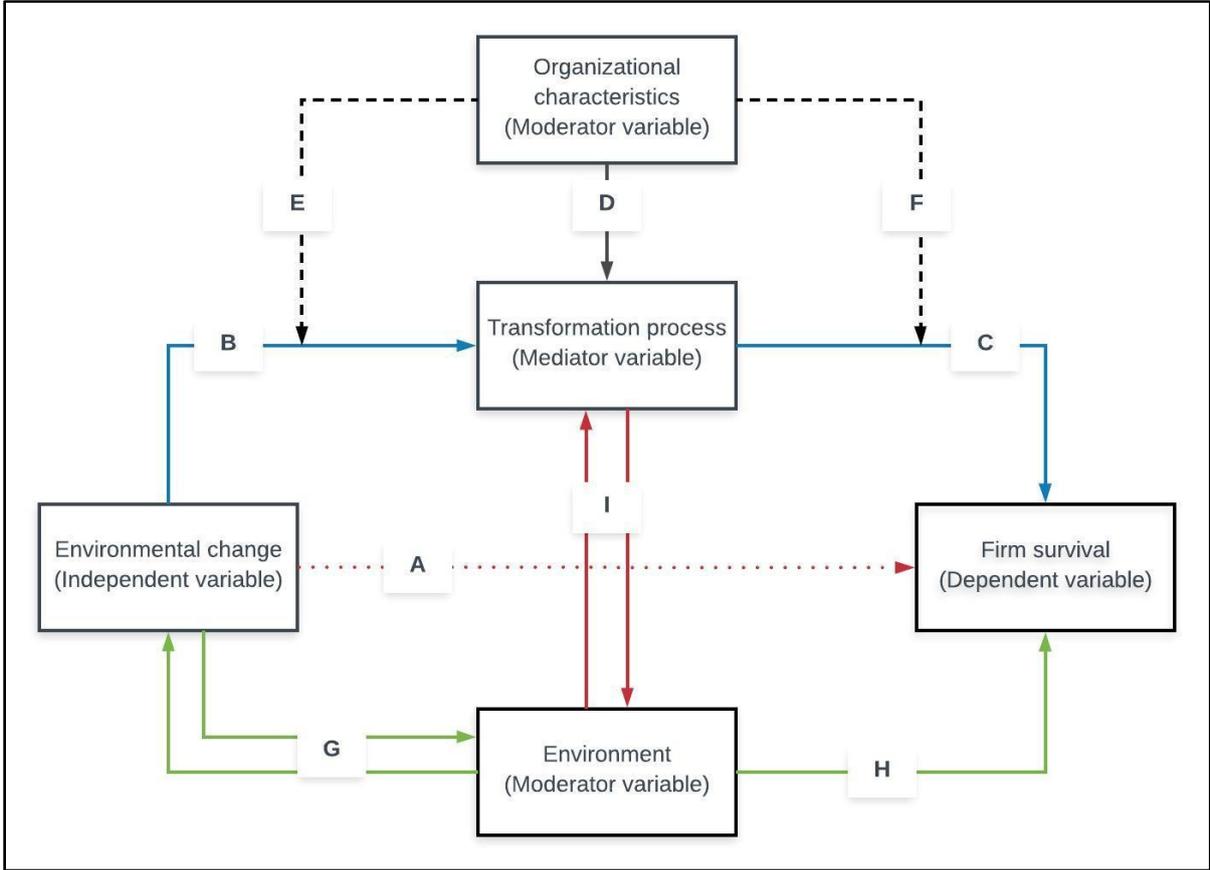


Figure 19 The adjusted Conceptual Model

Discussion

This study provided a theoretical and conceptual model describing the adaptive process based on Criminology and Business Administration research. This exercise of comparing Criminology and Business administration research on the specific topic of adaptability was not executed in previous research and surely was worth the effort. It delivered valuable additions to the current knowledge in Business Administration research about the adaptive process. These additions were drawn from differences in the insights into criminal organizations adaptive processes and the knowledge about adaptiveness in Business Administration research.

The hypothesis that criminal organizations demonstrate high adaptiveness based on Shelley (1995) is supported by the findings of this study. Extracting 32 cases describing the adaptive process in different criminal organizations. The only limitation is that Criminology articles do not always explicitly describe the whole adaptive process, because the main focus is prevention of criminal acts not the description of organizational processes.

Nevertheless, the exercise of comparing a phenomenon through two disciplinary glasses did lead to theoretical inspiration as described by Kersbergen and Waarden (2004). The theoretical inspiration leading to adjustments in the theoretical model and conceptual model for the adaptive process. Kersbergen and Waarden (2004) also describe that cross-disciplinary exercises can lead to mutual learning. In order to do so, it is important that researchers in the field of Criminology take the proposed model and study what kind of implications this gives for law enforcement. How can regulations and police actions be changed to effectively deal with fast adaptation in criminal organizations.

Furthermore, the proposed models can be used to test the relations in the model and further research the adaptive process in organizations. This process is very important for survival of organizations in today's increasing dynamic and demanding environment (Uhl-Bien & Arena, 2018). Therefore every attempt to make the adaptive process more insightful and more reliable is of most importance for Business Administration research and practice.

Lastly, synthesising the stimuli, reactions and output of an adaptive process did lead to a list of categories and components. This list is not further used in the study, because it was not able to explain the relations in the process of adaptiveness in enough detail to make the comparison. Therefore, the comparison was made using summaries of each individual case. The summaries describe the adaptive processes, and the relations within, in as much detail as possible with the information available in the criminology articles. This leaves the list with categories and components unused. This list is included in appendix B because it can be a source of theoretical inspiration from the discipline of Criminology for other disciplines.

Limitations

This study is not without limitations. The outcomes of the study are applicable for all organizations, although not useful in every situation. If the organizational environment is stable and relatively predictable, it is advised to continue to focus on traditional sources of competitive advantage (Reeves & Deimler, 2011). Nevertheless, the outcomes of this research are interesting for firms within a dynamic and demanding environment or close to this kind of environment. Making it of most importance to have a well implemented and aligned transformation process.

The decision to use a systematic literature review made the process of extracting insights into criminal organizations adaptive process from Criminology articles more transparent. However, it also brought limitations; the conceptual boundaries set to guide the SLR may be construed as rigid, since they do not allow room for any exceptions to be made to the inclusion or exclusion of articles. Furthermore, the strict search terms set to identify relevant articles might have excluded articles with less specific abstracts and/or with absent keywords (Pittaway, Robertson, Munir, Denyer, & Neely, 2004). The limitation of the inclusion and exclusion criteria could apply to the study, because this study did not make exceptions to the inclusion and exclusion criteria defined for the systematic literature review. Still,

the research questions were broad enough to leave room for exceptions. The impact of the limitation concerning the search term was decreased by using synonyms for adaptiveness and criminal organizations in the search string. When conducting the systematic literature review, only one researcher was involved making the result susceptible to interpretation biases. By clearly stating the steps and working through them systematically and transparent, this limitation is controlled for.

This study promotes adaptiveness, but it does not completely manage the concept of intelligent adaptation, because organizational inertia may also lead to intelligent adaptation (Levinthal, 1991). Over-adapting to changes in the environment could leave an organization without a core business, due to unnecessary adaptation. The ambidextrous strategy in the theoretical model partly deals with this concept, but it could be integrated further.

The framework which was used to extract data from the Criminology articles was based on the open-system theory. Due to the large amount of theories, this theory might not have been the most suitable one. For example, the complexity theory might also fit, although this theory is highly related to the open-system theory. Within the Criminology articles that were selected, seven articles were focussed on drug trafficking in South and Middle America. Seven other articles were focussed on drug trafficking in Europe. This means that the insights drawn from the articles are limited, because other criminal industries might have different ways of dealing with the adaptive process. But insight into other criminal industries are more rare. Another limitation concerning the Criminology articles is the focus of the studies. Criminology focusses on the prevention of criminal acts instead of the organizational process. Therefore, the insights extracted from the criminal articles could be incomplete. The study deals with this problem by taking various cases to draw conclusions on.

The last important limitation is that the theoretical and conceptual model summarizing knowledge within Business Administration research about the adaptive process is based on five articles, which leaves space for missing an important insight into the adaptive process. This limitation is dealt with by using review articles of which four of the five articles are highly cited. Still, it can be that the researcher missed or misinterpreted a component in the models from the review articles.

Recommendations for further research

This chapter describes recommendations for further research. The proposed models, about the adaptive process integrating insights from Criminology and Business Administration, should be tested in real life. Is this theoretical model indeed a complete explanation of the adaptive process in organizations? Are there components or organizational characteristics that influence the adaptive process, which are not yet considered? Answering these questions could lead to a multi-applicable model for the adaptive process in organizations. Also, deepening of the concepts ambidexterity and dynamic capabilities is needed. Especially, in a world where more organizations than ever before are confronted with dynamic and demanding environments.

The proposed models could also be used for theoretical inspiration within the discipline Criminology. Is it possible to prevent crime more effectively, when the understanding of the adaptive process in a criminal organization is more detailed. Testing the conceptual model in criminal organizations can increase the understanding of adaptiveness in criminal organizations. This research could lead to mutual learning and more specific laws dealing with the high adaptiveness in criminal organizations.

Further research is needed to test the hypotheses about relations between specific components of the proposed conceptual model. Are the described relations of the concepts in the conceptual model significant? For example, is relationship A mediated by the transformation process? Are the differences between Business Administration and Criminology indeed the reason for highly adaptiveness in criminal organizations? To perform statistical tests to validate these relations, first constructs and attributes need to be identified for the concepts displayed in the conceptual model.

The proposed model can also be a driver for implementation of the adaptive process in legal organization. Further research should focus on how to achieve a high level of adaptiveness by implementing a transformation process and which concepts have priority.

The list presented in Appendix B could inspire further research into the specific stimuli, reactions and outcomes of the adaptive process in criminal organizations. Are they, for example, the same as in legal organizations? This could lead to implications about the differences and similarities of the stimuli, reactions and outcomes of the adaptive process. It can result in further deepening of the knowledge about adaptiveness.

In this specific study, the adaptive process is compared to the discipline of Criminology. This tactic can be used for another discipline as well, such as Biology or Psychology. These disciplines may as well increase mutual learning and further deepen the concept of an adaptive process.

Conclusion

“Which insights into criminal organizations can strengthen the knowledge about adaptiveness as a process and the phenomenon adaptive organization in Business Administration research?”

After comparing the findings from Business Administration research about adaptability and the insights into criminal organizations adaptive process. The study can conclude that the concepts related to adaptability in Business Administration and Criminology are similar. Most interesting are the additional concepts linked to the adaptive process in Criminology research. Therefore, the knowledge about adaptiveness as a process and the adaptive organization in Business Administration research is strengthened by introducing three new concepts that are related to the adaptive process according to Criminology research. Indirectly, the knowledge within Business Administration is strengthened by combining all concepts related to adaptiveness in a Theoretical Model and explaining the relations in a Conceptual Model. This exercise of combining the concepts related to adaptability in organizations to explain the adaptive process was not yet conducted, adding academic value to the study. Furthermore, the new introduced concepts can lead to mutual learning in Criminology research and Business Administration research. Since, Business Administration has three new concepts to study in relation to adaptability and Criminology can learn from Business Administration how the concepts within the adaptive process are related and where criminal organizations differentiated from legal organizations. It might be possible for Criminology to come up with regulations to cope with the high adaptability of criminal organizations and for legal organizations to learn how to be highly adaptive.

The three concepts retrieved from the insights into the criminal organizations adaptive process are: Networking capability – Collaboration – Power & Influence. Networking capability can be described as an important component of Dynamic capabilities. Collaboration is a new introduced mediator in the transformation process and Power & Influence is a new introduced component facilitating firm survival. By adding the concepts to the conceptual model, an interaction between the transformation process and the environment arises. This interaction was not acknowledged in the current findings about adaptability within Business Administration research.

Concluding, by combining the main concepts known in Business Administration related to adaptiveness in a Theoretical Model and a Conceptual Model, the knowledge about adaptiveness and the adaptive organization is already strengthened, creating academic value. Additionally, by introducing three concepts from insights into criminal organizations, Networking capability – Collaboration – Power & Influence, the models and knowledge about adaptiveness and adaptive organisations are further explained and strengthened. These insights and adjusted models provide managerial implications and inspiration for further research.

Managerial implications

This chapter begins by introducing recommendations “to increase adaptiveness in organizations” for management. The recommendations are extracted from the insights into adaptability acquired from findings within Business Administration research and Criminology research. Afterwards, a case illustrates possible implementation ideas for the recommendations. The case can inspire the reader about possibilities to implement the recommendations in an organization.

Recommendations extracted from findings within Business Administration research

- Develop knowledge about the environment surrounding the organization.
- Identify dynamic capabilities important for your specific organization.
- Maintain a balanced ambidextrous strategy.
- Develop both operational and dynamic capabilities when necessary.
- Implement new and adjusted developments.
- Organizational characteristics need to be supportive of the transformation process by for example carefully allocating resources promoting ambidexterity and dynamic capability development.
- Take care of the alignment between the concepts within the transformation process.

Recommendations extracted from findings within Criminology research

- **Develop networking capabilities.** Expanding your network with important parties, such as the government. Additionally, and even more important, create stronger ties within your network. With stronger ties, the quality and frequency of sensing environmental changes can increase.
- **Collaborate with other parties.** By collaborating with other parties in the development of capabilities, a firm can use another firm’s capabilities or use them to develop their own. Using capabilities of other firms can ensure a quick implementation and can create time for the other parts of the transformation process.
- **Gain more power and influence in the environment.** This is closely related to networking capabilities and creating stronger ties. With more power and influence, a firm can direct change in the environment and identify triggers earlier.
- **Flexible resources.** For example, with more than one supplier mitigates risk and can create flexibility.
- **Decentralized network structure.** A decentralized structure enables fast decision making.
- **Implement fluid leadership.** Leaders need to have expertise on the core business, knowledge about the environment and encourage curtailed amounts of autonomy.
- **Create a culture that facilitates behavioural changes.** To be adaptive, an organization must change, and people may have to change their behaviour. Therefore, a flexible culture is important which facilitates behaviour changes.

Case: Big Bank

Big Bank is a financial services company which is located in the Netherlands. The company operates for over 20 years. Big Bank has a top down management and tends to keep doors closed. The bank is more focused on internal processes. In perception of the bank, they seem to be operating in a safe and comfortable environment. On top of that, the bank makes a reasonable profit. Nevertheless, there are some changes going on in their environment. Start-ups specializing in financial services, changes in laws and regulations and new technologies, such as block chain, are making the environment more dynamic. How can Big Bank learn from the high adaptiveness of criminal organizations?

Advise

The environment of Big Bank is changing and becoming more dynamic. To survive, the bank needs to be adaptive. Big Bank has a top down management and hence a centralized structure. A centralized structure makes it harder for an organization to be flexible. Criminal organizations have decentralized structures which make it possible to act faster and be more flexible. When Big Bank needs to be more adaptive, they should consider to be less hierarchical. Because, an hierarchical structure can have a negative moderation effect on the transformation process. The bank needs an well aligned transformation process to quickly adjust to the changing environment. Otherwise, firm survival will be threatened.

Changes in laws and regulations are hard to predict for legal organizations. Therefore, it is important to increase networks and gain strong ties with people outside their company. Criminal organizations make use of their networks to identify changes in their environment in an early phase. They can adjust in time and sometimes even anticipate beforehand. Additionally, some criminal organizations infiltrate or subsidize governments to gain power and influence. For Big Bank it is advisable to also use their network. By creating strong ties with people in their environment, they can use them to pick up early signals of environmental change. With these signals, Big Bank should be able to start their adjustments proactively. This can result in competitive advantage and firm survival. Furthermore, by lobbying Big Bank might be able to influence changes in laws and regulations and certainly know quicker about planned changes in for example the law.

New technological developments might be a threat for organizations in terms of substitution. However, to survive companies should adopt useful technologies to improve their organization and adapt to environmental changes. Criminal organizations have shown to be quick adopters of new technologies and use them in their advantage. Additionally, some criminal organizations choose to collaborate with other criminal organizations who can perform the required tasks better. Big Bank needs to develop capabilities that foster early adaption of technologies and consider collaborating with other parties to gain knowledge about the technological developments.

Concluding, Big Bank should focus on working towards a more decentralized structure, which positively effects the adaptiveness. Secondly, by expanding and strengthening their network Big Bank will be able to spot changes faster and act more proactively. Lastly. Big Bank can deal with the threatening technological developments by collaborating with parties that have more expertise about a certain technology. This collaboration can lead to dynamic capability development and thereby increasing the strength of the transformation process within Big Bank.

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Appendix B Categorizing the stimuli, reactions and outcomes of adaptability in criminal organizations

Stimuli

Environmental change:

Politics:

- Local political system change
- Failed nation-states
- Lack of Effective governance

Economic:

- Capitalist economy
- Economic crisis
- High unemployment rates
- Increase in competition

Social:

- Globalization

Technological:

- Rise of the Darknet
- Internet/ITC developments
- Technological innovations
- Upcoming high-tech sector
- Increase of sensitive/confidential information on the internet

Legal:

- Increase in law enforcement
- New and/or strengthened police investigation methods
- New regulations
- Name or organization on black list

Negative feedback:

- Increase in demand
- Scarcity of raw materials
- Bad quality of raw materials
- Prohibited raw materials
- Leader(s) surrenders to police
- Cut-off sales channels
- Increase of vulnerable customers
- Arrests employees

Reactions

Input:

- Increase money flow
- Information from within the government
- Increasing demand of labour
- Shifting financial backers
- Diversification of import sources/products
- Use of sensitive/confidential information
- Diversification in supply strategy (Multiple suppliers internationally)

Throughput:

Innovation:

- Mixing techniques for new products
- Early adopting and exploiting technological innovations
- Constantly testing new production processes
- Developing new forms of services
- Product as a service

Production and Logistics:

- Dissemination of transport
- Flexible distribution/sales channels
- Dispersed supply chain
- Easily moving of the production process
- Diversification of production processes
- Acquisition of fitting supply chains
- Production activity increase
- Flexible in core activities

Human resources:

- Digitalization of human work
- Flexibility in recruitment (location/target audience)
- Flexible employee roles/skills
- Quick replacement of high-end staff

Output:

- Product and/or service diversification
- New product and/ or services
- Increase in authority
- Infiltrating new markets
- Growing reserves
- Growing capital
- Risk reduction
- Faster interacting networks
- Solving more complex problems

Structure:

- Networks with group authority
- Strengthen/increase international structures
- Network structure development
- Changing management structure → collective control
- Infiltrating government → new network structure

Internationalization:

- Expanding businesses
- Moving total business for better conditions

Finance and Risk:

- Risk mitigation
- Shifting investment strategies without drawbacks

Leadership and Communication:

- Sophisticated communication networks
- Fluid leadership
- Networking for influence in government
- Change of communication manners
- Digitalization of communication

Outcomes

- Ensuring continuity
- Maximize profit
- Maximize return of effort
- Keeping the trust of customers
- Increase sales
- Industry growth
- Flourishing markets
- Decrease of risks
- Resolved capacity problems
- Accelerating the process of interaction
- Diversification of product and/ or markets
- Network efficiency and flexibility
- Easier coordination of network
- High interconnected power
- Increasing dominance
- Adaptable investment portfolio
- Adaptive supply chain