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Collaboration between first responders: a look into the dynamics of small-scale emergency response operations

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This thesis is a product of ours, but the shortcomings are solely mine.

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PART 1

1 Introduction

On Friday the 7th of January 2011, a SUV carrying a driver and three passengers drove southwards the E8 through Lavangsdalen in the county of Troms. It was a dry day with minus eight degrees with the road partially covered in ice and snow. At approximately 14:10, for unknown reasons, the car veered towards the other line.

A northbound bus carrying a driver and 42 passengers attempted an evasive maneuver, but the right guardrail prevented it. In the subsequent crash, the bus lost its steering capacity veering into the opposite line and crashing against a minibus that carried a driver and six passengers.

A call reporting the accident entered AMK at 14:10. The first ambulance reached the accident 20 minutes after the first call while the first police car arrived at 14:33. While the operation was ongoing seven additional ambulances from different municipalities, the fire department, the ambulance helicopter, as well as a bus to shelter, check and transport the unharmed passengers were mobilized (SHT, 2012)

This tragic event that claimed the lives of five people is one of many small-scale events that trigger emergency response operations happening every year in Norway[1].

Small-scale emergencies such as the one presented above are not as severe as events like 9/11, the Fukushima Daiichi nuclear disaster, or Typhoon Haiyan for a country or a society. Nevertheless, for victims and local communities, a small-scale "happening" may present as many implications as the abovementioned infamous events (Kreps & Drabek, 1996, p. 134).

In the literature on emergency management, most often, emergencies have been characterized, regardless of their scale, as "wicked" problems. Dynamic and complex

[1] The Hovedredningssentralen [Joint Rescue Coordination Center] registered 2983 land based events for the whole country and 798 for Northern Norway in 2019 https://www.hovedredningssentralen.no/wp-content/uploads/2020/01/HRS-Statistikk-2019.pdf (21/04/2020)

situations that are beyond the capabilities of any single organization and require the participation of multiple actors for successfully addressing them (Kapucu 2012, p. 15; Weick & Sutcliff, 2011, pp 20, 40). The resource mobilization required to respond to the Lavangsdalen accident described earlier, shows that this can be the case with small-scale events as well.

In critical times society looks at its leaders and expect that they will avert threats or minimize damages (Boin et al., 2005, p. 1; Boin & Hart, 2003, p. 544). To fulfill this expectation modern societies, develop security systems to deflect and manage emergencies. It is the organization of those systems that is the topic of this thesis.

Generally, the way of dealing with emergencies has been organizing the response operation in a hierarchical fashion (Hu et al., 2014; Fimreite, 2011; Kapucu & Garayev, 2011; Sylves, 2014). However, incidents in recent decades have shown that this type of management presents clear shortcomings (see for example Comfort, 1994; Jennings & Ewalt; Hu et al., 2014; 1998 Kapucu, 2006a; Waugh & Streib, 2006). These deficiencies include the possibility of having organizations that are not part of the same organizational scheme, mismatches between the dynamics of the response operation and the dynamics of the emergency, and dangers of miscommunication or communication failure between the top tiers and the people working on the ground. The possibility of losing workers due to fatigue or stress caused by a centralization of the chain of command, or by having incomplete or unreliable information for the rational decision-making model, often sponsored by hierarchical management proponents is also a concern (Aldunate et al., 2005; Axelsson & Axelsson, 2006; Head & Alford, 2013; Hatch, 1997; Moynihan, 2008; Quarantelli, 1997; Waugh & Streib, 2006; Lin & Su, 1998).

Some authors have gone further than identifying the weaknesses of the model to declare that the classical hierarchical style is ineffective when dealing with emergency situations (see for example Kapucu & Garayev, 2011). Gradually, a different style of management, non-hierarchical inter-organizational collaboration, has gained

momentum and several authors have presented it as the cornerstone of effective emergency management, due to its potential to surpass difficulties arising from the hierarchical model. (Kapucu et al, 2009, p. 300; Kapucu & Garayev, 2011, p. 366; Hu et al., 2014, p. 699: Rykkja, 2009, p. 6; Sylves, 2014, p. xvi, 17; Turoff et al., 2008, p. 464; Waugh & Streib, 2006, p. 135).

Non-hierarchical inter-organizational collaboration might serve better than the classical hierarchical style as a model for managing emergency response operations. It is, however, not a *panacea* since the model faces some challenges as well (Heranz, 2010, p. 312). In the same way that investigations are conducted after successful operations to cast light on possibilities for further improvement, investigating the factors that potentially hinder non-hierarchical inter-organizational collaborative dynamics is just as relevant to enhance the effectiveness of emergency response operations.

The emphasis on non-hierarchical inter-organizational collaboration as a way of organizing response operations has come together with a proliferation of research that focuses on this topic with a variety of approaches (see, Nohrstedt et al., 2018 for a detailed presentation of the variety). Some scholars have focused on describing and analyzing collaboration in emergency response operations by looking at communication patterns between participating organizations (see, for example, Kapucu, 2012; Saban, 2015; Abbasi & Kapucu, 2016; Topper & Carley, 1999). Within this approach, researchers have delved into the matter following different strategies. Abbasi and Kapucu (2016), for example, conducted social network analysis focusing on communication instances between organizations operating in the aftermath of hurricane Katrina. Topper and Carley (1999) conducted a similar study analyzing the response operation to the *American Trader* oil spill, by concentrating on direct contact between the organizations. Also, Rong et al. (2015) used entropy theory to analyze the network created in response to the Lushan earthquake in China by taking participation in the operation as the envisagement of collaboration.

In other cases, researchers have focused on discerning factors or groups of factors that have potential to affect collaboration through both qualitative and quantitative analysis (see, for example, Nolte & Boenigk, 2013; Nohrstedt et al., 2018; Kalkman & de Ward, 2017; Solansky & Beck, 2009; Therrien et al., 2015; Hermansson, 2016). Here, strategies have been varied as well. Nowell and Steelman (2015) used inferential statistics to detect the effect of organizational nature and previous contact on collaboration. Nolte et al. (2012) and Nolte and Boenigk, (2013) used structural equational modeling to determine what factors affected perceived network performance, while Hermansson (2016) used interview data to analyze the effects of authority and trust.

This thesis is situated closer to the latter explorative approach as its objective is to shed light over the question of what affects collaboration and how it happens. Nevertheless, this study differs from the previously mentioned ones in three aspects.

First, this thesis approaches the study of factors' influence on collaboration in an eclectic manner by studying the influence of nine factors identified through a systematic literature review.

Second, this study proposes and tests causal mechanisms for the two factors (trust and previous contact) that appear highlighted in the results of the quantitative analysis. To achieve this, I make use of descriptive and inferential statistics, and theory testing Process Tracing. Although there is a body of literature with a focus on the effects of various factors have on collaboration, there are no, to my knowledge, other studies that trace the causal process of these factors.

Third, this study is conducted in the context of low-level emergencies. Research on the field has given predominant attention to large-scale disasters. Investigating how to handle black swan events is necessary; nevertheless, knowledge of grey swan events, events on a minor scale, and discovering if the lessons learned from the one can apply to the other is equally relevant.

1.1 Research question

The following research question guides the study:

What are the factors that show most salience in influencing collaboration among first responders in the context of small-scale emergency response operations and how is causal power transmitted between them?

The research question could appear descriptive in its wording but has an analytical core to it. The aim is not to investigate if several factors affect collaboration, but to discern which factors show the highest potential for it. This is, identifying the factors that affect collaboration while controlling for the effect of others. Furthermore, the aim is also to look at the causal processes between the highlighted factors and collaboration, thus opening the black box of causality and describing the chain of transmission of causal force.

The claim of being able to investigate causality is a highly debated topic and has created schisms among social science scholars for decades. Although the phrasing of the research question takes a clear position within the camp that defends the possibility of conducting this type of research, my ontological and epistemological location differs from the classical positivist view of causality as the view I hold is close to what Blaikie (2009) terms depth realism at the ontological level, and neo-realism and conventionalism at the epistemological level (pp. 93-95). This positioning, as well as the effects it has for the research are presented and argued for in the methodology chapter.

To study collaboration in small-scale emergency operations, I have conducted a systematic literature review, a survey study, and semi-structured interviews with members of professional and non-professional organizations. Through the systematic literature review, I identified what factors are highlighted in the literature as influential to collaboration. Based on the factors identified through the review, I designed a survey to find the factors first responders in Northern Norway consider as prominent to

collaboration. Further, through the analysis of data from the interviews I propose two causal mechanisms that describe how the most prominent factors from the survey study, namely trust and previous relationships, transfer causal power to collaboration within the context of small-scale emergency response operations in Northern Norway.

The ambitions of this project are twofold: on the one hand, it has nomothetic aspirations, namely, to contribute to the existing literature on emergency management, especially within the emergency response realm by expanding our understandings on the dynamics of collaboration in emergency response operations.

The specific angle of this project, this is the eclectic approach to study the factors that can potentially affect collaboration, the investigation of causal pathways, and the focus on small-scale emergencies will help acquiring an insight on these dynamics in the context of low-level emergencies that could appear useful in other contexts as well.

On the other hand, analysing the processes leading to collaboration among first responder contributes to the development of enhanced emergency response and more resilient practitioner communities by identifying key aspects that can impair the smooth working of a collaborative endeavour, explaining how these conditions affect interorganizational relations in the context of highly stressful and time critical response operations can ease some of the tensions that might emerge.

1.2 The scope

The project is set in the emergency management studies field, and more specifically on collaboration in this context. Due to the predominance of literature on the dynamics of collaboration in the context of large-scale emergencies mentioned earlier, I focused the study on a different subclass event (George & Bennet, 2005): small-scale emergency response operations. This is, however, a delimitation that requires further specification. The literature on the field acknowledges that emergency management can be organized in a series of four phases. Namely, mitigation, preparedness, response, and recovery (Sylves, 2014). Both the mitigation and preparedness phases occur before the event

while response and recovery are post-event phases. The focus of this thesis is on the response phase. This phase, often described as the most dramatic, involves the actions to aid the parties implicated in the event and limit the extension of secondary damage (Sylves 2014, p. 23).

Without neglecting the importance of the preparation and mitigation phases, I follow Reason's (1997) argument that protective barriers will always have weaknesses (p. 9), and thus unwanted events will occur. The stakes at play in the aftermath of these situations, highlight the necessity of focusing on the response phase, and consequently, make the study of collaboration among first responders especially important.

In this study I wanted to come as close to the event as possible. As people working in the field during such operations have the nearest experiences regarding these foci, I selected the tactical level, this is first responders on site, as the scope. Thus, this study investigates the collaborative dynamics among first responders to small-scale emergency response operations.

Concerning context, the research was conducted within the geographical boundaries of Northern Norway. Selecting Northern Norway as a boundary present two interesting aspects.

First, the characteristics of this geographical area can make conducting response operations to small-scale events challenging due to distance and the availability of resources. This does not mean that operations in this region cannot be effective, but it implies that on numerous occasions, the efforts of local organizations need to be complemented with neighbor emergency response organizations or support from voluntary organizations, even when the event is minor.

The context presented here illustrates the importance of conducting research on collaboration in small-scale operations, as it becomes apparent that different organizations are required to work together to successfully manage this type of events. The context also allows to link the terms small-scale and emergency and to

argue that conducting research on small-scale and big-scale events explores different taxonomies and different perspectives of emergencies as a phenomenon (Drabek & Evans, 2005; Fischer, 2003; Kreps & Drabek, 1996). Thus, granting *a priori* the possibility of using the knowledge collected in previous studies that focus on large scale emergency response operation, and allowing for the discussion of the transferability of knowledge *a posteriori*.

Second, the Norwegian emergency management system can be described as an integrated network. Already from its inception in the post-World War II era, public, private, and voluntary organizations have worked hand in hand to respond and manage emergencies (Nedrevåg, 2015). The collaborative model that has gained salience in the last decades in the international context started being formalized in the early sixties with the gradual institutionalization of the *samvirkemodellen*[2] (Solberg et al., 2018, pp. 16-17) and the creation and establishment of the modern *Redningstjenesten* (emergency management system) and the Joint Rescue Coordination Center in the seventies (Hovedredningssentralen, 2020).

This tradition for inter-organizational collaboration, the organization of the emergency management system, and the understanding of emergency management as a *dugnad*[3] and as a collective work involving professionals, social organizations, private organizations, and the lay people to provide society with a valuable, and necessary, service makes the Norwegian context especially relevant to conduct this study.

1.3 Structure of thesis

This thesis is divided in five parts. Part 1 includes chapters 1, 2 and 3, and serves as an introduction to the thesis, as well as to the context in which the research is situated, and the methodology. In Chapter 1, I have introduced the aim and relevance of the

[2] Collaborative model. In this thesis samvirke is translated as collaboration, however, this concept has some special characteristics that are further explained in chapter 2 that differentiates it from samarbeid (the Norwegian word for collaboration)

[3] Dugnad is a concept well ingrained in the Norwegian society similar to voluntary work or communal work. The characteristic of it being the provision of a good by some members of the society to the wider society

project, the research question, as well as the scope of the study. Chapter 2 presents the context in which the study is conducted. Chapter 3 outlines the methodological reflections.

The second part of this thesis is formed by chapter 4. In chapter 4, I present and discuss different understandings and conceptualizations of terms such as disasters, emergencies, and catastrophes. Based on the presentation, I argue that large-scale and small-scale emergencies can be understood as two typologies of the same phenomenon

I also present and discuss the different understandings of collaboration in the field of study. Considering this discussion, I present the working definition of collaboration I use in this thesis, as well as its operationalization and testing though statistical analysis.

Furthermore, I present the results of a systematic literature review on articles published in the field of research where nine factors that have the potential to affect collaboration are identified. I then present the operationalization of the factors, and further test them through statistical analysis.

Part 3 consists of two chapters. In Chapter 5, I present some of the data retrieved through the questionnaire with the aim of showing that the characteristics that the literature on the field ascribes to emergencies also occur when the scale is small.

Chapter 6 is dedicated to the analysis of the quantitative data. Through this analysis I conclude that two of the nine factors identified in the literature, namely trust and previous contact, influence collaboration strongest when controlling for the effect of other factors.

Part 4 is formed by Chapter 7 and 8 and explore the influence that trust and previous contact have on collaboration. In chapter 7, I hypothesize two causal mechanisms that describe the transmission of causal force between trust and previous contact, and collaboration. In Chapter 8, I analyze the data retrieved through interviews to actualize the confidence in the existence of the presented mechanisms.

The fifth and last part of this thesis, contains chapters 9 and 10. In chapter 9, I discuss the most important momentums of the research. First, I discuss the value of the learnings extracted from the analysis of the trust and previous contact mechanisms as well as some caveats that they can present. Second, I discuss the dangers of incurring in conceptual stretching when using concepts loosely defined and how the definition of collaboration proposed in this thesis can contribute to avoiding it. And third, I argue that big-scale and small-scale emergencies can be understood as two typologies of the same phenomenon and that it is possible to transfer lessons learned from one type to the other.

In chapter 10, I present the conclusions of this project. I also suggest possible pathways for future research.

2 Pictures from Norway: a contextual introduction to the Norwegian civil protection field

In this chapter I present the context in which this project is situated.

The first section offers an introduction to the Norwegian Emergency Management System and the principles that guide it. In the second section, I present the structure of the system, the division of responsibilities and the tasks that each node is responsible for. The chapter offers a short description of the organizations included in the study.

2.1 Societal security in Norway – responsibilities in a fragmented and specialized system

Societal security is a concept widely discussed both in the academic context and within the Norwegian political sphere (Fimreite et al., 2014, p. 17). Fimreite, Lægreid, and Rykkja (2014) explain that the goal of organizing the necessary structures for guaranteeing the societal security within a country (civil protection work) is to reduce the vulnerabilities of a society, increase its robustness, and to mitigate the damage that an unwanted event can cause to that society (p. 17). According to these authors, societal security was first defined within the Norwegian political sphere in the *stortings melding nr. 17 (2001-02)* (Fimreite et al., 2014, p. 17).

This document defined societal security as a society's capacity to maintain its normal functions and guarantee the populations life, health, and other needs that can be menaced by different types of unwanted events (Fimreite et al., 2014, p. 17; st.meld. nr. 17 (2001-02), p. 4).

The story of the Norwegian emergency management system, however, started long before. In 1891 a private initiative concluded with the establishment of the Norsk Selskab til Skibbrudnes Redning (Nedrevåg, 2015, p. 3). In those early stages, emergency response was characterized by private initiatives voluntary help and solidarity. Though the first half of the XXI, a process of development occurred, nevertheless it was not until

the fifties that the Norwegian state formalized a committee to work toward the establishment of a modern emergency management system (Brandshaug, 2011, p. 8; Hovedredningssentralen, 2020, p. 11).

The committee presented in 1959, a report that suggested, among other things, the establishment of a Joint Rescue Coordination Center whose responsibility would be coordinating air, sea, and land emergency response operation (Hovedredningssentralen, 2020, p. 11).

Nevertheless, the official establishment of the Joint Rescue Coordination Center did not happen until 1970 (Hovedredningssentralen, 2020, p. 16). These events opened the era of what is often called the modern Norwegian emergency management system (Hovedredningssentralen, 2020, p.49).

Four principles guide the structure and functioning of the Norwegian system for civil protection (Samfunnssikkerhetsinstruksen). Namely, the liability principle[4], the decentralization principle[5], the conformity principle[6], and the collaboration principle[7] (Christensen et al., 2015, pp. 357-358). These principles, describe and set the framework of how emergency response management is organized and define three characteristics, decentralization, specialization, and collaboration, that become important to understand the functioning of operations regardless of the scale.

The first principle, the liability principle, defines that each department is responsible to work within their own spheres to secure and enhance societal security (Fimreite et al. 2014, pp. 17-18). This liability principle starts defining the decentralization and specialization characteristics of the Norwegian emergency management already at the strategical level.

[4] Ansvarprinsippet
[5] Nærhetsprinsippet
[6] Likhetsprinsippet
[7] Samvirkeprinsippet

The second principle, the decentralization principle, states that unwanted events must be handled at the lowest possible level (Fimreite et al. 2014, p. 18). The nature of the decentralization principle moves the liability principles to lower administrative levels, transferring responsibility from the state level to the county and the municipality level, and from the strategic to the operational and tactical level.

The third principle, the conformity principle, mandates that the structures of the bodies that have a responsibility for civil protection during everyday situations should be able to handle crisis or emergency situations without restructuring (Fimreite et al. 2014, pp. 18).

As it has been pointed out in the introduction and will be shown closer in chapter 4, this principle can be difficult to abide since the unpredictability of these unwanted events make difficult to foresee if a certain structure will be able to withstand the demands of such a situation. Fimreite et al, (2014) make a similar claim regarding this principle (p. 18; Christensen et al., 2015, p. 358).

The conformity principle, however, could be understood as a mandate for the relevant authorities and instances at the different levels to work towards the principles of a High Reliability Organization (Weick & Shutcliff, 2007). This would mean that the authorities and other instances involved in the field of societal security in Norway have to prepare, organize, and work in order to avoid crises or emergencies and in the cases where an unwanted event occurs to guarantee that they still maintain their usual functioning capacity and structure.

The fourth principle, the collaboration principle, was first formally introduced in 2012. However, it has been a *de facto* principle for the Norwegian emergency management system since the seventies (Solberg et al., 2018, p. 16-17) and a constant goal (see, Hovedredningssentralen, 2020, p. 52-53). The principle implies that emergency management is not solely the states responsibility, but that society, through private companies, civil organizations and individually have a responsibility to it and

acknowledges that the task must be faced as a joint force. The collaboration principle is often referred as the quintessential principle of the Norwegian emergency management system. This is the case not just because it makes emergency management more effective, but because the characteristics of the Norwegian context, demands it to make it viable (Solberg et al., 2018, p. 17].

Recognizing this, the principle states that all authorities, agencies, and instances have a responsibility to secure the best possible collaboration with the relevant actors in the work to prepare for, mitigate, and handle crisis situations (Hovedredningssentralen, 2020, p. 7].

Both the liability and decentralization principles guide The Norwegian system for civil protection toward specialization. This specialization is both horizontal and vertical (Fimreite et al., 2014, pp. 11-12; NOU 2000:24, p. 24). Horizontal specialization refers to the division of responsibilities and functions between organs and authorities at the same hierarchical level such as different departments, directorates, and organizations. By vertical specialization, it is meant the distribution of responsibility and functions between different hierarchical levels such as between national, regional, and local organs or authorities. The tenets of the collaboration principle push toward the integration of the otherwise fragmented and disconnected system.

In the previous chapter I mentioned that the Norwegian context makes specially interesting the investigation of collaboration. With the presentation made in this section I argue that the idea that collaboration is quintessential for conducting emergency response operations is not only mine, but that it is intrinsically intertwined in the system. Thus, making its study highly relevant.

2.2 The Norwegian societal security system

In the next pages, I will show how the effects that the liability and decentralization principle have had in the Norwegian Emergency Management System by describing its structure following the geographical specialization as a guideline. This description will also show why the collaboration principle is necessary for the system to function.

First, I will present the system's organization at the national level. Then, I will present the system at the regional level followed by the municipal level. Finally, I will present what I have termed the tactical level where I will describe the Rescue Service (Redningstjenesten) and the different organizations that have been part of this research project.

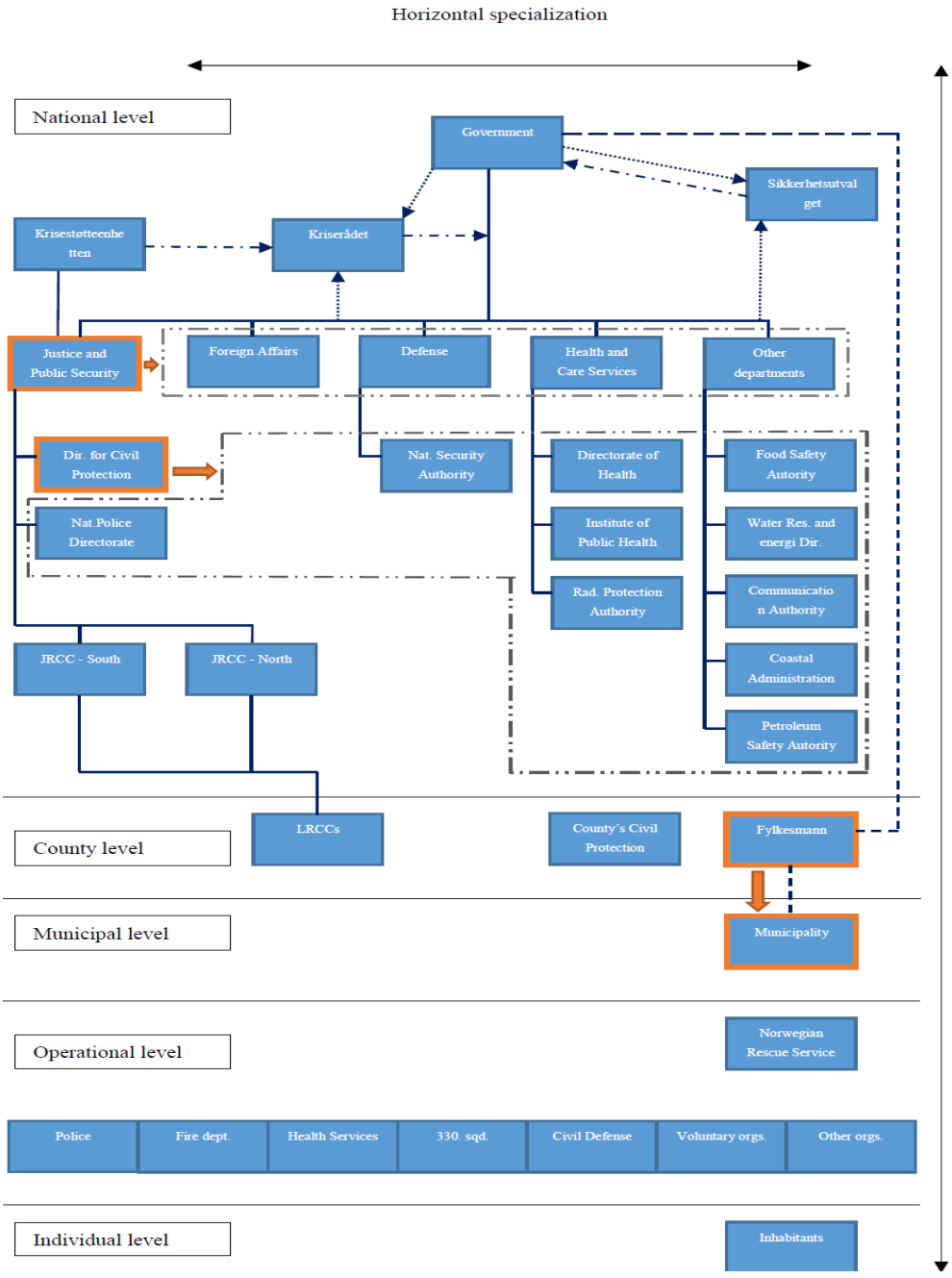


Figure 1: Norwegian Emergency Management System's structure.

2.2.1 The national level

The government is the authority with the ultimate responsibility for civil protection. This includes the political responsibility for managing all crises that occur. When issues regarding security are at question, the government functions through the Governments Security Council (Regjeringens Sikkerhetsutvalg) (Samfunnssikkerhetsinstruksen, 2017, chapter VIII).

Directly under the government we can find the different departments. All heads of departments have a constitutional responsibility in what concerns societal security (Samfunnssikkerhetsinstruksen, 2017, chapter VIII). The departments are responsible for identifying the risks, threats and vulnerabilities related to the sectors they oversee and designing and implementing measures to prevent them and mitigate their consequences (St. meld. Nr. 10 (2016-2017), p.25; Samfunnssikkerhetsinstruksen, 2017, chapters IV and V).

The issues encompassed under the term societal security blurs often the responsibility boundaries between departments. The Norwegian system for civil protection acknowledged this fact and organized its structure accordingly. To facilitate the work between departments Norway established the Government's Crisis Council and assigned a *de-facto* leadership function to the department of Justice and Civil Security.

The council is the highest administrative organ at the department level (Lango & Lægreid, 2014, p. 45). The main functions of the organ are to present strategic evaluations, secure coordination between sectors, and ensure that issues that require political resolution are passed to the correct authority.

The Crisis Support Organ is a support entity for the Government's Crisis Council role (Samfunnssikkerhetsinstruksen, 2017, chapter VIII). The organs main functions are twofold: first, to counsel the Government's Crisis Council to guarantee that crises are handled in a coordinated and integral manner. This includes supporting the council and departments in conducting and distributing situation reports as well as stablishing a

common operational framework among the incumbent instances. The second function is to support the Council with the necessary infrastructure, hardware, and personnel (Chapter VIII).

The establishment of the Government's Crisis Council and the Crisis Support Organ, however, does not affect the coordinating role of the Department of Justice and Public security[8]. When an issue regarding civil protection transcends the boundaries of a sector, it is the responsibility of the Department of Justice and Public Security to coordinate joint efforts among departments. Furthermore, the department is responsible for structuring the societal security work at the state level and for monitoring other departments in what regards civil protection issues (St.meld. Nr. 17 (2001-02), p.23; Kgl. res. 3 November 2000; St.meld. Nr. 10 (2016-2017), p.25; samfunnsikkerhetsinstruksen, 2017, chapter VI).

For decades, there has been a drift in the work of the departments towards policy development while other matters have been delegated to independent instances. The directorates are the states specialized institutions. As it is the case with the departments, directorates have a sectoral specialization as well. The task of each directorate is to implement and oversee state policies nationwide (Heidar, 2001, p. 46-47).

In what concerns civil protection each directorate has the responsibility to identify risk, threats, and vulnerabilities within their sector and to develop and implement measures to avoid and mitigate them (St. meld. Nr. 10 (206-2017), pp. 23-24).

The Norwegian Directorate for Civil Protection holds the responsibility to coordinate the work among directorates. The directorate has a variety of roles that expand from acting as an advisory body to the department of Justice and Civil Protection, maintaining

[8] https://www.regjeringen.no/no/aktuelt/nytt-sekretariat-for-regjeringens-sikkerhetsutvalg-rsu/id2427856/ (26/11/2018)

the emergency communication network (nødnett) to assisting in emergency response operations[9].

The last instance presented at the national level is the Joint Rescue Coordination Center. The center has two sections, one located in Sola and the other in Bodø. The 65 north parallel divides the coordination centers' geographical area of responsibility. The centers coordinate maritime, air and land emergency response operation.[10].

The Joint Rescue Coordination Center has the responsibility for following up the Local Rescue Coordination Centers and to facilitate collaboration and coordination between organizations participating in an emergency response operation[11].

2.2.2 The regional level

At the regional level, there are two organs that are responsible for societal security, namely the County Governor and the Local Rescue Coordination Center. These two organs are organized separately and have distinct functions.

The County Governor is the King and Government's representative in the counties. In what concerns the societal security aspect, since 1979, all existing offices of the County Governor stablished a civil protection section as a direct consequence of the reorganization of the Civil Defense districts[12] (Fimreite & Grindheim, 2007, pp. 103-104).

The office of the County Governor has the responsibility of organizing and conducting risk assessment analyses and organizing the civil protection field at the county level. In addition, it has the mandate to coordinate the municipalities' efforts in times of crisis when the situation transcends the boundaries of one municipality.

[9] https://www.dsb.no/menyartikler/om-dsb/ansvarsomrader-og-roller/ (02/09/2020)
[10] https://www.hovedredningssentralen.no/om-hovedredningssentralen/om-hovedredningssentralen/ (02/09/2020)
[11] https://www.hovedredningssentralen.no/om-hovedredningssentralen/ansvarsomrade/ (02/09/2020)
[12] https://www.fylkesmannen.no/Om-oss/Amtmennenesfylkesmennenes-historie/ (19/11/2018)

The role of the County Governor could be defined as that of a boundary spanner facilitating communication and information exchange between the relevant authorities and activating the County's Civil Protection Organ[13] to consolidate a line of action (St. meld. Nr. 10 (2016-2017), p.23; St. meld. Nr. 17 (2001-2002), p.23). Furthermore, the office holds the mandate to assist and oversee the municipalities' work in all the stages of emergency management process (St. meld. Nr. 17 (2001-2002), p.23; St. meld. Nr. 10 (2016-2017), p.23).

In what regards the Local Rescue Coordination Centers (LRCC), they are composed of a rescue leadership group that is formed by representatives of key organizations for land-based emergency response operations. The leader of the group being the police chief of the district.

The duties of the LRCC can be divided in two areas: duties between events and duties under events. In between events the LRCC must strive to increase the competence of the actors that participate in response operation and work for a better integration between actors. Under an event the LRCC takes the coordination responsibility for the operation[14] (see Organisasjonsplan for Redningstjenesten, 2019, chapter 3).

2.2.3 The municipality level

Municipalities in Norway are autonomous, politically elected, and locally managed entities that only owe themselves to the parliament as long as there is no other law-binding resolution stating the opposite (Solberg et al., 2018, p. 43). At this level, each municipality is responsible of doing risk assessment, crisis management, health preparedness, fire, and search and rescue activities within its geographical boundaries (St. meld. Nr. 10 (2016-2017), p.23). In addition to these tasks, the municipality has the responsibility of coordinating the joint efforts of the different actors involved in operations in times of crisis (St. meld. Nr. 10, p.23).

[13] Fylkesberedskapsrådet

[14] https://www.regjeringen.no/no/dokumenter/mandat-for-redningsledelsene-ved-lokale-redningssentraler/id2460500/

2.1.4 Tactical resources

In this section I will present the resources that usually play a first-responder role in the Norwegian Emergency Management System. This are the police, fire department, health personnel (ambulance workers as a first line and other staff as a second line), the 330. squadron, the plane ambulance, civil defense, the Red Cross (hjelpekorps), Norsk Folkehjelp, and Norske Redningshunder among others (St. meld. Nr. 10 (2016-2017), p.23). This is the level in which this study is situated.

The system, as it is organized in Norway, also ascribes responsibilities to private actors and public companies in possession of critical infrastructure or that provide basic services such as water, electricity, or communications). The responsibilities of this companies and organizations are also regulated by law or by direct agreements between the company and the authorities (St. meld. Nr. 10 (2016-2017), p.25).

When front line organizations (police, fire departments, ambulance services or others) face unwanted events where the response operations cannot easily be handled, and where the need for resources surpass the capabilities of these organizations, the Norwegian Rescue Service is activated by either the Joint Rescue Coordination Center or the Local Rescue Coordination Centers (Solberg et al., 2018, p. 15). The Department of Justice and Civil Protection has the administrative coordination responsibility over the Rescue Service, while the Joint Rescue Coordination Centers and, in the cases of land-based operations, the Local Rescue Coordination Centers have the role for leading and coordinating the work of the Service (Solberg et al., 2018, p. 16).

The Rescue Service is formed by public, voluntary, and private organizations, as well as private individuals (Solberg et al., 2018, 15). In the following pages I will present the components that I have included in this study.

The police

The police in Norway is organized, since the first of January 2016, in 12 police districts. These 12 police districts are further divided into 58 sheriff and 58 police station districts. (St. meld. nr. 10 (2016-17), p. 39).

In what regards civil protection, the Norwegian police counts with some specialized units that have their base in Oslo and offer nationwide assistance (St. meld. nr. 10 (2016-17), p. 38). Nevertheless, the front line for civil protection is formed by the ordinary police officers. The police has the mandate to organize and coordinate at the operational and tactical levels, emergency response operations as well as search and rescue operations, regardless of the scale unless the responsibility is assigned to another authority (St. meld. nr. 10 (2016-17), p. 38). This mandate is stablished by paragraph 27 of the police law (politiloven, 1995):

The S*tortings melding nr. 10 (2016-17)* states that the goal for 2020 is to have two police officers per 1000 inhabitants. The report mentions that by the 30th of September 2016 the ratio was 1.72 per 1000 inhabitants (St. meld. nr. 10 (2016-17), p. 38), at the beginning of 2019 it had increased to 1.94 This ratio, however, does not offer a full picture of the availability of police resources for two reasons: first it considers all the people employed by the force and classified as police and not just the operative personnel; and second it neglects the role that distance plays for the availability of resources in the geographical area under study. In 2020, the average man-years of operative personnel in the three counties amounted to ca. 1031[15].

The fire department

The fire departments are organized following municipal demarcations, unless an inter-municipal fire department is stablished (Brann og eksplosjonsvernloven, 2002, § 9, Forskrift om organisering av brannvesenet, 2002 § 1-3). In addition to the tasks regarding fire prevention and response to fires, Fire departments have the

[15] Dokumenter – Politiet.no

responsibility to work towards the prevention of accidents regarding the transport of dangerous goods, to act in response to unwanted events contemplated in the municipalities' risk analysis assessment, to respond to other unwanted situations emerging in times of crisis and war, and to respond to offshore fires and accidents (Brann og eksplosjonsvernloven, 2002, § 11). The Brann og eksplosjonsvernloven (2002) also stablishes that when responding to an emergency the fire department will hold a leadership position over other organizations in the absence of the police (§ 12).

As of 2017, Norway had 265 fire departments, which counted with 10584 employees. nevertheless only 3834 were fulltime firefighters. The Norwegian Fire departments are a man-dominated arena as among all employees with tasks related to firefighting and emergency response (both professional and voluntary) only 229 were women (Direktoratet for Samfunnssikkerhet og Beredskap, 2017). The resources and structure of fire departments vary from region to region. In the three counties investigated in this thesis (Nordland, Troms and Finnmark) there are 12 stations with around-the-clock crew presence, four in Nordland (in addition, this county has three posts with day presence) five in Troms, and three in Finnmark. Professional fire response services are complemented with a significant number of volunteer crews spread throughout the least populated areas.

Health services

For health services, there are two main hospitals in Northern Norway located in Bodø and Tromsø. In addition, there are several smaller hospitals and clinics spread throughout the three counties. Emergency response is coordinated through four medical emergency communication centers (AMK[16]). Each of these centers coordinates ambulances, boat ambulances, and plane ambulances in each region. Nordland is divided into two regions, while the borders of Troms and Finnmark limit their respective

[16] Akuttmedisinsk Komunikasjonssentral

AMK regions. Each municipality counts with round the clock ambulance services that can be supplied with boat and helicopter services when needed.

330. Squadron

First established in 1941, is the oldest still operative flying squadron with permanently manned stations in Sola, Rygge, Ørland, Bodø, Banak and Florø. The squadron took SAR[17] duties from 1971 as part of the lessons learned from the sinking of the M/F Skagerrak in 1966 (NOU 1997:3, pp. 22-23). Although originally thought as maritime SAR organization, the 330. Squadron also takes part in land-based emergency response operations and ambulance duties.

Civil defense

The creation of the Norwegian Civil Defense dates to 1936. With the start of the Spanish civil war, and specially the bombing of Gernika, the Norwegian government understood that the civilian population could become a target in war-time and deemed necessary to stablish a non-martial organization that would react and respond to air strikes.[18].

In the 1990' the organization shifted the focus from war-time protection to peace-time protection, although they are still part of the total defense concept (Solberg et al., 2018, p. 49). The Norwegian Civil Defense is to be understood nowadays as a support organization that provides its services to supplement front-line organizations when responding to emergencies and special events[19].

The Norwegian Civil Defense is subject to the Directorate for Civil Protection, and it is divided in 20 districts, each managed by a district office with around the clock presence. At the national level, the organization counts with 250 full time employees. The workforce, however, sums up to 8000 people[20] (Solberg et al., 2018, p. 49). It uses a conscription system to guarantee an operative base. The conscription system is rooted

[17] Search and Rescue
[18] https://www.sivilforsvaret.no/dette-er-sivilforsvaret/historia-til-sivilforsvaret/
[19] https://www.sivilforsvaret.no/dette-er-sivilforsvaret/historia-til-sivilforsvaret/
[20] https://www.sivilforsvaret.no/dette-er-sivilforsvaret/

in the *Sivilforsvarsloven* (1953) paragraph 23, that was updated with the *Sivilbeskyttelsesloven* (2010). Paragraph 7 states that all Norwegians (men and women) between the ages of 18 and 55, and that have their homestead in the country can be called to serve in the organization (Sivilbeskyttelsesloven, 2010, §7).

Within the geographical boundaries delimiting this study, there are four Civil Defense districts (Nordland, Midtre-Hålogaland, Troms, Vest Finnmark, and Øst Finnmark).

Voluntary organizations

Voluntary organizations play an important role in the Norwegian civil protection system. In Norway there are about 8000 voluntaries organized in around 500 local chapters pertaining to different organizations. These organizations are autonomous from each other; however, many of them are professionally coordinated through the *Frivillige Organisasjoners Redningsfaglige Forum* (FORF).

FORF is an umbrella organization that serves as a cooperation organ between the different member organizations. These organizations, by the year 2018, are NLF Flytjeneste[21], Norske Redningshunder[22], Norsk Folkehjelp[23], Norsk rotteforbund[24], Norsk Radio Relæ Liga[25], Speidernes Beredskaps[26] and the Red Cross.

FORF has the mandate to function as a cooperation organ for its member organizations, to support and develop the competence of its members, to develop working standards, to develop common technical literature as well as to lobby in order to show the importance of the voluntary organizations in what regards civil protection and guarantee the economical sustainability of its members (Solberg et al., 2018, p. 51).

In this study I focus on the three biggest voluntary organizations that have presence in Norther Norway. Namely, the Red Cross, Norsk Folkehjelp, and Norske Redningshunder.

[21] Norwegian Air sport Organization's Air Service (own translation)
[22] Norwegian Search and Rescue Dogs
[23] Norwegian People's Aid
[24] Norwegian Cave Association (own translation)
[25] Norwegian Radio Relay League
[26] Norwegian Guide and Scout Association

Established in the early 1920', The Red Cross is Norway's largest voluntary organization and counts with around 300 local emergency response groups and around 5000 active members nationwide.

The first emergency response group (hjelpekorps) was founded in 1932 in Frederikstad. Nowadays, most of these groups have established official collaboration agreements with the municipalities in which they are located (ca. 258[27]). The Norwegian Red Cross does not only respond to SAR calls but takes part in other types of emergency response operations such as in forest fires and extreme weather events[28].

As it was the case with The Norwegian Civil Defense, Norsk Folkehjelp was stablished in 1939 as an answer to the Spanish civil war. An initiative of LO[29], the aim of the organization is to provide sanitary services in Norway and internationally when citizens are in need. Nowadays the organization has around 60 Local emergency response groups and counts with ca. 2000 members, their areas of expertise being sanitary services, SAR, and avalanche response[30].

Norske Redningshunder was stablished in 1953 and counted with seven members. Nowadays the organization counts with 1600 members spread across the country. The organization participates in SAR operations and counts with dogs accredited for avalanche, wilderness, and disaster applications. Although most of the activity is conducted nationally, they have participated in international emergency response operations. Women could enter the organization, but it was not until 1966 that the first female guide was accepted. Nowadays women account for nearly 50% of the members[31].

[27] Flere kommuner må inngå beredskapssamarbeid - Røde Kors (rodekors.no)
[28] http://www.fanarkh.no/wp-content/uploads/2012/07/Dette-er-RKH-deltakerhefte.pdf
[29] Landsorganisasjonen i Norge is nowadays the largest umbrella organization of labor unions in Norway
[30] https://folkehjelp.no/forstehjelp-og-redningstjeneste/finn-ditt-lokallag
[31] Historikk (nrh.no)

3 Methodological reflections

Before going deeper into the investigation to answer the research question, a detailing of the methodology becomes necessary. This chapter will lay out the steps taken to complete the project (data collection, handling, and analysis) and will help in clarifying the reasons behind particular decisions during the research process.

First, the reader will find an explanation of my ontological and epistemological starting point. In the subsequent section, I present the methods and techniques used and discuss their appropriateness as well as how the different "problems" were solved or dealt with.

3.1 Ontological and epistemological underpinnings

The perspective from which I approach this study is rooted in Critical Realism. This understanding implies that: there is a reality independent of human consciousness; reality can be stratified into three domains (the empirical, the real, and the actual); it is possible to access reality's different strata, but the possibility of accessing reality does not translate into successful identification of reality; and that at the ontological level, causality is composed of causal mechanisms. (See, for example, Danermark, 2002; Sayer, 2000; Collier, 1994).

In other words, this perspective acknowledges that reality exists independently of the human mind. This reality is, however, stratified into three separate domains: the empirical (part of the transitive dimension of science), the real, and the actual (both part of the intransitive dimension of science).

The first domain, the empirical, is what is directly observable. These observations can relate to either the actual or the real domains, but it is not necessary for the researcher to know either of them (Sayer, 2000, p. 12).

The real domain refers in Critical Realism to "whatever exists, be it natural or social, and regardless of whether it is an empirical object for us, and whether we happen to have an adequate understanding of its nature" (Sayer, 2000, p. 12). More specifically, whatever exists is to be understood as not only "objects" but also as their structures and powers.

The actual, refers to what results from the powers of the objects being activated, regardless of how one experiences them (Danermark, 2002, pp. 20-21; Sayer, 2000, p. 12).

The key distinction between the different domains brings us to the intransitive and transitive dimensions named earlier. Critical Realism recognizes that science is about deepening knowledge of a reality independent of itself, of people's understanding and the circumstances under which they gain access to it (Baert, 2005, p. 90; Collier, 1994, p. 51).

That independent reality is part of the intransitive dimension of science, while the results of scientific work are part of the transitive dimension. Our observations (when those observation are possible) of the regularities that exist in the actual domain occurring due to powers being activated in the real domain are intersubjective (Collier, 1994, p. 51). This means that results and theories are, in the best-case scenario, nothing more than the best approximations to reality that society has at that moment. It is in not by any means ultimate knowledge (Collier, 1994, pp. 50-51; Danermark, 2002, pp. 22-23; Sayer, 2000, pp. 10-11).

Empirical observation does not guarantee an accurate picture of reality because attempts to achieve it are "influenced by the context and factors such as culture, economy, psychology, as well as the researcher's characteristics and idiosyncrasies (Searle, 1995, p. 151). One could posit that epistemic objectivity is always impossible, not just for the above reasons, but also because methods and people (researchers) are

fallible. Recognizing the fallibility of science, however, does not mean that scientific knowledge cannot be produced.

After acknowledging that achieving epistemic objectivity is impossible and considering the ontological tenets of Critical Realism, the following question emerges "How does the researcher approach reality?" A possible answer could be that they do it by first looking for evidence. This evidence is located at the empirical domain. When the researcher collects these measurements, they do not have a view of the reality located at the real or actual domains but can interpret it based on the collected evidence and existing theory. Being aware of this, as well as realizing that the data collection process might have limitations as well as acknowledging the fallibility of the human mind, the researcher will proceed to build a picture of reality. This picture will never be a hundred percent accurate, but it will present the phenomenon of interest as close to the way it is as possible.

Another pillar of Critical Realism is the understanding of causation as being composed of causal mechanisms. Viewing causality through a mechanistic lens means that the focus of the research is on the process of how X has caused Y (Beach & Pedersen, 2013, pp. 1-2; Bennet & Checkel, 2014, p. 6). Nevertheless, the mechanistic camp is not homogeneous (see, Hedström & Ylikoski, 2010; Steel, 2004 for examples of different conceptualizations).

The understanding of mechanisms adopted in this thesis falls within the category *mechanisms as systems* proposed by Beach and Pedersen (2013). This means that mechanisms are seen as entities that when activated allow the transmission of causal forces from X to Y. In this view, the causal mechanism has an internal structure that can be divided into parts. Each part of the mechanism is formed by an entity that undertakes an activity, and in turn, this activity allows the transfer of causal energy to the next part of the mechanism (Hedström & Ylikoski, 2010, p. 51).

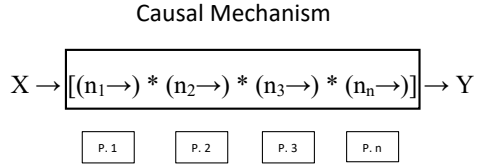


Figure 2: Structure of the causal mechanism

One should read this graphic depiction in the following way: through a contextual condition(s), the first part of the mechanisms (n_1→) is activated. The first part of the causal mechanism is composed by an entity (n_1) and the activity it undertakes (→). In combination, (n_1→) transmits causal force to the next part of the mechanisms (n_2→). Then (n_2→) transfers it to (n_3→), which then produces the outcome (Y).

An important critique that the researcher focusing on mechanisms must answer is that of infinite regress. As King, Keohane and Verba (1994) posit:

> "if […] an explanatory variable causes a dependent variable, a causal mechanism approach would require us to identify a list of causal links between the two variables. This definition would also require us to identify a series of causal linkages, to define causality for each pair of consecutive variables in the sequence, and to identify the linkages between any two of these variables and the connections between each pair of variables". (King et al., 1994, p. 86)

This critique, points towards the impossibility of giving a satisfactory explanation of a casual mechanism since the researcher will always have the possibility of going deeper in the research, conducting a more detailed analysis, and finding additional nuances to the internal structure of causal mechanisms (Bennett and Checkel, 2014, p. 14, King et al., 1994, p. 86).

Nevertheless, and as it is mentioned by Hedström and Ylikoski (2010) "a mechanism-based explanation describes the causal process selectively. It does not aim at an exhaustive account of all details but seeks to capture the crucial elements of the process by abstracting away the irrelevant details" (2010, p. 53). This is to say that even though

a level of finer detail is always possible to acquire, it is the researcher's responsibility to draw the stopping line.

3.2 Methodological implications

In what concerns the methods that can be used to explore reality, Critical Realism takes a pragmatic approach, which implies that research methods can be chosen in relation to the nature of the objects under study and the intention of the researcher (Sayer, 2000, p. 19).

The endorsement of different methods is not, however, a carte blanche. Social phenomena are complex in that they are formed by multiple objects, structures, and powers and, in contrast to the natural sciences, they constitute an open system. This means that we cannot take apart components and study them under controlled conditions and therefore must use careful conceptualization and abstraction to get to the deeper domains of reality.

The case against epistemic objectivity presented earlier implies that whatever approach to the research object the researcher takes, they will have to be careful when presenting results and not fall into the temptation of presenting them as definitive and incontestable.

The understanding of causality presented in the previous pages leads to another methodological implication. As mentioned before, the mechanistic view focuses on investigating the process of how X has caused Y. The general argument here is that to do this, a qualitative approach is required (see for example, Beach & Pedersen, 2012). Nevertheless, I argue that the idea of a qualitative approach being necessary does not invalidate the exercise of using statistical analysis. In fact, it has been argued that quantitative analysis might be useful or even necessary for the researcher that wants to approach the study of a phenomenon in an eclectic manner as a first step before using other "mechanism-friendly" methods such as process-tracing (see for example,

Beach & Pedersen, 2012, pp. 1-2; Beach & Pedersen, 2013, p. 21; Trampusch & Palier, 2016, p. 2). The use of statistical analysis in the thesis responds to this reason.

3.3 On methods

In this section, I present the methods I have used to collect and analyze the data used in this study. I endorse the argument that King, Keohane and Verba (1994) made when pointing out that "the most important rule for all data collection is to report how the data were created and how we came to possess them" (p. 51), in order to comply with one of the precepts of scientific research, namely, transparency. I extend this to the analysis process.

3.3.1 Systematic literature review

Among the different types of reviews, I choose to conduct a systematic literature review to control for personal bias and guarantee transparency and thus replicability (Krumsvik & Røkenes, 2016).

The aim of conducting the literature review was twofold First, I wanted to conceptualize the central term of this thesis, collaboration, and search for an adequate manner to operationalize it. And second, I wanted to build an analytical framework to analyze the problem in a holistic manner rather than from a specific theoretical perspective.

The first step in doing the review was considering databases, search terms, and time span. After consultation with a librarian, I chose *Web of Science* and *Scopus* as the databases and (*emergency* OR *emergencies* OR *disaster**) AND (*respon** OR *manag**) AND (*collaborat** OR *co$operat** OR *co$ordinat**) AND *(inter$organi?ational* OR *inter$agency)* as the search phrases. The reason for including the two databases followed the librarian's suggestion since *Web of Science* appears to be more prone to include North American literature, while *Scopus* includes a wider variety of European texts. As for the search words, I attempted to include both British English and American English spellings, as well as common synonyms for the terms in which I was

interested. The time span was set from 1990 onwards. The selection of the time period was partly driven by Sylves' (2014, p. xiv) argument that since the end of the Cold War, a shift in the concept of emergency response took place from civil defense against nuclear attacks towards emergency management directed at natural disasters and man-made non-conflict events (see also Lango & Lægreid, 2014, p. 37). In the Norwegian context, this shift can be illustrated with the St. meld. nr. 24 (1992-1993) (Lango & Lægreid, 2014, p. 39).

The search for literature In *Web of Science* (SCI-EXPANDED and SSCI) with the previously mentioned search phrases and time span and limited to articles written in English yielded 112 papers. The search phrase in *Scopus* was slightly modified to match the language used in the database[32]. Refining the search to journal articles written in English between 1990 and 2017 resulted in 151 documents.

All 263 articles were imported to *Endnote*, and a search for duplicates was conducted. After crosschecking the suggested duplicate documents, 77 were eliminated, leaving 186 remaining articles.

The abstracts of the 186 articles were individually screened following a set of criteria.

Table 1: Inclusion and exclusion criteria.

	Inclusion	Exclusion
1	Emergencies and disasters understood as acts of terrorism, fires, accidents (industrial, technological, or transportation), infrastructure failure/disruption, public disorder, or natural disasters	Different understanding of emergencies and disasters. E .g., sexual abuse, patient care, economic crises, organizational or political crises, non-emerging pandemics, or international humanitarian aid
2	Focus on collaboration, cooperation, or coordination	Other focus. E.g., risk assessment, crisis communication[33], education, program description or evaluation, or the policy level

[32] (emergency OR emergencies OR disaster* OR cris?s) AND (respon* OR manag*) AND (collaborat* OR co*operat* OR co*ordinat*) AND (inter*organi?ational OR inter*agency).

[33] Communication with other actors than those involved in the response operation such as the press or the wider public.

3	Focus, at least partially, on the response phase of emergency management	Focus solely with prevention, mitigation, or recovery phases
4	Units dealt with had to be organizations and agencies	articles taking states or regions as their only focus without specifying organizations or agencies

These inclusion and exclusion criteria served to identify articles that contained the key elements that define the focus of this study (see chapter 1). Namely, collaboration among first responders in the response phase of the emergency management cycle. This is reflected in criterion 2, 3, and 4. Criterion 1 responds to the need of discriminating the different uses of the terms emergency and disaster.

In the cases where the adequateness of the article could not be determined from the abstract, the full article was reviewed. After consideration, 47 articles were retained.

3.3.2 Survey

The data acquired though the systematic literature review was used as a guide to design a survey (see chapter 4 for details). While developing the survey questions, I had a series of informal conversations with individuals that worked in the field of study at the tactical (2 people), operational (1 person) and strategic level (1 person). Through these conversations, I learned what these individuals thought about the factors emerging from the theory, what they thought was relevant, what they had experienced, and what they had not thought about. In addition, I learned or at least built a picture of how emergency response operations work, what difficulties first responders face, how they organize, and how they operate.

Once the survey questionnaire was developed, these same people went through the questions and gave feedback on their understanding of each question in terms of both relevance and phrasing to minimize data-collection error (Bryman, 2012, p.205). The process of test-rewrite-test was repeated three times.

The survey (see Appendix A) consisted of 41 questions (185 items). It started with a short text that explained the nature of the research, its aim, a short description of what respondents would have to answer, and an explanation of how anonymity would be guaranteed. Since I wanted to ensure that informed consent was obtained, respondents had to answer if they consented to participate in the study. It is worth mentioning that this first question was the only mandatory question. In the case of acceptance, respondents received access to the rest of the questionnaire.

Once the survey was ready, I started the recruitment process by contacting the organizations[34] from the three counties[35] that delimit the geographical boundaries of the project. On that first contact via e-mail and telephone, they were briefed about the aim of the study and the method, as well as the ethical considerations adopted to guarantee anonymity of sources.

Responses varied from organization to organization and from district to district[36]. Some responded positively, some declined to participate stating that they did not want their organization to be part of the study, and some did not respond. Non-respondents were solicited again in subsequent weeks, with the result of more joining and a few again not responding. Non-respondents were contacted a third time, but no positive results came from that last round of inquiry. In the cases where an explicit decline to participate was not received, I contacted local teams. This process proved to be challenging as contact information was not always readily available and on some occasions that information had not been updated or was wrong. Most of the local teams did not answer to repeated emails, however, five teams distributed across the three counties responded positively. In addition, two of the contacts offered to act as gatekeepers with other local teams in their region. This resulted in one additional team responding positively to the participation request.

[34] Police, fire department, ambulance services, plane ambulance, 330 squadron, civil defense, Red Cross, Norske Folkehjelp, and Norske Redningshunder.
[35] Nordland, Troms and Finnmark.
[36] Here district is used as a generic word that comprises the territorial boundaries that delimit the jurisdictions of the different organizations.

Of the participating organizations, two provided an e-mail list, while the rest of the organizations distributed the survey through a link. One of the district leaders of a professional organization encouraged members to answer the survey during working hours, the rest specified that their members would have to answer the survey in their spare time.

Among the organizations that chose to distribute the survey, some responded that they would distribute it to all members of the organization within their jurisdiction, while a few stated that they would only forward it to the members they considered relevant.

The fact that most of the organizations used the link for distributing the survey does not allow us to see the number of people receiving the survey; nevertheless, the distribution log provided by the software used to create the survey shows that 195 people accessed it. The number of respondents amounted to 131, a response rate of approximately 66%.

The description of the data collection process presented demands a commentary on the consequences it has for generalizability. Although I have tried to generate a random sample the fact that some organizations distributed the questionnaire to a selection of members makes it difficult to assert that the used sampling method has been purely random (Bryman, 2012, p. 187), and therefore increases the chances of sampling errors. Nevertheless, from the correspondence with the organizations that would discriminate between recipients, it was understood that the selection would be based upon the fact that many members of the organization could not complete the survey due to lack of experience or because they did not work in this type of operations.

Furthermore, although the sample is large enough to conduct statistical analysis the size dictates the need for caution when generalizing from the results. A larger sample size would have increased the precision (Bryman, 2012, p. 198), nevertheless, I deem that

this sample size allows to cautiously claim that it is representative of the population from which it emanates[37].

3.3.3 Handling the survey data

As often occurs with survey data, there were some missing values[38] (Dong & Peng, 2013). To account for missing data, I considered an imputation method, i.e., a method through which missing values can be inferred and included in the database. The default method in many of the statistical software, and one often used when conducting quantitative analysis (Peng et al., 2006, qtd. in Dong & Peng, 2013), to deal with this is listwise deletion.

This method, however, presents some problems. On the one hand, it can reduce the amount of data available for the analysis. On the other hand, ignoring missing data reduces information decreasing statistical power and increasing standard errors. According to the authors, the utilization of listwise deletion increases the chances of getting biased or inefficient estimates (Beretta & Santaniello, 2016; Dong & Peng, 2013). To avoid this problem, researchers have made use of different imputation methods as they are considered better suited to deal with missing data (see, for example, Beretta & Santaniello, 2016; Zhang, 2012).

In recent years, there has been a proliferation of the use of the many so-called complex methods for imputing missing data (Dong & Peng, 2013). These methods have

[37] The exact population from which the sample was selected, this is active members of the selected organizations that have participated in emergency response operations and that operate within the counties of Nordland, Troms, and Finnmark is unknown. To my knowledge there is not a systematic compilation of the resources available in the three counties that delimit the geographical boundaries of this study. Often the publicly available figures are not presented following regional delimitations or discriminate between members and active members. In addition, I have not found reports or studies that analyze the incidence of double counts i.e., the possibility that a person is registered as an active member in more than one organization. Nevertheless, a rough estimation can be done collecting data from some organization and extrapolating it. As mentioned in chapter 2, the police declared ca. 1000 man-years in 2020. From consulting the websites of the health districts, I estimate that there are ca. 700 operatives in the ambulance services and ca.1300 in the Norwegian Civil Defense. If one extrapolates this average to the rest of the organizations, it would amount to ca 9000 operatives. This number is, however, not realistic as it implies that the Red Cross would have 20% of the members, Norske Folkehjelp 50% of the members and Norske Redningshunder almost a 100% of the members in the region under study.

[38] An item that has not a recorded response

proven to be more appropriate than simpler imputation techniques and are openly recommended in the statistics literature, however, the complex methods assume a normal distribution of the data (Dong & Peng, 2013), and therefore they were not applicable in the context of this study. Instead, I made use of k-nearest neighbors[39][40]. This parametric method can deal with this type of distribution and has been shown to have positive results (see, for example, Beretta & Santaniello, 2016; Zhang, 2012)

Once the database had no missing data, I started the process of creating the composite variables. In the cases where scale reliability[41] and unidimensionality[42], was satisfactory, I computed the items to form composite variables. I did this by summing the scores of each item. In this case, summing scores created a disparity of scales as well[43]. I considered two options to deal with this: standardization and dividing by the number of items. Although both methods would yield the same results in the analysis, the visual interpretation of standardized variables might be more challenging. Therefore, I chose to divide the sums by the number of items to produce scales ranging from 1 to 5.

For many decades, there has been a debate on how Likert scales should be used and how the data collected through them should be analyzed (Carifio & Perla, 2008). This debate has been divided in two blocks that sponsor competing views. An *ordinalist* view that argues that Likert scales are ordinal in character and therefore produce rank data (see, for example, Jamieson, 2004) and thus, that it is not possible to conduct parametric tests (Carifio & Perla, 2008). And an *intervalist* view that argues that there is a division between a Likert-type item and a Likert scale (see, for example, Carifio & Perla, 2008; Sullivan & Artino, 2013; Murray, 2013). Likert scales are a collection of

[39] KNN is a donor-based imputation system where missing data in case x is replaced by calculating the average of that datapoint from k cases (3 cases in this study) that are similar to case x in regard of other recorded datapoints (Beretta & Santaniello, 2016)
[40] To conduct kNN imputation I used VIMGUI, a visual interface for the VIM package of R
[41] Cronbach's α
[42] Principal Component Analysis
[43] the composite variable *collaborative culture* was formed by four items producing a scale ranging from 4 to 20, while *shared mental models* was formed by three items that resulted in a scale from 3 to 15

items that are used to capture the characteristics of a concept, phenomenon, attribute, or trait (Murray, 2013). This differentiation between item and scale allows the argument that although the lower level (the item) is ordinal in nature, the upper level (the scale) should be treated as interval data. Moreover, because scales are interval, it would be possible to use parametric statistics.

In this thesis, I have adopted the *intervalist* view. I have treated scales as interval data, and therefore, I have used parametric tests. Nevertheless, I have been careful about the data distribution shape, and I have thus bootstrapped these tests[44].

In other cases, such as when conducting group comparisons or when looking at the relationship between a pair of variables where one was ordinal, I used non-parametric tests.

The analysis of the quantitative data showed that trust and previous contact appeared to have the biggest impact on collaboration when controlling for other factors. Subsequently, I started the process of uncovering the causal mechanisms, that could be in play though Process-Tracing.

3.3.4 Some words on process tracing

Although the term process tracing, originated in the field of cognitive psychology and was taken into the political science realm as a way of describing the use of within case evidence to make causal inferences in historical case studies, contemporary Process Tracing has expanded to encompass any kind of study where the researcher's aim is to identify and disentangle the causal process between X and Y (see for example Beach and Pedersen, 2013, Bennett and Checkel, 2014).

[44] When bootstrapping tests, one looks at the data as being the best estimate of the population and resamples it. This is done by selecting random samples from the available data *x* number of times (1000 in this thesis). The test is then conducted for each of the samples. The distribution of the results is then presented considering the distribution span specified by the researcher (95% in this thesis). This resampling helps in circumventing the assumption for normal distribution implied in parametric tests (Ruscio, 2008, p. 418).

Beach and Pedersen (2013) identify and describe three types of Process Tracing, namely theory testing, theory building, and explaining outcome (see also, Bennett and Checkel, 2014).

Each type of Process Tracing serves best for a specific research situation. In this thesis, I make use of theory testing Process Tracing. This type is best suited when the aim is to analyze a theorized mechanisms between an X and a Y with a proven correlation[45] (Beach and Pedersen, 2013, p. 21).

To complete the research, I followed a four-step process. In the first step I hypothesized the causal mechanisms that linked trust and previous knowledge, and collaboration, based in a review of existing theorization. In step two I operationalized the causal mechanism and inferred the possible observable manifestations that each part of the mechanism could produce. In step three I gathered the necessary data through interviews. In step four, I analyzed and discussed if the data retrieved through the interviews can be used as supporting evidence for the theorized mechanism.

It is worth mentioning, however, that in Process Tracing evidence do not equal to observations. Observations, i.e., data, presents some nuances that the researcher doing Process Tracing has to consider. The usefulness of the evidence, the accuracy, and the validity to explain the hypothesis should be considered regarding its contextual surroundings. The researcher needs to ponder if she has enough observations to corroborate what later will be the evidence i.e., evidence emanates from patterns in the data material.

The observations should also be analyzed on the base of the researcher's contextual knowledge on the case and the researcher needs to evaluate her confidence on the source's accuracy. In other words, the researcher has to be aware of the different

[45] Theory-building Process Tracing differs slightly from the theory-testing variant in that it attempts to build a causal mechanism explanation, based primarily on case-based evidence. The Explaining Outcome variant focuses on explaining a particular outcome by building a minimally sufficient explanation of the causal mechanism in play. By sufficient explanation (Beach & Pedersen, 2013, p. 18).

domains of reality mentioned earlier. One of the methods to deal this is to adopt a Bayesian approach. The Bayesian view holds that much scientific and everyday reasoning is done in probabilistic terms. Namely, when a researcher evaluates a certain claim (a hypothesis), they do so considering the available evidence, information, or knowledge. This consideration in turn, allows to increase or decrease confidence in the hypothesis (Howson & Urbach, 1993). To this end, in this thesis, I use the following formula:

$$p(h|e) = \frac{p(h)}{p(h) + \frac{p(e|\sim h)}{p(e|h)} * p(\sim h)}$$

p (h): also referred as prior, shows the confidence the researcher has on the h (the hypothesis) – previous to the empirical work – based upon already existing theorization, empirical material and other forms of scientific knowledge (Beach & Pedersen, 2013)[46].

p (~h): refers to the possibility that h is incorrect. The assignment of the value p (~h) will be complementary to p (h); i.e. if p (h) is .8 then p (~h) will be .2.

p (e|h): or theoretical certainty, refers to the confidence the researcher has on that the predicted e (evidence) must be present in the case under investigation. The value is ascribed before the empirical work is conducted and its fundament lays on previous theorization, empirical material, and contextual knowledge (Beach & Pedersen, 2013)[47].

p (e|~h): also known as theoretical uniqueness, shows the possibilities of e being caused by another not considered plausible h (Beach & Pedersen, 2013)[48].

[46] If the literature the investigation relies on, predicts that the hypothesis is likely to be true, the researcher will ascribe a high value to the prior (e.g. a .8 in a 0 to 1 scale). If the literature, however, is not conclusive on the validity of the hypothesis, the researcher will assign a lower value (for example a .4).

[47] When the researcher is confident in the possibility of finding e, a high value will be ascribed to it, however if the researcher knows that e exits but the contextual knowledge tells her that the evidence is difficult to find, then a low value should be ascribed.

[48] When having a high degree of confidence in the uniqueness of the explanatory power of h on e a low value should be ascribed. The low value refers to our confidence on alternative explanations accounting for the finding of e. On the contrary when the researcher does find potential alternative plausible explanation for the existence of e a high value of p (h|~e) is set.

p (h|e): posterior, refers to the actualized confidence the researcher had on p (h) after considering e (Beach & Pedersen, 2013)[49].

The values ascribed to each part of the formula represent the confidence on matters such as the existence of a part of a mechanism, the confidence on the data retrieved from the interviews, or the expectation on being able to find the appropriate evidence. The ascription of the values is done informed by the knowledge of the researcher on the subject matter which in implies a degree of subjectivity (Beach & Pedersen, 2013, p. 98). Beach and Pedersen (2016) offer an illustrative example of this subjectivity:

> Regarding democratic peace, sceptics from the realist tradition of international relations contend that the thesis has a very low prior probability of being true (low p(h)) […] A realist would therefore start a process- tracing analysis with a low prior as a starting point in a particular case […] a liberal scholar who engaged in research on the democratic peace mechanism would start with different priors (pp. 98-99)

The formula should not be understood as percentages nor as a type of quantitative analysis. The formula serves to be open and transparent to the reader (Beach & Pedersen, 2013, p. 98). The results reflect the confidence, the researcher has on the existence of each part of the hypothesized mechanism after finding, or not finding, the predefined evidence given the aforementioned considerations.

3.3.5 Interviews

Taking a starting point in the hypothesized mechanisms, I develop the interview guide (see appendix B) that was used in the data collection process. The guide could be divided in 3 parts. The first questions were used to learn about the informant, their job, and tasks that they undertake in emergency response operations. The second part had its focus on trust while the third inquired around the aspects of working with people known from before contra working with people that were unknown.

[49] The actualization of p (h) can be either negative, namely the researcher finds that p (h|e) is lower than p (h) or positive [p (h|e) > p (h)]. On some occasions, the researcher could find that no actualization takes place.

The recruitment process followed the same lines described before in section 3.3.2. The results of the mass sending of e-mails, however, did not work as expected. Only three leaders of local voluntary organization groups answer positively to the request of spreading the information to other members of their organization. From this process two informants where recruited.

In addition, I mobilized the personal network I had built over the years I have been working in the project. This resulted in three more informants being recruited and the opportunity to present my research in a seminar where members of the organizations under investigation where participating. Some of the members contacted me after the seminar and offer help in finding informants working within the geographical area of the study. The subsequent contact with the suggested members granted five additional informants.

Up to that stage I had not succeeded in recruiting any members of two organizations. I send a new badge of email targeting the local groups of one of the organizations (a voluntary organization) and the leadership of the other. One of the leaders of the local chapters suggested that she/he could be interviewed and presented me with two names from other local groups. Both persons agreed to be interviewed. The leadership of the other organizations did not answer to the different attempts I made for contact.

In total I conducted 13 interviews. Twelve of them were recorded. The interviews lasted between 35 minutes and 1 hour and 15 minutes. two of the interviews were conducted in the interviewees' house, four were conducted in the workplace (three of them were on active duty) and the rest were conducted over telephone. The reasons for conducting some of the interviews by telephone responded to cost cutting measures derived from the need to travel by plane to different locations and the working shifts of some of the interviewees. Two of the operatives interviewed by phone were on active duty at that moment.

3.4 Reflecting upon my persona and position within the field of study

When I started this project, I was completely new to the field of societal security and the topic of collaboration in emergency response operations. Moreover, by the time I started the PhD I had lived in Norway for two and a half years. This meant that in addition to being new to the field of study I was also new to the geographical context in which the study is rooted.

From the beginning of the project, I have seen myself as an outsider in the insider-outsider continuum, and the choice of Norwegian as the working language for the survey, interviews and correspondence with the participants exacerbated this perception.

Having an outsider position when researching a topic has been described as posing advantages and disadvantages (Dwyer and Buckle, 2009). From my conversations and correspondence with research participants, I perceived that this outsider position had some positive effects, as I was viewed as unthreatening, and they did not identify the research with an evaluation and thus they approached the topic with openness. Furthermore, I will argue that being an outsider has been positive in avoiding mixing my personal experience in the research process, thus making easier to argue that the findings are not compromised by my previous perceptions (Dwyer and Buckle, 2009, p. 59).

Nevertheless, being an outsider has brought challenges as well, and this became clear in the recruitment process, which proved to be a tedious and difficult job to reach and convince organization leaders to take part in the study. My unfamiliarity with possible gatekeepers and the absence of a name "well-known" within the field backing the project has limited the access to the practitioner field, however, I consider that I reached a number of respondents that allows for conducting the analysis.

3.5 Ethical considerations

Ethics in research encompasses a wide spectrum of topics (NESH, 2016, p. 5). Nevertheless, when discussing ethics in the social sciences, guaranteeing that participants cannot be recognized is often held to be quintessential. Israel (2014) quotes Lowman and Palys (1999) to make clear the importance this idea has to research:

> Research subjects divulge information in confidence about their own […] activity to a person who asked them to divulge the information, with the full knowledge that they are offering us data that will at some point be compiled, analyzed and divulged. […] since the interaction would not have happened if we had not initiated it, a tremendous ethical burden is placed on us to ensure no adverse effects befall the participant because of our entry into their lives. (p. 30, qtd. in Israel, 2014, p. 102)

One could pinpoint two aspects of this quote. The first is informed consent. The second aspect is to "Do not harm". An often-repeated premise within the social sciences (see, for example, Bryman, 2012, pp. 135-7; Bøas, 2006, p. 72; Kovats-Bernat, 2002, p. 214; Mertus, 2009, p. 166; NESH, 2016).

Concerning informed consent, I provided a short text together with the survey that explained the nature of the research, its aim, a short description of what respondents would have to answer, and an explanation of how anonymity would be guaranteed. They were also informed that the research project had been presented to and approved by NSD. In what regards the interview process, I delivered a written text with all the above-mentioned information to the participants I met face-to-face. When the interviews were conducted over telephone the same information was given orally.

Usually discussion around the tenet "do not harm" emerge within qualitative studies where data that could identify a person is gathered or when the research centers on sensitive topics. I consider that no sensitive information has been solicited through

either of the methods employed, however, I have attempted to avoid the possibility that the data could be traced back to the participants.

In what regards the survey data, this has been unproblematic. The only personal data recorded was general demographic data and respondents did not have to disclose the location in which they lived or worked. As for the interview data, anonymity has been guaranteed by redacting all the information that could help identifying the respondents (names, municipalities, locations of operations, roles within the organization…).

While conducting the statistical analysis I was faced with a situation that created some uncertainty: namely, that the research could influence the very phenomenon that it purports to study in a negative way. That deeper reflection on ethics started while working on the analysis in relation to one factor: previous relations. As it will be shown in Chapter 4 the literature suggests that previous relations between members of organizations have the potential to influence a collaborative effort positively, given that these relations have not been negative.

The concern about the research influencing future collaborative processes in emergency response operations was rooted in four items that were designed to measure the level of trust that respondents had in other organizations[50]. These items could be understood as if the participants were evaluating the professionalism of other organizations. Thus, if I were to publish the results of the survey in a way such as *Organization A gives low scores to Organization B while giving high scores to Organization C*, it could end up alienating Organization B from Organization A, as they could perceive that the other organization did not consider that they do their job adequately.

When a dilemma such as the one described occurs, the NESH (2016) guidelines consider that the researcher must weigh "the risk of causing minor strain […] against

[50] I perceive that the following organizations are well prepared to handle emergencies; I perceive that the following organizations are well equipped to handle emergencies; and, I have perceived that the participation of the following organizations positively contributes to the outcome of the operation.

both the benefit of the research for society and the value for the participants (p. 19). Following the guidelines implies that the researcher must start a reflective debate on the matter. These thoughts together with the request from some interviewees to redact their organizational membership prompted me to extend anonymity from the personal to the organizational.

Anonymizing organizations will produce a coarser description of the qualitative data. However, this does not necessarily affect the ultimate goal of this project, which is exploring the influence that a number of factors have on collaboration and the identification of causal mechanisms, not an evaluation of how specific response organizations operate or the differences between organizations.

Friendly relationships between actors participating in a response operation positively contribute to the development of inter-organizational collaboration, which in turn can help determine the success of the operation. Extending the scope responds then not to extending the protection of individual sources to the protection of organizations, but it implies that the "do not harm" premise extends to the process under investigation.

PART 2

4 Concepts and factors

In this chapter I present and discuss different understandings and conceptualizations of some of the terms used when referring to unwanted events. Furthermore, I problematize the concept of collaboration and propose a working definition. The operationalization of collaboration adopted in this thesis is also offered in this chapter. In addition, I outline a series of nine factors that have the potential to affect collaboration and I present their operationalization.

4.1 Disasters, extreme events, emergencies, catastrophes, unwanted events…

Often, small-scale emergency response operations are presented as quintessentially different by arguing that they are routine operations or that they lack the complexity or uncertainty present in large-scale events. If one is to accept that small-scale and large-scale events are to be considered as separate phenomena, it cannot be argued that knowledge can be transferred.

This would be critical for the project at hand since much of the research on the topic of emergency management has been conducted within the context of large-scale events. Thus, limiting the knowledge base that could be used in the context selected in this project.

This view that differences small-scale and large-scale events, however, is not unanimous. In this section, I discuss the different understandings of terms such as disasters, emergencies, and catastrophes and argue that large-scale and small-scale emergencies are different typologies of the same phenomenon.

Disasters have been a study subject for sociologists for decades. Drabek and Evans (2005) point as far back as 1920 when identifying a study conducted concerning an accident that occurred between two ships in the port of Halifax (Canada) in 1917 (p. 2). The basic premise for the study of disasters has been that although each event has

its own characteristics that make it unique, certain commonalities can be found to build a body of knowledge regarding disasters.

Within the field of sociology of disaster, one can find research lines that aim to answer questions such as what the root causes are, how do people react and respond to them, and what makes a disaster a disaster (Drabek & Evans, 2005, p. 2-3).

This last question of what makes a disaster a disaster is key to defining the research field. However, an unanimously held conceptualization is not in place (Quarantelli et al., 2007, p. 22). Kapucu (2006b) exemplifies this in the following:

> Henry Quarantelli invited disaster researchers to find a definition of disaster. Authors in the resulting edited volume, however, were not able to reach a consensus on the best definition of disaster. Disaster is defined […] depending on the characteristics of local vulnerability, as a 'social disruption'. (p. 210)

Such a result is not uncommon in the social sciences. Moreover, in the emergency management literature, one finds a myriad of terms referring to events that cause the activation of an emergency response operation. Disasters, extreme events, emergencies, crises, wicked problems, black swan events, or accidents are examples that appear frequently in articles and books. For some of these terms, their use and definitions appear consistent, as they stem from concepts developed by known authors. Wicked problems are, as defined by Rittel, problems of the social system that are ill formulated, where information is not optimal, where there are many parties and decision-makers with despair values, and where the ramifications for society are difficult to anticipate (Churchman, 1967). Black swans are events characterized by their rarity, large impact, and unpredictability (Taleb, 2007).

For other terms, there seems to be tacit understanding of their meaning and implications. Often, these key terms appear defined, and the understandings are laid out (frequently in different fashions and with different characteristics). It is common, however, to find the terms simply used with no further explanation. This is

problematic not only because researchers and practitioners might end up talking pass each other (Quarantelli et al., 2007, p. 22), but also because different languages ascribe different meanings to such terms, and therefore readers from different countries might interpret the terms in different ways (Murria, 2004). This stresses the importance of defining, or at least positioning, the understanding of key concepts to avoid misunderstandings, and to be able to decipher the commonalities among the inherently unique events under consideration.

Many authors have proposed explicit definitions to clarify what disasters are. Fritz (1961) defined disasters as "events that are concentrated in time and space, in which a society, or a relatively self-sufficient subdivision of a society undergoes severe danger and incurs such losses to its members and physical appurtenances that the social structure is disrupted" (Fritz, 1961, qtd. in Kapucu, 2006b, p. 210). Barton (1969) saw disasters as a subcategory of collective stress that occurred when some members of a social system failed to receive the expected condition for life and safety in the physical environment; food, shelter or the means to continue with normal activities (Barton, 1969, qtd. in Kreps & Drabek, 1996, p. 130). Kreps and Drabek (1996) defined disasters as nonroutine events occurring at a time of specific historical conditions that generate harm in larger subsystems of a society (p. 133), while Micko and Leitner (2006) adopted the UN ISDR's (2002) definition of disaster: "a serious disruption of the functioning of a community or a society causing widespread human, material, economic, or environmental losses that exceed the capability of the affected community or society to cope using its own resources" (UN ISDR, 2002, qtd. in Micko & Leitner, 2006, p. 288).

Each of these definitions attaches individual particularities to the concept of disaster. While Fritz (1961) and Kreps and Drabek (1996) refer to the event as the disaster, Barton's (1969) and the UN ISDR's (2002) definitions point to the post-event situation, more specifically to the effects of the event as the disaster. These two views are widely prevalent in the literature. Kapucu (2006b) suggests, for example, that the

disaster is not the event, but the extreme stress that is caused in the population that experiences it (p. 210). Some others, however, (e.g. Nowell & Steelman, 2015; Topper and Carley, 1999) seem to adopt the understanding that the disaster is the actual event itself. Some articles, without explicitly mentioning if a disaster is an event or a post-event situation, make use of the term in a way that could be interpreted as disasters being the event, e.g., "disasters seriously disrupt a community's functioning" (Nolte & Boenigk, 2011, p. 1385). In other studies, such as (Nolte et al., 2012), the understanding seems to point towards the situation after the event: "Disasters by definition encompass turbulent and complex situations […]" (p. 709).

The UN ISDR's (2002) definition also focuses on the inability to cope with the event. By doing this, UN ISDR's (2002) definition is linked to the concept of wicked problem, namely a situation that no actor can handle successfully on their own (Hermansson, 2016, p. 333).

One could say that this view of disasters, and the interdependence of actors, is consistent throughout the literature, notwithstanding the scale of the event. Saban (2015) mentions that extreme events increase the dependence of governments on the joint mobilization of resources of the global emergency management field (p. 1497). Abbasi and Kapucu (2012) similarly mention that during this type of situation, individuals from different agencies must work together to be able respond to the incident properly (p. 3) (see also, Nowell & Steelman, 2015; Gillespie & Murty, 1994; Sydnes & Sydnes, 2011; Nolte & Boenigk, 2011; Topper & Carley, 1999).

It is then interdependence and unpredictability that appears to be the distinction line between disasters and routine operations as the later are recurring events that can be solved by the incumbent organization on its own (see for example, Greene, 2013, pp. 3-4). Veil (2013) argues that routine operations can evolve into non-routine operation but that the distinction between routine and non-routine operations is often context bounded. (2013, 845-847). A snowstorm in Norther Norway could be considered a

routine operation, a similar storm in another country, such as the 2018 and 2021 events in Spain[51], would not.

Most of the proposed definitions mention that disasters occur when part of society is affected or disrupted. The level of abstraction (Sartori, 1970) of these definitions makes it difficult to define what "part of society" means. Regardless of whether one defines disaster as an event or post-event situation, it becomes difficult to decide when something can be qualified as a disaster and when is the threshold not reached to be categorized as such. This brings us back to the main premise of disaster studies, namely finding commonalities to compare cases and studies to continue building a body of knowledge about disasters, and how to manage disasters.

In pursuit of this, attempts have been made to develop a taxonomy of disasters. Kreps and Drabek (1996) defined four features that could help categorize the phenomenon, namely length of forewarning, the magnitude of the impact, scope of the impact, and duration of the impact (p. 133). Others have proposed a definition that reflected a continuum where different types of events could be classified as accidents, emergencies, or disasters (Drabek & Evans, 2005, p. 7), emergencies, disasters, and catastrophes (Veil, 2013, p. 847), or a disaster scale that follows that of the Richter scale for earthquakes (Fischer, 2003, pp. 99-100). These last two systems of categorization also center on the four features defined by Kreps and Drabek (1996).

The different taxonomies presented allow for the classification of events or post-event situations of different scale or intensity. This implies a *de facto* understanding of the taxa being part of the same phenomenon. Moreover, they take the above-presented definition down the abstraction ladder, clarifying even further what the phenomenon of interest is. This is valuable not just for researchers, but also for those

[51] https://elpais.com/ccaa/2018/01/06/madrid/1515271176_943958.html; At least three people die in Spain's worst snowstorm in 50 years | Spain | The Guardian

that must manage them, who in the end are in charge of averting or minimizing the effects of accidents, emergencies, disasters and other problems.

Based on the presented ideas, I will argue that big-scale and small-scale emergencies can be understood as two typologies of the same phenomenon and that it is possible to transfer lessons learned from one type to the other

4.2 On factors with the potential to affect collaboration

In this section, I present the factors identified through the literature review.

The literature on the topic shows that there is a wide variety of factors with the potential to influence collaboration. In the framework of this study, the focus is on what Reason (1997) called latent conditions and local circumstances. Latent conditions refer to the factors emanating from the system that go beyond individual psychology and sharp-end failures. By keeping the focus on the systemic level, I identified a series of factors that could be classified as a) being in place before the event, b) activated at the time of the event, and c) influencing the collaborative effort when organizations respond to the event.

4.2.1 Tendencies in defining collaboration

The necessity for conceptualizing collaboration becomes apparent when approaching the literature on emergency management. In general terms, collaboration has been understood as two or more organizations working together to handle a situation, nevertheless, the discussion of the meaning of collaboration, is not settled (Fleming et al., 2015).

The lack of an unanimously accepted definition has caused researchers to adopt different understandings of the phenomenon. Different understandings have brought different working definitions and different ways of measurement. This means that when a person interested in the topic of inter-organizational collaboration in

emergency response does a quick search for scientific articles, they will find that on occasion collaboration is investigated through network analysis, where the links between nodes account for instances of communication (see for example, Kapucu, 2012). Other times, the links will reflect any type of actual connection between organizations, be it a telephone, exchange of resources, or taking the same helicopter to get an overview of the situation in the place where the operation is being conducted (see for example, Rong et al. 2015).

In some articles, the reader will find an opposition to the idea that participating in the same operation or communicating actions automatically qualifies as collaboration (see for example, Hermansson, 2016). In these cases, researchers may pay special attention to power relations among participating actors, or the focus might be on the process of joint decision-making.

Yet, looking at other articles, the reader will find that some scholars have argued that certain characteristics or requirements must be met for inter-organizational work to be classified as collaboration (see for example, Beck & Plowman, 2014; Butts et al., 2012; Fedorowicz et al., 2007). These requirements vary in the degree of inter-organizational embeddedness that they presuppose. Sharing information and resources, creating shared rules and norms, leveraging differences and concerns across organizations, jointly assessing, and discussing a situation to draw lines of action, negotiating authority to reach a relative symmetry of power, joint decision-making or establishing a joint entity where different organizations become a single macro-organization are examples of different requirements cited in the literature.

Furthermore, the reader might also notice that other terms such as coordination or cooperation are widely used in the literature. Sometimes as synonyms for collaboration and sometimes as inherently different phenomena (see for example, Martin et al., 2016, p. 622; Nolte et al., 2012; Nolte & Boenigk, 2013, p. 150). The following statement exemplifies the difficulties that a reader can face when reading a

text that does not present a clear conceptualization of key terms, since one cannot know if the concepts are used as synonyms or as inherently different constructs.

> Deng and Liu, when studying the Yushu (Qingai, China) earthquake rescue process, proposed a coordinated emergency method and established a cooperative efficiency evaluation model focusing on the collaborative efficiency curve of the rescue teams, medical departments, traffic departments and associated organizations. (Rong et al., 2015)

If one finds this confusing, as I certainly did, one might start wondering what the author means by collaboration, coordination, or cooperation. Very often, however, the reader will not find a clarification of what is the understanding of collaboration (or any other term) adopted by the author nor how it has been operationalized.

Although I do not try to resolve the discussion on collaboration, I feel necessary to offer a clarification of how the term collaboration is understood throughout this thesis, what is the working definition and how it has been operationalized. This is not just useful and necessary for conducting the project at hand, but it also contributes to ongoing debate as well as the field by presenting a multi-faceted definition of collaboration and a structured operationalization that could serve to guide future research.

The definitions of collaboration I found after conducting the systematic literature review are presented in the following table

Table 2: Definition of collaboration identified through the systematic literature review.

Article	Proposed definition
Fedorowicz et al. (2007)	Represents the joint organizational entity, infrastructure, business processes, resources, and relationships which support a shared effort to provide some collective benefit, whether it is a program, service, or a product (p. 786)
Bingham, 2008 in Hermansson (2016)	Co-labour to achieve common goals working across boundaries in multi-sector and multi-actor relationships (p. 336)
Solansky and Beck (2009)	A cooperative relationship in which participants' differences are leveraged and divergent stakeholder concerns are balanced (p. 856)
Kapucu et al. (2009)	Interstate relationships act as interorganizational collaborations when multiple organizations go beyond simply coordinating activities and resources […] The use of integrated, interdependent collaborations as a form of interstate relations allows states to work together and to create new solutions to problems larger than any one state could handle (p. 299)
Kapucu et al. (2010a)	A form of inter-governmental relations that allows public and private organizations to work together and create a solution to a problem larger than any one organization can handle (p. 225)
Kapucu et al. (2010b)	Any joint activity by two or more agencies that is intended to increase public value by their working together rather than separately (pp. 453-454)
Nolte et al. (2012)	[…] refers to activities that cross organizational boundaries, requiring both organizations involved to alter their own behaviours based on the others (p. 709)

Butts et al. (2012)	Organizations are said to collaborate if they engage in any substantive interaction — e.g., information transfer, exchange of manpower, donations of material or financial support, or delegation of authority — related to task performance (p. 4)
Beck and Plowman (2014)	A cooperative, interactive process in which participants from different organizations, relying neither on markets nor legal hierarchy mechanisms, develop shared rules, norms, and structures to act and decide on issues related to a shared problem (p. 1235)
Fleming et al. (2015)	[a process] involving multigovernmental, multijurisdictional arrangements used to solve difficult public problems that extend beyond any one agency's scope or ability to respond alone (p. 446)
Lu and Xu (2015)	[…] collaboration is collective action […] (p. 270)
Saban (2015)	A cooperative relationship among organizations that relies on neither market nor any hierarchical mechanisms of control […] long-term interagency interaction for planning effective and sustainable response for disaster events (p. 1497)
Hermansson (2016)	[…] actors jointly assessing a situation, discussing measures to be taken to mitigate the effects of disasters, and initiating and working on responses together (p. 336)
Martin et al. (2016)	[…] a long-term relationship between organizations, characterized by high levels of interdependency and high risk […] which requires significant power symmetry (2016, p. 625). […] a deep relationship that required change and strategic action within both partner organizations (p. 626)

Within these definitions, three tendencies can be identified: the first tendency is that of collaboration being a shared effort to face a problem, increase public value, or achieve common goals (Beck & Plowman, 2014; Fedorowicz et al., 2007; Hermansson, 2016; Kapucu et al., 2010b; Saban, 2015). Some authors argue that collaboration occurs when organizations work jointly to find a solution to a problem that one single organization cannot solve alone (Fleming et al., 2015; Kapucu et al., 2010a; Kapucu et al., 2009). Other authors (see, for example, Martin et al., 2016; Nolte & Boenigk, 2013; Tang et al., 2017), although not mentioning it explicitly, seem to agree with this tendency as well.

The second tendency would be that a certain level of power symmetry exists among organizations (Martin et al., 2016). Other definitions do not make this point explicit. However, it could be assumed that there is a certain equality between organizations when stating that differences and concerns have to be balanced (Solansky & Beck, 2009); behaviors have to be molded to those of other organizations (Martin et al., 2016; Nolte et al., 2012), and assessing, sharing ideas for action, deciding, and acting occur jointly (Beck & Plowman, 2014; Guo & Kapucu, 2015; Hermansson, 2016; Kapucu, 2007; Tang et al., 2017).

Two of the definitions mention as well that collaboration does not rely on the market or hierarchical mechanisms of control (Beck & Plowman, 2014; Saban, 2015). Beck and Plowman (2014) and also Saban (2015) adopt Phillips et al. (2000) view of collaboration as an act that requires negotiating roles and responsibilities in a situation where no legitimate authority is to be found to take a leading position (p. 24).

The third tendency could be understood as that a certain level of integration among the parts is required. Some of the definitions describe collaboration as the act of working together, interacting with others, or as collective action. In addition, other authors explain that collaborating presupposes that organizations share information, work force, material resources, and financial burdens. They develop rules, norms, and structures in a manner that they create a joint organizational entity that works

together to assess the situation and decides and acts jointly to respond and mitigate the effects of the event (Beck & Plowman, 2014, p. 1235; Butts et al., 2012, p. 4; Fedorowicz et al., 2007, p. 786; Hermansson, 2016, p. 336; Saban, 2015, p. 1497).

It could be pointed out that this tendency appears to conflict with the definition presented by Kapucu et al. (2010b). By reading other definitions, one could argue that collaboration goes beyond conducting any joint activity. Hermansson (2016) supports this last idea by asserting that even though two or more organizations work together in an emergency response operation, the joint effort does not necessarily qualify to be classified as collaboration (p. 335). This is an interesting notion because if taken as a maxim, one could argue against many studies looking at collaboration. If one looks at Rong et al. (2015), the authors mention that in order to investigate collaborative relationships:

> […] rescue organizations were coded as to whether or not they participated in emergency rescue work, with 1 indicating that the organization was directly or indirectly involved in the emergency rescue work, and 0 indicating that the organization was not involved in the emergency rescue work. (p. 953)

Here, Rong et al. (2015) make use of a conceptualization that fits their purpose and methods. In fact, several other researchers have looked, for example, at communication links as the means to investigate collaboration through network analysis. However, the definitions discussed above and other relevant literature point towards a certain amount of embeddedness among organizations when describing the phenomenon of collaboration (see, for example, Kim et al., 2017; Martin et al., 2016; Nolte et al., 2012; Solansky & Beck, 2009; Tang et al., 2017).

Two of the definitions include a specification of time span (Martin et al., 2016; Saban, 2015). According to these definitions, collaborations are long-term relationships. If one were to accept these characteristics without further consideration, it would mean that the term collaboration could not be used when speaking about short-term interorganizational work as it is being studied in this thesis. Nevertheless, these

authors nuance the understanding of long term; Martin et al. (2016) mention that the understanding of collaboration in terms of longevity range from episodic to highly formalized work based on contractual agreements (Martin et al., 2016). The use of "long-term" by Saban (2015) implies that collaboration is not just confined to the response phase of an emergency, but extends to the other three phases—i.e., mitigation, preparedness, and recovery. If long-term were to be understood in this manner, then it would mean that one can also speak about collaboration when referring to only one of the phases. This idea can be reinforced using the term collaboration when he analyzes the response (response phase) to Typhoon Haiyan.

Summing up, in the emergency management literature, the definitions of collaboration are diverse and at times contradictory, and only a small number of the articles define these terms. Nevertheless, from the presented definitions and the identified tendencies, one could conceive collaboration as a phenomenon that occurs when two or more actors work together to achieve a goal that might or might not be attainable on their own. Collaboration goes beyond simply working together because it requires merging between organizations regarding sharing ideas for action, decision-making and acting, which brings the implication of a relative power symmetry. This is where the collaborative effort, or response operation, becomes a project conducted by an entity made up of different actors (an understanding that can be related to the concept of *samvirke* presented in chapter 2).

Following this, in this study collaboration is understood as *the acts of sharing ideas for action, decision-making, and acting that two or more organizations conduct jointly in a relative symmetry of power to respond to a problem*.

As mentioned earlier, one can often find the terms coordination and cooperation used alongside collaboration. On some occasions these appear as synonyms while in others as inherently different constructs. In the following pages I will explain how my conceptualization of collaboration relates to these two terms.

Through the literature review I identified a series of definitions regarding coordination and collaboration (see appendix C). Within the identified definitions of coordination, three tendencies are highlighted. The first is that of defining the aim or achieving a common goal. Similar to the definitions of collaboration presented earlier, four of the definitions of coordination mention that it is done to achieve a common purpose or objective (Comfort, 2007; Curtis, 2015; Ivanova & Sydnes, 2010; Martin et al., 2016). Although not mentioning that the term is common or shared, Kapucu (2006a), Kapucu (2006b), and Abbasi & Kapucu (2016) argue that coordination is done to accomplish a specific goal.

A second tendency is the link between coordination and interoperability. Along this line, Ivanova and Sydnes (2010) describe coordination as "the bridging together of diverse elements into a harmonious relationship" (p. 142). Some authors present the idea of "bridging" as the alignment, organization, and separation of actions among organizations, connecting the nodes of a network in response to the needs and context, managing dependencies among activities, eliminating redundancies, and distributing information between actors (Abbasi & Kapucu, 2016; Brooks et al., 2013; Comfort, 2007; Guo & Kapucu, 2015; Kapucu, 2006a; Kapucu, 2006b; Kapucu et al., 2010b; Martin et al., 2016; Nolte et al., 2012; Saban, 2015).

A third tendency is that of understanding coordination as vertical and horizontal. Morris et al. (2007) present two definitions that see coordination in different ways. The first conception refers to a set of clear and unambiguous inter-organizational connections that have been crafted for each actor within the system and that define clear lines of authority to help link all parties in order to achieve certain goals. The second conception maintains that coordination relies on negotiation and adjustment to take advantage of shared resources, authority, knowledge, and technology possessed by the different organizations participating in the response operation (p. 95).

Kapucu et al. (2010a) draw on this idea as well by identifying and defining hierarchical, network, and market coordination. These understandings of

coordination might appear contradictory; nevertheless, the difference between them is that of direction of interactions. Coordination can happen in the traditional hierarchical fashion and horizontally, or in network forms (Morris et al., 2007, p. 96). Although the hierarchical, network and market coordination distinction made by Kapucu et al. (2010a) is not mentioned in other found definitions, several authors mention both vertical and horizontal/lateral coordination (see, for example, Brooks et al., 2013; Comfort, 2000).

Cooperation is the least defined term, and from the offered definitions, it is challenging to point to a characteristic that makes the act of cooperating distinguishable from collaboration and coordination. Nevertheless, the clearest tendency arising from the definitions is that of low-key interaction. The emphasis in phrasings such as sharing as necessary to the situation, low-intensity relations, inter-organizational relations that do not require resource exchange or working together in a non-binding manner to achieve a goal emphasizes the loose level of organization ascribed to cooperation (Coles et al., 2012; Martin et al., 2016; Nolte et al., 2012).

Although the differences between some of the ideas adopted in the presented conceptualizations of collaboration and coordination might not appear as straight forward my conclusion is that coordination appears more linked to the operative aspect of emergency management—i.e., interoperability and the act of "bridging". The differences between collaboration and cooperation emerge clearer as the latter lacks de embeddedness presupposed by the former.

4.2.2 Operationalizing collaboration

Based on the conceptualization of collaboration mentioned in the previous section, namely, *the acts of sharing ideas for action, decision-making, and acting that two or more organizations conduct jointly in a relative symmetry of power to respond to a problem.* I included three items in the questionnaire to

encompass the characteristics described in that definition. Namely, sharing ideas for action, joint decision making, and power symmetry.

The motivation of these three items was to create a composite variable that reflected the level of collaboration perceived by the respondents.

> **Item 1)** I perceived that the following organizations dominated/tried to dominate other organizations.[52/53]
>
> **Item 2)** I experience that my organization made common decisions about the implementation of the operation with the following organizations.[54]
>
> **Item 3)** I experienced that my organization shared ideas and points of view about the implementation of the operation with the following organizations.[55]

Respondents had to rate their agreement with the statements given using a 5-point scale (*strongly disagree – disagree – neutral – agree – strongly agree*) in relation to the listed organizations, namely police, fire department, ambulance services, plane ambulance, 330 squadron, civil defense, the Red Cross, Norwegian Peoples Aid, and Norwegian Search and Rescue Dogs.

With the intention of forming a composite variable, I tested for internal consistency of the index. Cronbach's α, alpha, (n = 105) showed a value of .721. This is over the recommended value of .7. An increase in the alpha would have been achieved (α = .795) by eliminating the variable regarding perceived domination attempts. Nevertheless, taking the results into account, and in order to maintain theoretical consistency, I deemed it adequate to be used for analysis. Once internal consistency was tested, I

[52] Jeg oppfatter at følgende organisasjoner dominerte/prøvde å dominere over andre organisasjoner.
[53] The direction of domination had to be changed for methodological reasons, thus in subsequent pages higher levels of domination are represented by lower values.
[54] Jeg oppfattet at min organisasjon tok felles beslutninger om fremdriften av operasjonen med følgende organisasjoner.
[55] Jeg oppfattet at min organisasjon delte ideer og synspunkter om fremdriften av operasjonen med følgende organisasjoner

proceeded to examine unidimensionality. This is that they measured the same latent construct, in this case what I termed collaboration.

After testing the factorability of the items[56] I conducted Principal Component Analysis (n = 105). The initial Eigen values suggested a solution of one component. This component had an Eigen value of 1.998 and explained a total of 66.597% of the variance. All three variables loaded strongly into the component, the lowest being a loading of .712 for perceived domination attempts. The difference between the Eigen value of the first factor and the second (.683), together with amount of variance, suggested that the variables are unidimensional.

4.2.3 Before-event factors

When an organization comes into the field and participates in a response operation, it brings a series of qualities that have the potential to influence collaboration either positively or negatively. These qualities can be differentiated into two groups: those internal to the organization, such as culture and structure, and those external to the organization, such as perceptions about, and relations with, other organizations. In this section, I will discuss these qualities and pose some hypotheses concerning before-event factors.

4.2.3.1 Internal qualities

Organizational culture

Organizational culture, or aspects of that culture, has often been cited by authors as an enabler or disabler of collaboration (see, for example, Curtis, 2015; Hermansson, 2016; Kapucu, 2012; Waugh & Streib, 2006). Culture is, however, a broad and often debated concept that is understood in several different ways (see, Hatch, 1997, p.

[56] All items correlated above .3 with the others. The analysis shows a determinant value of .435. This is above the recommended value of .00001. The Kaiser-Meyer-Olkin measurement of sampling adequacy showed a result of .614 – above the recommended value of .6 – and Barlett's test of sphericity gave a significance level $p < .01$. Lastly, communalities were all above the required .3 (the lowest being .506 for perceived domination attempts), further confirming that all items shared some common variance among them.

205). Offering a definition of culture could be a project of its own. In this thesis, the culture of an organization is understood as the norms and values created, adopted, and/or maintained by the influence of members of the organization. That the culture subsequently influences the ideas, behavior, and choices of those same individuals (Hatch, 1997, pp. 200-217). Researchers have stressed that culture as a shaper of cognitive frameworks can produce different understandings of the same situation, as well as differences in goal-setting, paths of action, and predilections for certain types of structure (see, for example, Bdeir et al., 2017, p. 348; Kalkman & de Ward, 2017, p. 895).

In the emergency management literature, cultural differences such as diversity of values, perceptions, goals, or modes of operation have been deemed potentially detrimental to collaborative effort (Kapucu, 2012; Waugh & Streib, 2006, p. 134). This would make it necessary to engage in a negotiation process to minimize their effect, which would produce in the best-case scenario a slowdown in the operation. Some authors have pointed to civil-military relations as an example of the effects of cultural divides (Fimreite et al, 2014, p. 19; Waugh & Streib, 2006, p. 134). The relevance of this becomes patent in the context of this study because professional and voluntary, organizations that have their own idiosyncrasies are required to work together in other to manage emergencies. Although cultural differences might be detrimental for the collaborative endeavor, the problems that arise can be addressed and overcome (Curtis, 2015, p. 623).

The main element that would help in resolving the problems is that organizations have a collaborative culture. This is, that collaboration with other organizations, regardless of their differences is part of their ethos and that they know how to collaborate. This statement might appear logical and overly simple; nevertheless, it is essential (Kapucu et al., 2010b, p. 454). Hermansson (2016) offers a prime example of this with a quote from one of the informants participating in his study:

> The main crisis of the crisis management was the collaboration between the governor and AFAD[57], and us, because we could not collaborate. They didn't want to work with us, and we didn't want to work with them so there was a crisis within the crisis. (p. 340)

This quote exemplifies the importance of having a collaborative culture. At first glance, such a statement might appear surprising. Nonetheless, organizations have claimed different reasons to reject collaboration (see, for example, Nolte et al., 2012; Kapucu et al., 2010a; Kalkman & de Waard, 2017; Brooks et al., 2013; Sydnes & Sydnes, 2011; Kim et al., 2017). In the example given by Hermansson (2016), it was the concurring political ideologies professed by the two agencies (p. 340).

Kapucu (2007) explicitly states that for the most part the success of a collaborative effort relies on the willingness of leaders and organizations to play a part and contribute (p. 553, Kapucu, 2006b). an idea that is also highlighted by other authors on the field (see, for example, Nolte et al., 2012; Solansky & Beck, 2009; Guo & Kapucu, 2015; Tang et al., 2017; Nolte & Boenigk, 2011; Nolte & Boenigk, 2013).

A study conducted by Solansky and Beck (2009) supported this idea empirically finding that a strong embeddedness of the idea of collaboration among organizations participating in an operation, generated higher degrees of inter-organizational collaboration (p. 868). A review of empirical studies on collaboration conducted by San Martín-Rodríguez et al. (2005) in the context of interprofessional collaboration also found similar results (p. 141).

Adaptability

A collaborative culture is the necessary starting point of a collaborative effort; however, this alone is not enough. Organizations must have some capabilities (Kapucu et al., 2010a). Kapucu (2012) argues that collaboration is only viable if the participating

[57] AFAD is the Abbreviation for the Turkish Disaster and Emergency Management Presidency

organizations are “internally fit for the structural and value adjustments needed for collaborative efforts purposes” (p. 43).

Organizational rigidity or the incapability to improvise can be considered as detrimental. For a functional collaboration to occur, organizations must have the will and capability to mold or adapt their culture, structure, and goals in response to the ongoing situation and to the other participating organizations (Kapucu, 2012, p. 51).

Morris et al. (2007) give an example of what the capacity to adapt means when describing the adaptive capacity that the U S Coast Guard showed during Hurricane Katrina, forming additional helicopter crews by using personnel from different sectors of the organization (pp. 100, 102).

The capacity to adapt to other organizations becomes especially important in emergencies due to the heterogeneity and quantity of organizations that might be involved (Guo & Kapucu, 2015, p. 3). In addition to this, the changing and unpredictable nature of emergencies requires that organizations often adapt to new ways of functioning. When habits and preferences lead, for example, to inflexible positions such as rigid behavioral patterns regarding action plans or chain of command structures, the possibility of hindering collaboration is increased (Kapucu & Garayev, 2011, p. 370; Weick & Sutcliffe, 2011, pp. 26, 29). Therefore, organizations that allow and facilitate adaptability (flexible organizations that are open and capable to change) will facilitate the collaborative process.

4.2.3.2 External qualities

Regarding the external qualities, the literature in the field highlights perception about other organizations, and relations between organizations, that have the potential to influence collaboration before the event. There are three distinct aspects of this perspective, namely homophily, trust and previous contact.

Homophily

As mentioned earlier, cultural differences between organizations can be detrimental for a collaborative endeavor (Kapucu, 2012; Waugh & Streib, 2006, p. 134; Fimreite et al, 2014, p. 19; Waugh & Streib, 2006, p. 134).

The opposite, namely that actors are more likely to interact and share resources and information with other actors if they perceived that they all form part of a wider group or collective is also argued (Nowell & Steelman, 2015, p. 7; Abbasi & Kapucu, 2012, p. 5; Siciliano & Wukich, 2017; Waugh and Streib, 2006).

Homophily here refers to the degree of similarity between organizations that interact with each other and the propensity to relate to other actors with similar features and characteristics (Siciliano & Wukich, 2017, p. 492).

Nowell and Steelman (2015) state that the effects of homophily on collaboration is empirically supported between individuals and to some extent between organizations (p. 7). Siciliano and Wukich (2017) emphasize that at the organizational level, the homophily principle has presented mixed results (p. 492). However, they argue that in the context of emergency response, where organizations that have not had any previous contact before might be required to work together and where there are high levels of uncertainty, similar organizational characteristics can be perceived as indicators of common expectations and trust (Siciliano & Wukich, 2017, p. 492). This idea is empirically reinforced, as homophily appears to be significant in three of the four cases analyzed in their study (Siciliano & Wukich, 2017). Similar findings are demonstrated in a study conducted by Nowell and Steelman (2015), in which they found that a shared stakeholder group affiliation had a significant effect on collaboration between organizations. Moreover, Waugh and Streib (2006) stress that organizations that share a common language will collaborate more effectively (p. 134). Nowell and Steelman (2015) also point to similar identities as an enabler of well-functioning collaboration (p. 7).

Trust

As mentioned earlier, emergency response operations need to be managed by several actors in order to be manage successfully (Kapucu, 2012, p. 53; Nolte & Boenigk, 2013, p. 151).

In the emergency management literature, trust is the factor that is often highlighted for facilitating smooth collaboration under the conditions of interdependence and it can be linked to one organization's perception of another organization's professionalism, experience, and capabilities (San Martín-Rodríguez et al., 2005, p. 56; Jalba et al., 2010), and could be defined as the readiness of an actor to be susceptible to the actions of another organization with the understanding that the other will perform an assigned task that is important for the actor, regardless of the ability to monitor and control the other organization (Mayer et al., 1995, qtd. in Kalkman & de Waard, 2017).

Trust, or the lack thereof, has often been cited as playing an important role in collaborative emergency response operations by helping to develop functional relations between members that need to collaborate in order to respond to an emergency situation (see, for example, Hu et al., 2014, p. 698; Kapucu, 2006b, p. 209; Kapucu, 2008, p. 256; Kapucu et al., 2009, p. 306; Kapucu & Demiroz, 2011, p. 552; Kapucu & Garayev, 2011, p. 373; San Martín-Rodríguez et al., 2005, p. 141; Beck & Plowman, 2014, p. 1234).). Kapucu et al. (2010b) go even further in asserting that trust holds a collaborative network together (p. 454, Hermansson, 2016, p. 336). This becomes especially relevant in the context of emergencies where it might be challenging to invoke policies and guidelines to guide the participants joint work due to the shifting nature of emergencies (Kapucu, 2007, p. 559

In addition, trust can facilitate the sharing of information, risk, and opportunities. Also, it can help sustain working relationships, and avoid competing relationships (Carignan, 2013, p. 24; Hu & Kapucu, 2014, p. 5; Kapucu, 2006a, p. 210; Coles et al., 2012, p. 68; Guo & Kapucu, 2015, p. 4). In other words, if Organization A does not

trust that Organization B will fulfill its duties, it will most likely avoid engaging them as a partner in the operation (San Martín-Rodríguez et al., 2005, p. 142).

The lack of trust that an organization might have for another might be well founded or might be based on preconceptions. Nolte and Boenigk (2013) maintain that "organizations with extensive experience may have doubts about the abilities of less-experienced organizations (p. 153). Waugh (2000) provides an example when he states that public organizations might be reluctant to rely upon voluntary organizations:

> because they distrust the intentions of the volunteers, lack confidence in the volunteers' skills and resources, fear that volunteers may endanger themselves or others, are concerned that volunteers may get in the way of professional responders, and fear that there may be legal liability for volunteers' actions. (Waugh, 2000, qtd. in Kapucu, 2006b, p. 214)

This distrust or skepticism might seem surprising; however, Hermansson (2016) points out that organizations often enter a collaborative effort with a skeptical view of others. They know what their own organization can do but cannot know about their counterparts. Therefore, Hermansson (2016) suggests that trust might be crucial in the initial stages of a response operation to be able to conduct the operation efficiently (p. 336).

In this thesis, I have classified trust as a factor that emerges before the operation. Some authors have argued that this is often not the case in the context of emergency response operations (Doyle et al., 2015, p. 10; Kalkman & de Waard, 2017, p. 891; Beck & Plowman, 2014, p. 1242). Nevertheless, as shown in the context chapter the organizations under study have a long history of relations behind them. This can also be seen in chapter 5. The focus on small-scale emergencies lifts the prominence of conventional trust as the organizations participate in dozens of operations each year. However, I do not mean to suggest that this is essentially different in small scale emergencies as the result of several articles of large-scale emergencies with tens if not hundreds of organizations involved also shows that participating organizations tend to

form cliques between those that had already stablished trust relationships (see for example Kapucu, 2012.

With this, I do not want to negate the existence of swift trust nor the importance that it may play in certain emergency response operations. In cases where organizations have not had any previous experience with each other or in situations where a high number of organizations are involved, investigating swift trust may result quintessential.

Previous contact and previous conflict

Moreover, pre-existing relationships and interpersonal relationships between emergency responders have been said to have positive effects regarding collaboration because they yield stronger ties between organizations (Kapucu, 2006a, p. 212; Moynihan, 2008, pp. 356-357; Turoff et al., 2008, p. 466; Waugh & Streib, 2006, pp. 137,139; Nolte & Boenigk, 2013, p. 153). In a study conducted by Martin et al. (2016) in Haiti in the aftermath of the 2010 earthquake, they found that organizations that have had previous experience with each other required less effort to launch a collaboration in comparison to other organizations with whom they have not had previous contact (p. 638).

Organizations that have had previous relations to each other know what knowledge their counterparts have, what they can do, and what they can offer when building a shared mental model, this is when the have to build a common understanding of what is happening and what has to be done. In addition, previous collaboration and dialogue help build inter-organizational trust, facilitates inter-organizational communication, planning, and structuring the operations, conflict resolution, coordination, and ease of future collaborative efforts (Hu et al., 2014, p. 707; Kapucu, 2006a, p. 210; Kapucu, 2006b, p. 209; Kapucu, 2012, p. 49; Kapucu & Garayev, 2011, p. 373; Gellert et al., 1994, p. 6; Nowell & Steelman, 2015, p. 18). As Nowell and Steelman (2015) assert, this occurs because interactions between two organizations that have a history of previous relations will differ from the interactions between organizations

that are unfamiliar to each other (p. 6). In other words, interactions between friends will not be the same as transactions between strangers.

Furthermore, Siciliano and Wukich (2017) argue that previous contact might bypass the lack of trust that an organization might have regarding a counterpart if there is a two-step connection between them. This means that if both organizations have previously collaborated and have developed a trust relationship with a third organization, it will be easier to trust each other because they will perceive each other as a friend of a friend. In other words, trust is transferable.

The idea that previous contact influences collaboration has been supported by both qualitative and quantitative studies (see, for example, Gellert et al., 1994; Nowell & Steelman, 2015; Siciliano & Wukich, 2017; Nolte & Boenigk, 2013).

Previous contact with other organizations, however, can affect collaborative efforts undesirably if the contact in the past has been negative (Nolte & Boenigk, 2013, p. 153; Kapucu et al., 2010b, p. 455).

In the context of emergency management, this might become especially relevant since organizations might not be able to choose freely partners from a diverse pool. In this type of mandated collaborations, organizations will have to participate with others in a response operation regardless of the previous experience they have had with a counterpart. Doyle et al. (2015) argues that when this occurs, organizations tend to focus their attention on task demands rather than collaboration, and therefore the effectiveness of the response operations is reduced (p. 10).

In sum, I have identified six factors in the literature that can be categorized as being activated before the event. These are collaborative culture, adaptability, homophily, trust, previous contact, and previous conflicts. These factors appear to be widely accepted in the emergency management literature, and to some extents have been proven to have an effect through empirical research.

4.2.4 Operationalizing before-event factors

I will first present the operationalization the two internal qualities, namely collaborative culture and adaptability. I included the following four items in the questionnaire to investigate collaborative culture:

> **Item 1)** My organization has a good understanding of how organizations should work together to handle an emergency.[58]
>
> **Item 2)** My organization has clear guidelines on how collaborating with other organizations should be conducted.[59]
>
> **Item 3)** My organization works to find common solutions when a problem with another organization arises in an emergency.[60]
>
> **Item 4)** My organization helps its members to acquire abilities to collaborate with members of other organizations in the best possible way.[61]

As mentioned earlier, collaborative culture, this is the embedded willingness and openness to collaborate, plays a paramount role in the success of a collaborative endeavor. These four items can be seen as inquiring around different markers that represent that embedded willingness. The first two items bring to the forefront how rooted is collaborative culture in the organization by asking if there is a widespread understanding of how collaboration should be conducted, and if the organization has codified that understanding. The last two items reflect on the willingness to collaborate by inquiring if the organization strives for collaboration when faced with obstacles and

[58] Min organisasjon har en god forståelse av hvordan forskjellige organisasjoner bør jobbe sammen for å takle nødsituasjoner.
[59] Min organisasjon har klare retningslinjer om hvordan samarbeid med andre organisasjoner bør gjennomføres.
[60] Min organisasjon arbeider for å finne en felles løsning hvis et problem oppstår med en annen organisasjon i en nødsituasjon.
[61] Min organisasjon hjelper sine medlemmer med å oppnå ferdigheter til å kunne samarbeide med andre organisasjoners medlemmer på en mest mulig effektiv måte.

if they prepare their members for it (which tacitly implies the use of economic resources).

Respondents had to rate their agreement with the statements given using a 5-point scale (*strongly disagree – disagree – neutral – agree – strongly agree*). The motivation for these questions was to create a composite variable that reflected the organizations' collaborative culture perceived by the respondents.

The next step was creating the composite variable for collaborative culture. Cronbach's α (n = 105) showed a value of .819. No increase in the alpha would have been achieved by eliminating any of the variables. Subsequently, I proceeded to test unidimensionality. After testing the factorability of the items,[62] I conducted Principal Component Analysis (n = 105). The initial Eigen values suggested a solution of one component. This component had an Eigen value of 2.607 and explained a total of 65.172% of the variance. All four variables loaded strongly into the component, the lowest being a loading of .716 for the variable regarding the perception of the organization being able to find common solutions to tackle problems with other organizations. The difference between the Eigen value of the first factor and the second factor (.655), together with the amount of variance, suggested that the variables are unidimensional. In other words, the four items presented above, when connected, form a variable (composite variable) that can be used to measure collaborative culture.

To investigate the adaptability of the organizations, I included the following items in the questionnaire[63]:

[62] All items correlated above .3 with the others. The analysis shows a determinant value of .220. The Kaiser-Meyer-Olkin measurement of sampling adequacy showed a result of .761 and Barlett's test of sphericity gave a significance level $p < .01$. Lastly, communalities were all above the required .3 (the lowest being .513 for the variable regarding the perception of the organization being able to find common solutions to tackle problems with others), further confirming that all items shared some common variance among them.

[63] As it was the case with collaborative culture, respondents had to rate their agreement using a 5 point scale, the intention behind the items was to create a composite variable as well.

Item 1) My organization can adapt its modus operandi to accommodate the changing dynamics in an emergency.[64]

Item 2) My organization suffers disruptions when departing from the established modus operandi.[65]

Item 3) My organization looks for new ways to solve problems.[66]

Item 4) My organization is open to learning from stories of success and failure from other organizations and incorporating this learning into their modus operandi.[67]

Item 5) My organization changes its modus operandi if necessary, to adapt to other organizations.[68]

As Kapucu (2012) argues, collaboration can only occur if the organization involved in an operation has the ability and will, or openness, to adapt to changes and obstacles that will inevitably appear. The five items presented above were created to retrieve information on that capability and willingness to change. Items 1, 2 and 5 inquire around that capacity, although it could be argued that item 5 also reflects on how willing organizations are to accept changes to adjust to other partners. Items 3 and 4 inquire around the willingness or openness to change. While item 3, appears more organization centered, item 4 directly asks about openness to change from input coming from counterparts.

Cronbach's α (n = 105) showed a value of .504, a value that does not meet the threshold to be considered acceptable. An increase in α would have been achieved (α = .753) if the variable regarding disruption in the organization for departing from

[64] Min organisasjon kan tilpasse sine innøvde rutiner til den skiftende dynamikken i en nødsituasjon
[65] Min organisasjon opplever avvik fra etablerte og innøvde rutiner som forstyrrende.
[66] Min organisasjon leter etter nye måter å løse problemer på.
[67] Min organisasjon er åpen for å lære av tidligere suksess og fiasko fra andre organisasjoner, og inkorporerer erfaringene i våre rutiner.
[68] Min organisasjon endrer innøvde rutiner hvis det er nødvendig for å tilpasse seg til andre organisasjoner.

established routines was not included. Seeing these results, I decided to exclude the variable and examine the unidimensionality of the other four variables.

After testing the factorability of the items[69] (four variables, n = 105), I conducted Principal Component Analysis. The initial Eigen values suggested a solution of one component. This component had an Eigen value of 2.303 and explained a total of 57.585% of the variance. All four variables loaded strongly into the component, the lowest being a loading of .734 for the variable regarding the organization's capacity to adapt to accommodate other organizations.

The results show a considerable difference between the Eigen value of the first factor and the second (.836). Although the total variance explained is below the 60% threshold, I decided to compute the composite variable. In other words, the four included items mentioned above form a variable (composite variable) that enables the analysis of the factor labeled adaptive capacity.

After presenting the operationalization of the two internal factors, I present the operationalization of three external factors. Namely homophily, trust and previous contact. First, I included the following three items in the questionnaire to look at homophily as a factor:

> **Item 1)** I perceived that there are cultural differences between my organization and the following organizations.[70]
>
> **Item 2)** I perceived that there are identity differences between my organization and the following organizations.[71]

[69] All items but one correlated above .3 with the others. The analysis shows a determinant value of .340. The Kaiser-Meyer-Olkin measurement of sampling adequacy showed a result of .645 and Barlett's test of sphericity gave a significance level $p < .01$. Lastly, communalities were all above the required .3 (the lowest being .538 for the variable regarding the organization's capacity to adapt to accommodate other organizations), further confirming that all items shared some common variance among them.

[70] Jeg oppfatter at det er kulturelle forskjeller mellom min organisasjon og følgende organisasjoner.

[71] Jeg oppfatter at det er identitetsforskjeller mellom min organisasjon og følgende organisasjoner.

Item 3) I have experienced that there are jargon differences between my organization and the following organizations.[72]

Previously I have argued that collaboration can be facilitated by the perception of similarities in organizational characteristics i.e. the perception that different organization are part of a wider group. Without negating the wide variety of potential markers, I chose culture, identity, and jargon as markers of these characteristics (see for example Nowell & Steelman, 2015; Abbasi & Kapucu, 2012; Siciliano &Wukich, 2017). While culture and identity are more abstract concepts, I also include a marker that could be identified in the day-to-day work. It is important to mention that the aim of items 1 and 2 was not to inquire about the specific culture and identity that different organizations have or how they are seen by counterparts. Their formulation is not adequate for this task. The purpose of the three items is to build an index that will reflect the perception of similarity/difference between organizations. From the conversations I had with practitioners while designing the questionnaire (see chapter 3) I noticed that the terms culture and identity were used when comparing organizations. This was also observed when conducting interviews.

Respondents had to rate their agreement with the statements given using a point scale (*strongly disagree – disagree – neutral – agree – strongly agree*) in relation to the listed organizations, namely police, fire department, ambulance services, plane ambulance, 330 squadron, civil protection, the Red Cross, Norwegian Peoples Aid, and Norwegian Rescue Dogs.

Cronbach's α (n = 105) showed a value of .820. An increase in the alpha would have achieved (α = .822) by eliminating the variable regarding jargon differences. Nevertheless, considering the low increase on the α, and that its value is above the threshold to be considered good, as well as to maintain theoretical consistency, I proceeded to test the unidimensionality of the three variables.

[72] Jeg oppfatter at det er sjargonforskjeller mellom min organisasjon og følgende organisasjoner.

After testing the factorability of the items[73], I conducted Principal Component Analysis (n = 105). The initial Eigen values suggested a solution of one component. This component had an Eigen value of 2.208 and explained a total of 73.612% of the variance. All three variables loaded strongly into the component, the lowest being a loading of .810 for the variable regarding jargon differences.

The difference between the Eigen value of the first factor and the second (.492), together with the amount of variance, suggested that the variables are unidimensional. Thus, I computed it as a composite variable that can be used to measure homophily in the analysis.

With respect to second factor of the external qualities found in the literature, namely trust, there were three items in the questionnaire that were included to operationalize trust:

> **Item 1)** I perceive that the following organizations are well prepared to handle emergencies.[74]
>
> **Item 2)** I perceive that the following organizations are well equipped to handle emergencies.[75]
>
> **Item 3)** I have perceived that the participation of the following organizations positively contributes to the outcome of the operation.[76]

In this thesis trust has been defined as the readiness of X to be susceptible to the actions of Y with the understanding that Y will perform an assigned task that is important for X, regardless of X's ability to monitor and control Y. This definition is tightly connected to

[73] All items correlated above .3 with the others. The analysis shows a determinant value of .325. The Kaiser-Meyer-Olkin measurement of sampling adequacy showed a result of .696 and Barlett's test of sphericity gave a significance level $p < .01$. Lastly, communalities were all above the required .3 (the lowest being .657 for the variable regarding jargon differences), further confirming that all items shared some common variance among them.

[74] Jeg oppfatter at følgende organisasjoner er godt forberedt på å håndtere

[75] Jeg oppfatter at følgende organisasjoner er godt utstyrt for å håndtere kriser.

[76] Jeg oppfatter at deltakelsen til følgende organisasjoner bidrar positivt til utfallet av operasjonen

expectations and predictability. Thus, the items were designed to act as markers of competence by inquiring about the capabilities, resources, and experience.

Cronbach's α (n = 105) showed a value of .717. No increase in the alpha would have been achieved by eliminating any of the variables. I then proceeded to test the unidimensionality.

After testing the factorability of the items[77], I conducted Principal Component Analysis (n = 105). The initial Eigen values suggested a solution of one component. This component had an Eigen value of 1.932 and explained a total of 64.397% of the variance. All three variables loaded strongly into the component, the lowest being a loading of .786 for the variable regarding the perception that the other organization is well equipped.

The difference between the Eigen value of the first factor and the second (.562), together with the amount of variance, suggested that the variables are unidimensional. Therefore, I combined and formed a composite variable from these three items to measure trust as a factor in collaborative efforts.

The next factor classified as an external quality was previous contact. I Included the following question in the questionnaire,

Item 1) Has your organization had earlier contact with these organizations?[78]

The item was presented as a multiple-choice matrix where respondents could answer yes or no regarding four different types of contact, namely collaboration in earlier emergency operations, meetings, joint training, or other situations. The idea behind the design of the question responded to the idea that contact can occur in various

[77] All items correlated above .3 with the others. The analysis shows a determinant value of .550. The Kaiser-Meyer-Olkin measurement of sampling adequacy showed a result of .680 and Barlett's test of sphericity gave a significance level $p < .01$. Lastly, communalities were all above the required .3 (the lowest being .618 for the variable regarding the perception of the other organization being well equiped), further confirming that all items shared some common variance among them.

[78] Har din organisasjon hatt tidligere kontakt med følgende organisasjoner?

context, that due to their particular idiosyncrasies offer different opportunities to create relations and gain knowledge about the "other".

The literature mentions that previous contact is to be considered as potentially beneficial when that contact has been perceived as positive. In the cases where it has been problematic, it has the potential to influence collaboration in a negative manner. To investigate this type of negative contact, I included the following two question:

> **Item 1)** I have perceived conflict between my organization and the following organizations.[79]
>
> **Item 2)** I have perceived disagreements between my organization and the following organizations.[80]

Negative contact is often linked to confrontations. The idea behind including these two items was to capture both serious and lower levels of confrontation between organizations. In addition, item 2 was designed to serve as a safeguard to item 1. Understanding that the word conflict could be perceived as very severe by respondents, I considered the possibility of underreporting. The availability of a second item with a milder phrasing could then be used to balance it.

Respondents had to answer the items using a 5-point scale in regards of the listed organizations.

4.2.5 Factors inherent to the event

The complexity of an emergency in this framework is understood in a similar fashion to *environment* in organizational theory. This is as an entity external to the organization that exerts constraints and demands adaptation (Hatch, 1997, p. 63). In this section, I present one factor.

[79] Jeg har oppfattet konflikter mellom min organisasjon og følgende organisasjoner.
[80] Jeg har oppfattet uenigheter mellom min organisasjon og følgende organisasjoner.

This factor is defined by the characteristics present at the site and time of the operation. Earlier, I described emergencies as characterized by urgency, dynamism, and complexity—a situation where the availability and reliability of information is not always optimal and where different organizations have to work together to handle it successfully. Kapucu (2012) stresses that these characteristics differ from the nature of routine operations. Emergency response operates in a high-performance and high-stakes environment (Carr & Jensen, 2015) where the abovementioned characteristics meet high consequentiality (Boin et al., 2005, p. 46; Carr & Jensen, 2015; Kapucu & Garayev, 2011, p. 370; Moynihan, 2008, p. 351; Kalkman & de Waard, 2017). These intrinsic characteristics of emergencies have the potential of influencing collaborative patterns in that they pose challenges to the timely and accurate transmission of information, strain actors, and demand adaptability (Kapucu, 2012, p. 44; Kapucu & Garayev, 2011, p. 371; Doyle et al., 2015, p. 6).

In this type of operation, respondents often must deal with high levels of stress and pressure, as well as a lack of information and resources.

4.2.6 Operationalizing factors inherent to the event

Within the category factors inherent to the event, I categorized one single factor: complexity of the emergency. The many facets that define the context of an emergency response operation e.g., dynamism, stress, time pressure, or the availability of resources asked for a variety of items that become difficult to combine, thus. Thus, In the survey I included a battery of questions that reflected these characteristics.

Item 1) How did you perceive the level of stress during the operation?[81]

Item 2) How did you perceive time pressure during the operation?[82]

[81] Hvordan oppfattet du stressnivået under operasjonen?
[82] Hvordan oppfattet du tidspresset under operasjonen?

Item 3) How did you perceive the pressure generated by third parties?[83]

Item 4) How necessary was it to change plans drafted before the operation?[84]

Item 5) How did you experience information availability during the operation?[85]

Item 6) How did you experience the availability of necessary personnel?[86]

Item 7) How did you experience the availability of material resources?[87]

These items were to be answered using a 5-point scale. The idea with items 1, 2, and 3 was to create a composite variable that would reflect the strain level that operative felt under the operation. In addition, items 5, 6, and 7 were devised to create a composite variable that reflected the availability of necessary resources during the operation.

As mentioned earlier, the characteristics of emergencies and high consequentiality of the work that emergency respondents do can affect actors and thus pose a negative effect on collaboration. Items 1, 2, and 3 were devised as markers of that strain by inquiring not just on the level of stress they felt, but also the time pressure, as well as the pressure that they might have felt from higher instances.

Emergencies have also been described as uncertain and dynamic situations. Item 4 was used as a marker of those changing dynamics, while 5, 6, and 7 mirrored the arguments done by different author around the availability of information and resources.

[83] Hvordan oppfattet du presset fra eksterne aktører under operasjonen?
[84] I hvor stor grad var det nødvendig å endre planer som var lagt før operasjonen ble igangsett?
[85] Hvordan oppfattet du tilgjengeligheten til informasjon under operasjonen?
[86] Hvordan oppfattet du tilgjengeligheten til nødvendig personell?
[87] Hvordan oppfattet du tilgjengeligheten til nødvendige materielle ressurser? (Kjøretøy, radio, verktøy, telt…)

Cronbach's α for strain (n = 105) showed a result of .765. No increase in the alpha would have been achieved by eliminating any of the variables. The test for factorability showed positive results.[88]

The Principal Component Analysis (n = 105), suggested a one-component solution. The component had an Eigen value of 2.047 and explained a 68.232% of the variance. All three variables loaded strongly in the component. The lowest loading was for pressure from third parties (.780).

The difference in the second Eigen value (.580), together with the amount of the variance explained, suggested that the three variables are unidimensional and thus I computed them to form a composite variable that I named strain.

Cronbach's α for resources (n = 105) showed a result of .649. No increase in the alpha would have been achieved by eliminating any of the variables. The test for factorability showed positive results.[89]

The Principal Component Analysis (n = 105), suggested a one-component solution. The component had an Eigen value of 1.769 and explained a 58.970% of the variance. All three variables loaded strongly in the component. The lowest loading was for information availability (.702). The second Eigen value was .707.

Although the total variance explained is below the 60% threshold, I decided to compute the composite variable. Thus, creating a composite variable that I named resources.

[88] All items correlated above .3 with the others. The analysis shows a determinant value of .443. The Kaiser-Meyer-Olkin measurement of sampling adequacy showed a result of .669 and Barlett's test of sphericity gave a significance level $p < .01$. Lastly, communalities were all above the required .3 (the lowest being .608 for the variable regarding the pressure from third parties), further confirming that all items shared some common variance among them.

[89] All items correlated above .3 with the others. The analysis shows a determinant value of .655. The Kaiser-Meyer-Olkin measurement of sampling adequacy showed a result of .636 and Barlett's test of sphericity gave a significance level $p < .01$. Lastly, communalities were all above the required .3 (the lowest being .493 for the variable regarding information availability), further confirming that all items shared some common variance among them.

4.2.7 Factors activated during the operation

After discussing the factors that organizations bring into the operation and the inherent characteristics of emergencies, this section presents factors that are activated during the response operation. Throughout the literature review, two distinct factors that could be categorized as activated during the event emerge: communication and shared mental models.

Communication

In this thesis, communication is understood as Martin et al. (2016) define it: the transmission of a message from one node to another (p. 623). Kapucu (2012) stresses the importance of communication and decision support systems for collaboration. The availability of these technologies to the participating organizations throughout the operation is considered necessary to collaboration as a mean of reducing and coupling some of the determinants of emergency (pp. 47-49). Communication has been described as the *sine qua non* of any collaborative effort. A system without a sufficient communication structure is prone to disorder, unpredictable performance, doubling of tasks, and disintegration (Comfort, 1994, p. 395; Kapucu, 2006a, p. 211; Kapucu & Garayev, 2011, p. 369; Weber & Khademian, 2008, p. 335). In turn, when communication flows effectively between different actors, mutual knowledge develops, and improvement in processes and constructive negotiation is facilitated (San Martín-Rodríguez et al., 2005, pp. 141-142).

Shared mental models

Furthermore, some authors (see, for example, Choi & Kim, 2007; Smith & Dowell, 2000) have emphasized the necessity of having a shared mental model (cognitive framework) to respond to emergencies effectively. Shared mental models, often referred to as collective cognitive accuracy or common operational pictures, is a concept that revolves around the idea of whether different organizations participating in a collaborative action know what is going on, what is the plan, who is

doing what, who knows what, and who can do what. In other words, if they are acquainted with the network and with the situation.

Shared knowledge, along with holding similar expectations about a dynamic situation, enables unitary and collaborative responses (Choi & Kim, 2007, p. 200; Smith & Dowell, 2000, p. 1155). In contrast, when a shared mental model is not in place, collaborative activities might be hindered, since the operation leader will tend to make decisions in isolation (Carignan, 2013, p. 27; Smith & Dowell, 2000, pp. 1154, 1164).

4.2.8 Operationalizing factors activated during the event

To investigate communication, I posed one question:

> **Item 1)** I experienced a good communication flow between my organization and the following organizations.[90]

The item regarding communication was presented in a 5-point scale format to measure the respondents' level of agreement with the statement in relation to the listed organizations. The item inquires around the perception of quality of communication, both coming in and leaving the organization. The design of the item was inspired by how communication is looked at in many studies that take network analysis as the method of investigation (see for example, Kapucu, 2012).

In what regards shared mental models, I presented three items with the idea of forming a composite variable that could reflect the level of shared understanding present among the organization at the operation:

> **Item 1)** In this operation, all organizations knew what was going on.[91]

[90] Jeg oppfattet at det var en bra kommunikasjonsflyt mellom min organisasjon og følgende organisasjoner
[91] I denne operasjonen visste alle organisasjoner hva som foregikk

Item 2) In this operation, all organizations knew what had to be done.[92]

Item 3) In this operation, all organizations knew who could do/provide what.[93]

As mentioned before, the definition of shared mental models revolves around the idea of whether the members of a collaborative endeavor know what is going on, what is the plan, who is doing what, who knows what, and who can do what. The three items presented above are designed by questioning directly about it.

For shared mental models, Cronbach's α (n = 105) showed a value of .847. An increase in the alpha would have been achieved (α = .853) by eliminating the variable regarding the perception that all organizations knew what was going on. Considering the low increase in the α and that its value is above the threshold to be considered good, as well as to maintain theoretical consistency, I proceeded to test the unidimensionality of the three variables.

After testing the factorability of the items[94], I conducted Principal Component Analysis (N = 105). The initial Eigen values suggested a one-component solution. This component had an Eigen value of 2.297 and explained a total of 76.559% of the variance. All three variables loaded strongly into the component, the lowest being a loading of .825 for the variable regarding the perception that all organizations knew what was going on.

The difference between the Eigen value of the first factor and the second (.447), together with the amount of variance, suggested that the variables are unidimensional. Thus, I computed the composite variable that I termed shared mental model.

[92] I denne operasjonen visste alle organisasjoner hva som måtte gjøres.
[93] I denne operasjonen visste alle organisasjoner hvem som kunne gjøre/sørge for hva.
[94] All items correlated above .3 with the others. The analysis shows a determinant value of .263. The Kaiser-Meyer-Olkin measurement of sampling adequacy showed a result of .708 and Barlett's test of sphericity gave a significance level $p < .01$. Lastly, communalities were all above the required .3 (the lowest being .687 for the variable regarding the perception that all organizations knew what was going on), further confirming that all items shared some common variance among them.

4.3 Summary

In this chapter, I have presented the different understandings of terms such as disasters and emergencies and I have argued that small-scale and large-scale emergencies should be understood as two typologies of the same phenomenon.

In addition, I have presented the different conceptualizations of collaboration identified while conducting the literature review, discussed their characteristics and proposed a working definition for collaboration. i.e., *the acts of sharing ideas for action, decision-making, and acting that two or more organizations conduct jointly in a relative symmetry of power to respond to a problem.*

Furthermore, I have discussed how this understanding of collaboration relates to coordination and cooperation. I have also outlined the operationalization of collaboration that is used in this research.

Moreover, I have identified 9 distinct factors that appear to be theoretically sound. Many of them have been confirmed to different degrees through empirical analysis. A short summary of these is presented in the following two tables:

Table 3: Factors, assumptions and expectations

Factor	Assumptions and expectations
Collaborative culture	**1:** Collaborative culture is beneficial for the collaborative endeavor. Participants referring higher levels of collaborative culture will be more likely to report high levels of collaboration.
Adaptability	**2:** The organizations' capacity to adapt is beneficial for the collaborative effort. Participants referring higher levels of organizational adaptability will be more likely to report high levels of collaboration
Homophily	**3:** Homophily between organization is positive for strengthening collaboration. Participants referring higher levels of homophily between participating organizations will be more likely to report high levels of collaboration.

Trust	**4:** The existence of trust relationships between the actors participating in an emergency response operation will benefit the collaboration. Participants referring higher levels of trust with other organizations will be more likely to report high levels of collaboration.
Previous contact	**5:** Previous contact between organizations helps in acquiring valuable knowledge about counterparts that will benefit the collaborative endeavor. Participants referring more previous contact with other organizations will be more likely to report high levels of collaboration.
Previous conflict	**6:** Previous contact can also be negative. A history of previous conflict between organizations will be detrimental for the collaborative effort. Participants referring higher levels of previous conflict with other organizations will be less likely to report high levels of collaboration.
Complexity of the emergency	**7:** The complexity of the emergency can pose challenges that might affect the performance of the actors involved in the operation, and thus the collaborative effort. Participants referring higher levels of complexity will be less likely to report high levels of collaboration.
Communication	**8:** Swift inter-organizational communication will facilitate collaboration. Participants referring higher levels of communication will be more likely to report high levels of collaboration.
Shared mental models	**9:** A shared mental model, i.e., shared knowledge about a dynamic situation and the actors involved on it, is beneficial for unitary and collaborative responses. Participants referring higher levels of shared mental models will be more likely to report high levels of collaboration.

Furthermore, I have operationalized the above-mentioned factors:

Table 4: Operationalization of factors.

Factor	Operationalization	Composite variable
Collaborative culture	**Item 1)** My organization has a good understanding of how organizations should work together to handle an emergency. **Item 2)** My organization has clear guidelines on how collaborating with other organizations should be conducted. **Item 3)** My organization works to find common solutions when a problem with another organization arises in an emergency. **Item 4)** My organization helps its members to acquire abilities to collaborate with members of other organizations in the best possible way.	Yes (all items included)
Adaptability	**Item 1)** My organization can adapt its modus operandi to accommodate the changing dynamics in an emergency. **Item 2)** My organization suffers disruptions when departing from the established modus operandi. **Item 3)** My organization looks for new ways to solve problems. **Item 4)** My organization is open to learning from stories of success and failure from other organizations and incorporating this learning into their modus operandi. **Item 5)** My organization changes its modus operandi if necessary, to adapt to other organizations.	Yes (formed by items 1, 3, 4, and 5)
Homophily	**Item 1)** I perceived that there are cultural differences between my organization and the following organizations. **Item 2)** I perceived that there are identity differences between my organization and the following organizations. **Item 3)** I have experienced that there are jargon differences between my organization and the following organizations.	Yes (All items included)

Trust	**Item 1)** I perceive that the following organizations are well prepared to handle emergencies. **Item 2)** I perceive that the following organizations are well equipped to handle emergencies. **Item 3)** I have perceived that the participation of the following organizations positively contributes to the outcome of the operation.	**Yes (All items included)**
Previous contact	**Item 1)** Has your organization had earlier contact* with these organizations? * collaboration in earlier emergency operations, meetings, joint training, or other situations	No
Previous conflict	**Item 1)** I have perceived conflict between my organization and the following organizations. **Item 2)** I have perceived disagreements between my organization and the following organizations.	No
Complexity of the emergency	**Item 1)** How did you perceive the level of stress during the operation? **Item 2)** How did you perceive time pressure during the operation? **Item 3)** How did you perceive the pressure generated by third parties? **Item 4)** How necessary was it to change plans drafted before the operation? **Item 5)** How did you experience information availability during the operation? **Item 6)** How did you experience the availability of necessary personnel? **Item 7)** How did you experience the availability of material resources?	Yes (*Strain* formed by items 1, 2, and 3, and *Resources* formed by items 5, 6, and 7)
Communication	**Item 1)** I experienced a good communication flow between my organization and the following organizations.	No
Shared mental models	**Item 1)** In this operation, all organizations knew what was going on. **Item 2)** In this operation, all organizations knew what had to be done. **Item 3)** In this operation, all organizations knew who could do/provide what.	Yes (All items included)

PART 3

5 Anatomy of the emergency

In chapter 4, I argued that big-scale and small-scale emergencies can be understood as two typologies of the same phenomenon. The reason behind the argument is that it is its nature and not the size that defines what an emergency is.

As I have mentioned earlier, emergencies are characterized as dynamic and complex situations that are beyond the capabilities of any single organization and require the participation of multiple actors for successfully addressing them. The short summary of the Lavangsdalen accident offered in chapter 1, shows that these characteristics can also be experienced in low level emergencies.

In this chapter I will present some of the data retrieved through the questionnaire with the aim of showing that complexity, dynamism, uncertainties, lack or inaccurate information, stress and other characteristics that are ascribed to emergencies also occur when the scale is small.

5.1 A coarse description of small-scale emergencies in the context of Norther Norway

In the survey, I asked participants about their perception of the existing capacity of handling small-scale emergencies at the national level, in Northern Norway, and in their respective districts. I also inquired about the capacity of handling different emergencies at the district level.

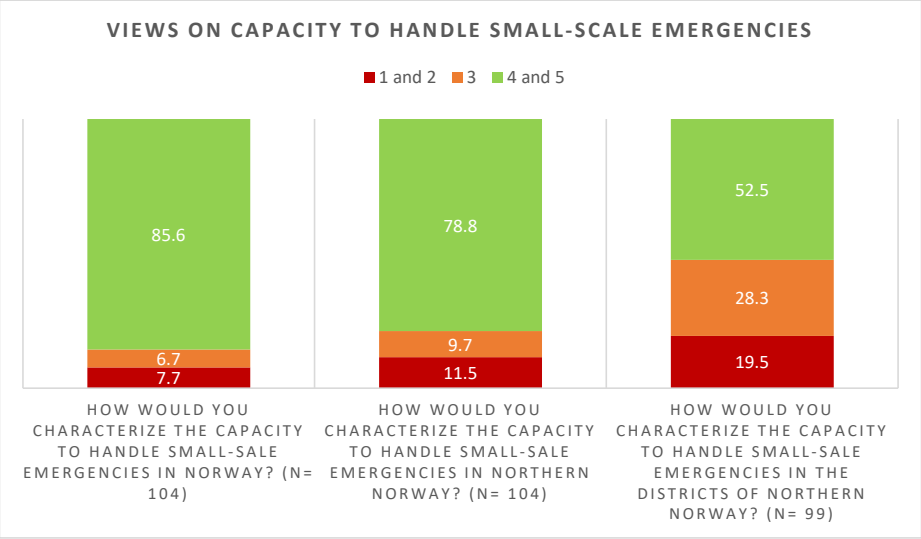


Figure 3: Views on capacity to handle small-scale emergencies

The figure hints a trend of towards the lower values of the scale when the questions are set in the context of Northern Norway and its districts.

A similar trend can be seen when respondents were asked about the capacity of their districts to handle emergencies with the involvement of different amounts of people.

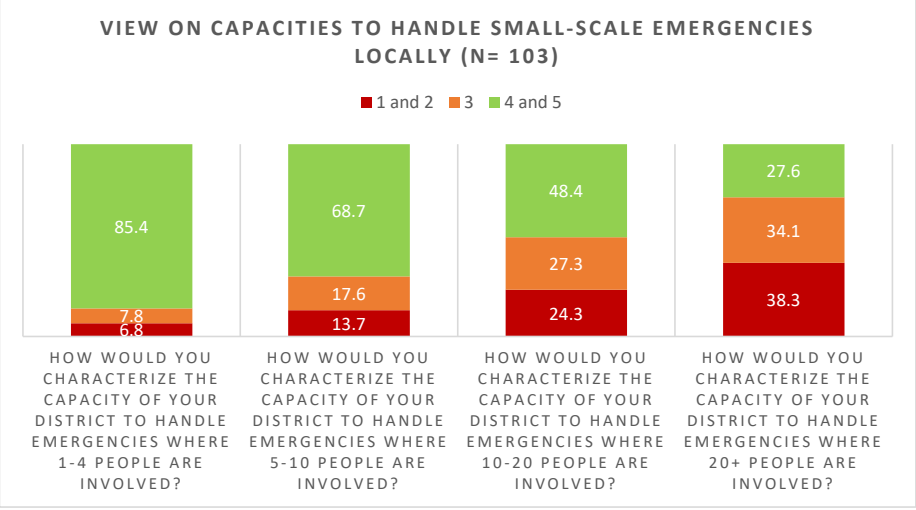


Figure 4: Views on capactities to handle small-scale emergencies locally

The respondents' confidence in the capacity of handling emergencies decreases when narrowing the context to the local and when the number of involved people increases.

What one can also infer from the previous figures is that context plays a role in the determination of what is an emergency and what a routine operation might be. One of the informants interviewed argues:

> […] it boils up to how many resources are available. It is quite scarce [here]. What can be defined here as a catastrophe I will not be defined as such in the city […] 3 or 4 people that are injured is the maximum we can deal with locally and [this is] when the 4 are not seriously injured. If it is bigger, then [we need other organizations to be able to handle the situation] (informant 1)

This statement supports the claim that the categorization of an event as an emergency is contextual. As mentioned earlier a snowstorm in Norther Norway could be considered a routine operation, a similar storm in another country, such as the 2018 and 2021 events in Spain, would not.

In Chapter 1, I mentioned that the characteristics of Northern Norway can make conducting response operations to small-scale events challenging due to distance, and the availability of resources.

Examining the results from the question regarding time to the site where the operation takes place helps to reinforce this idea.

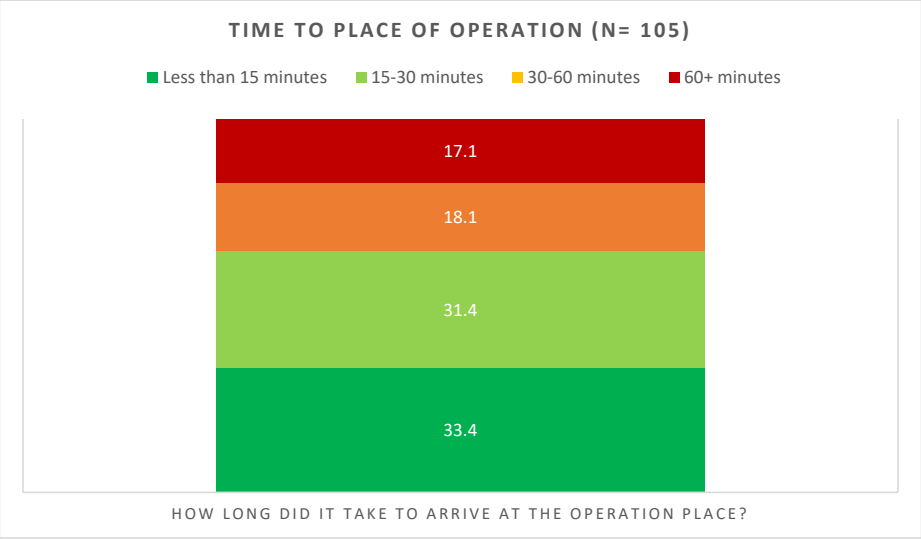


Figure 5: Time to place of operation

Even though the mode is the lowest option and response under 30 minutes covers most cases, over one third of the respondents declared that they needed more than half an hour. The results and knowledge about the geographical characteristics suggest that respondents often must travel long distances to reach the operation site.

One cannot automatically correlate time used to reach the operation site with the displacement distance because organizations have different characteristics e.g., different requirements of readiness, different geographical presence, or the fact that adverse weather conditions might dictate lower travelling speeds.

Nevertheless, displacement can be linked to knowledge with the place in which the event occurred. It is worth mentioning that although familiarity or unfamiliarity with the place might not appear problematic when imagining a traffic accident. Nevertheless, if the emergency concerns a SAR operation, familiarity with the surroundings can become paramount. The results are presented in the following figure:

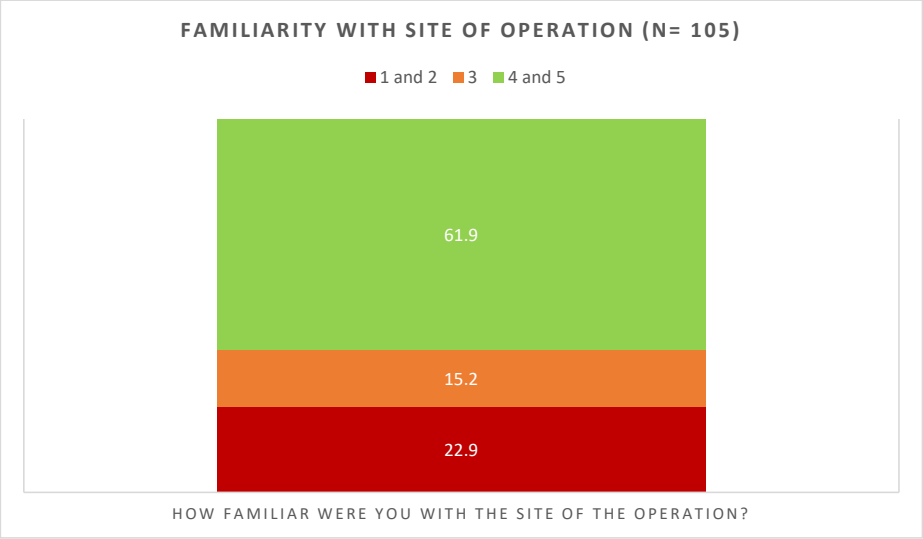


Figure 6: Familiarity with site of operation

When conducting a correlation analysis between the variables time to place and familiarity with place (n = 105), the result showed a significant association between the two, *rho* = -.316 ($p < .01$) BCa 95% CI [-.490, -.142]. This result can be cautiously interpreted as supporting the idea that often respondents must travel long distances to respond to an emergency.

The data obtained through the survey allows comparing differences between professional and voluntary organizations concerning arrival time. I conducted a Mann-Whitney test that showed a significant inter-group difference $U = 595$, $n_1 = 45$, $n_2 = 55$, $p < .01$ (exact sig. two-tailed), meaning that the higher arrival times reported by voluntary organizations is not random.

The higher values in arrival time reported by voluntary organizations could be due to different reasons. One explanation could be related to differences in the level of readiness. In general terms, the personnel that responds to emergencies in professional organizations are ready for it, as it is their job and happens during working hours, while members of voluntary organizations are not.

A second reason could be that assets of professional organizations might be more widespread geographically than those of voluntary organizations, so when a voluntary organization is asked to join an operation, they might have to travel longer distances.

I conducted a Mann-Whitney test with familiarity with the site of operation. The results, however, did not show any significant differences. Although this result cannot be taken as evidence, it indirectly counters the idea that members of voluntary organization must travel longer distances that members of professional organizations which can suggest that the differences in response time between professional and voluntary organizations are related to readiness.

The literature on emergency management often mentions that emergencies are characterized by a scarcity and unreliability of information that on many occasions can produce a lack of resources. Informant 1 offers an example about it:

> One could experience that [name of two organizations] were called to a situation, but not [name of a third organization]. When we arrived, we could see that we needed [name of the third organization]. We could not do anything without them, it was a catastrophe that we did not have accurate information about the situation at the beginning (Informant 1)

Availability of accurate and reliable information is just a part of the equation in the necessities that first responders need to manage an operation successfully. Sufficient personnel and material resources are also necessary.

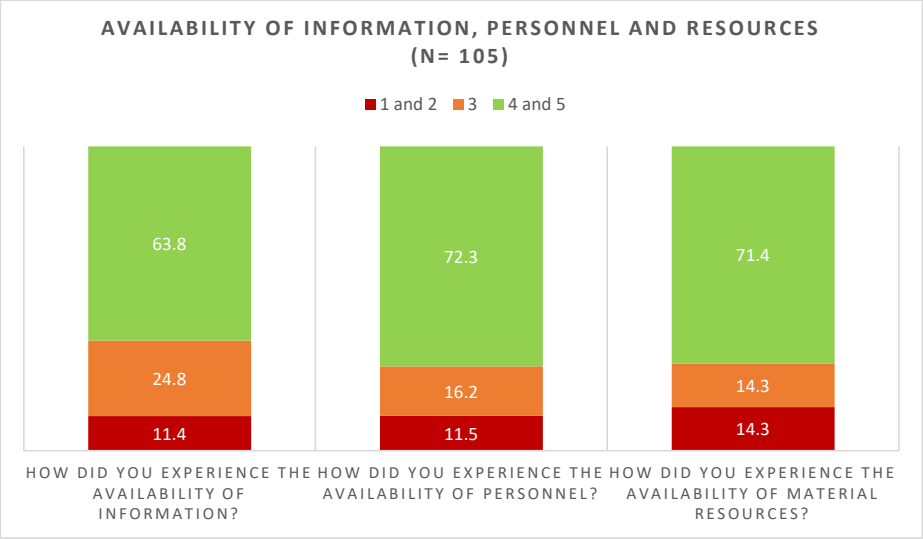


Figure 7: Availability of information, personnel, and resources

Even though the data suggest that in the vast majority of the operations, information, personnel, and resource availability was not a problem, it does not erase the fact that in over a third of the operations the availability of information was not categorized as being in the positive side. Neither was the case for personnel and resource availability in over one fourth of the reported cases. Thus, the data from the reported operations suggest that this characteristic can also be present in the context of low-level emergencies.

Another characteristic of emergencies is their dynamism.

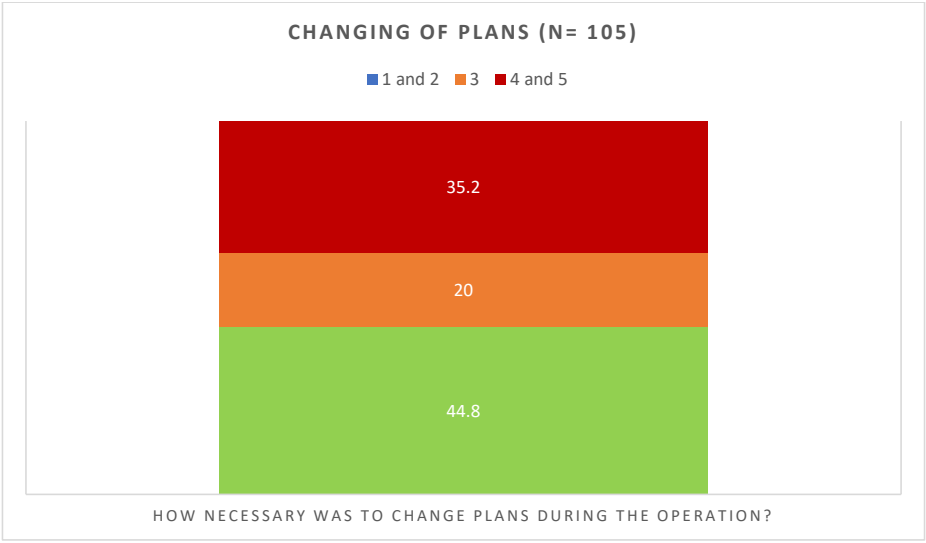


Figure 8: Changing of plans

The data shows that most emergencies did not require a major change in plans. Nevertheless, the dynamism of this type of operation becomes clear when seeing that the difference between the lower and higher two brackets is 9.6 points. Taking these results as definitive, however, might be problematic since the term neutral as used to label the third step in the scale might lead to confusion. Nevertheless, it suggests that small-scale emergencies have a dynamism that can force the involved actors to alter their plans.

The points made before can increase the stress and time pressure felt by the operatives. In addition, a different source of pressure might be generated by third parties not present in the field due to the high stakes that are at play in this type of events. This could be produced by interference by the organization's higher echelons, politicians, the media, the public, or other parties.

The data distribution regarding the items inquiring about these topics is as follows:

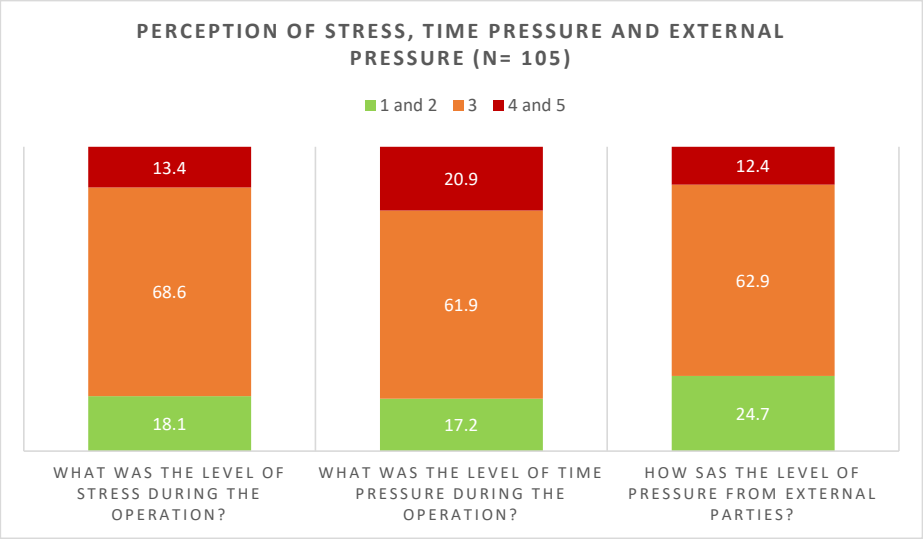


Figure 9: Perception of stress, time pressure, and external pressure

The result show that in the reported cases stress, time pressure, and pressure from external parties was felt by first responders, suggesting that it is not uncommon in this type of operations.

I conducted seven Mann-Whitney tests to explore if there were differences between professional and voluntary organizations regarding dynamism, information, personnel and material availability, stress, time pressure, and pressure from third parties. The results show that there are no significant differences.

An additional aspect that can define the operation is shared mental models. As presented in chapter 4, shared mental models was operationalized with three items. The distribution of the data for these items is presented in the next figure:

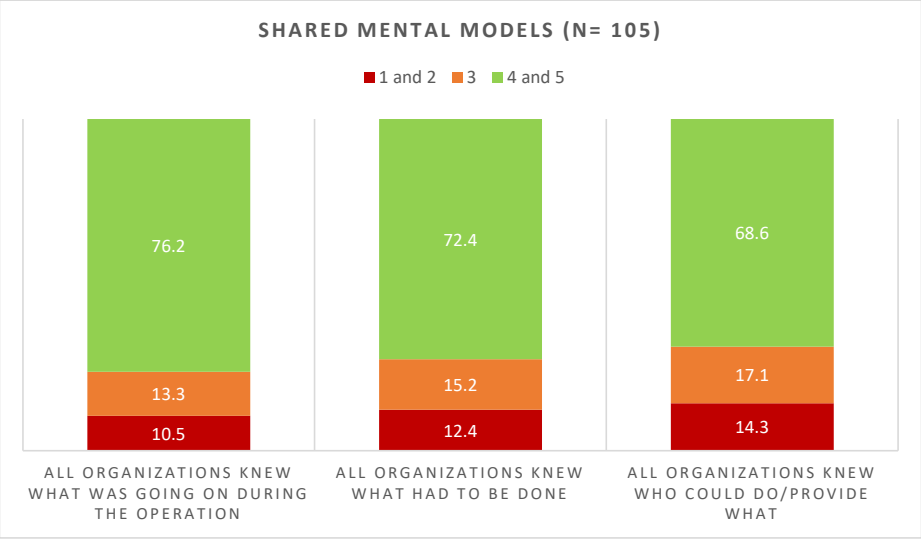


Figure 10: Shared mental models

Looking at the results suggests that in most cases, there was a good level of shared mental models. Nevertheless, the percentages disagreeing with the statements show that this is not always the case. In around one fourth of the reported operations there was confusion about what was happening and what had to be done and in over one third of them there was confusion about what the organizations involved could do. These results suggest that uncertainty is not that uncommon in small scale response operations.

5.2 Summary

In this chapter, I presented some of the data retrieved through questionnaire that helps supporting the idea that small-scale events can share the characteristics that the literature ascribes to emergencies. This serves the purpose of arguing that small-scale and large-scale emergencies are typologies of the same phenomenon.

I have proposed that the definition of an event as an emergency is contextually bounded, and that it is related to the idiosyncrasies of the event and not necessarily its size.

The data presented suggests that, within the context of Northern Norway, small-scale emergencies can be deemed as complex and dynamic, where stress, pressure, and uncertainty can be present, and where information, personnel, and resource availability is not always at its best.

6 On factors with the potential to affect collaboration

The analysis will be first conducted in distinct parts. This is in relation to the classification presented in chapter 4, namely factors emerging before the event, factors inherent to the event, and factors emerging while the event is ongoing.

The main purpose of this chapter is to discern which of the factors identified through the literature review have the highest effect on collaboration.

6.1 On factors emerging before the event

In Section 4.2.3, I presented a series of factors that emerged before the event and that appear to have the potential to influence collaboration. These were collaborative culture, adaptive capacity, homophily, trust, previous contact, and previous conflict. In the following pages, I will look more closely at these factors.

The first step I took to analyze the data was looking for correlations between the aforementioned factors and *collaboration*.

Table 5: Correlations between variables collaborative culture, adaptability, homophily, trust, previous contact, conflict, disagreements, and collaboration.

n = 105				Collaboration
Collaborative culture	Pearson's r			.386
	Sig- (2-tailed)			.002
	Bootstrap[a]	Bias		.013
		Std. Error		.133
		95% CI	Lower	.394
			Upper	.796
Adaptability	Pearson's r			.327
	Sig- (2-tailed)			.001
	Bootstrap[a]	Bias		-008
		Std. Error		.115
		95% CI	Lower	.071
			Upper	.526

Homophily	Pearson's r			-.359
	Sig- (2-tailed)			.000
	Bootstrap[a]	Bias		.004
		Std. Error		.100
		95% CI	Lower	-.532
			Upper	-.136
Trust	Pearson's r			.422
	Sig- (2-tailed)			.000
	Bootstrap[a]	Bias		-.010
		Std. Error		.112
		95% CI	Lower	.186
			Upper	.616
Previous contact	Pearson's r			.345
	Sig- (2-tailed)			.000
	Bootstrap[a]	Bias		-.008
		Std. Error		.096
		95% CI	Lower	.149
			Upper	.503
Conflict	Pearson's r			-.345
	Sig- (2-tailed)			.000
	Bootstrap[a]	Bias		.003
		Std. Error		.081
		95% CI	Lower	-.495
			Upper	-.167
Disagreements	Pearson's r			-.250
	Sig- (2-tailed)			.010
	Bootstrap[a]	Bias		.003
		Std. Error		.096
		95% CI	Lower	-.437
			Upper	-.049

a. Bootstrap results are based on 1000 bootstrap samples

The results show significant correlations between collaborative culture, adaptability, homophily, trust, previous contact, conflict and disagreements, and collaboration. These results appear to be in line with the ideas presented in chapter 4.

In section 4.2.3, I presented that organizations the positive aspects of a collaborative culture and argued for the importance of being open and wiling to collaborate. Organizations with such a culture know the requirements of a collaborative effort and are essentially open to the idea of collaborating. Thus, they will not be alienated

or resistant to the need for sharing ideas, making joint decisions, and making the necessary changes in their role.

The results presented here follow the arguments laid out in chapter 4 and resonate with the ideas presented by other scholars (see for example, Kapucu, 2006b; Kapucu, 2007; Kapucu at al., 2010b; Nolte et al., 2012; Tang et al., 2017) and with the results of other studies on the topic (see for example, San Martin-Rodriguez et al., 2005; Solansky & Beck, 2009)

When looking at the results in perspective, one could argue that they suggest that the confidence in that *assumption 1*[95] (see table 3 for an overview of the different assumptions) is supported can be increased. This statement should not be taken to confirm that collaborative culture influences collaboration, but rather that the confidence in that collaborative culture, and especially the existence of an understanding among members of the organization of what it takes to collaborate, is intertwined with collaboration.

In regards of adaptability, I argued that although collaborative culture is a necessary starting point for a collaborative effort, commitment to the idea is not enough, as organizations need to be able to put these tenets into practice by adjusting structures, values, or lines of action, i.e., they need to have a certain capacity to adapt and resilience to changes (see, for example, Kapucu et al. 2010a; Kapucu 2012). This is especially relevant in the context of emergency management, due to the heterogeneity and quantity of organizations participating in operations, as well as the dynamic nature of emergencies.

The results support an increase of confidence in that *assumption 2*[96] is supported, as the results for adaptability follow the prediction proposed in section 4.2.3 and support

[95] Collaborative culture is beneficial for the collaborative endeavor. Participants referring higher levels of collaborative culture will be more likely to report high levels of collaboration.

[96] The organizations' capacity to adapt is beneficial for the collaborative effort. Participants referring higher levels of organizational adaptability will be more likely to report high levels of collaboration.

the ideas of other authors (See, for example, Kapucu & Garayev, 2011; Weick & Sutcliffe, 2011; Guo & Kapucu, 2015).

As presented in chapter 4, *assumption 3*[97] was based on the idea that when there is uncertainty, lack of previous knowledge, or a situation where actors that have not developed a previous relationship of trust have to work together, organizations will look for similarities to discern potential partners, since these similarities are indicators of common expectations and trust. Following this idea, one would expect that traits pointing towards homophily between organizations would correlate positively with the level of collaboration.

The results from the correlation analysis do fulfill this expectation, and follows the ideas presented by other scholars (See for example, Nowell & Steelman, 2015; Abbasi & Kapucu, 2012; Siciliano & Wukich, 2017) and supporting an increase of confidence on the assumption regarding homophily.

Nowell & Steelman (2015) have pointed that results on the influence of homophily on collaboration have shown varying results. The results of this study can be interpreted as reinforcing the idea that homophily play a role in defining collaboration.

Regarding trust, the literature suggests that established trust relationships make the collaborative effort easier as it, among other positive effects facilitate sharing of information, maintaining good working relationships, and avoiding turf wars.

The results of the test appear to support the ideas presented by several scholars on the field (see, for example, Kapucu, 2006a; Coles et al., 2012; Hu & Kapucu 2014), and allows to increase the confidence in *assumption 4*[98].

[97] Homophily between organization is positive for strengthening collaboration. Participants referring higher levels of homophily between participating organizations will be more likely to report high levels of collaboration.

[98] The existence of trust relationships between the actors participating in an emergency response operation will benefit the collaboration. Participants referring higher levels of trust with other organizations will be more likely to report high levels of collaboration.

The correlation tests between previous contact and collaboration appear to be in line with the ideas presented in chapter 4. Namely, that previous contact has the potential to positively influence collaboration because it helps creating a climate of familiarity, it allows for the development of trust between organizations, and makes inter-organizational communication easier.

The literature also suggested that previous relations do not necessarily translate into positive experiences, and thus previous negative experiences between organizations might affect collaboration. In what regards conflict and disagreements, the results of the tests also support the ideas lied out in chapter 4.

The results allow to argue for an increase of confidence in that the *assumption 5*[99] and *assumption 6*[100] are supported and reinforces some of the view on interorganizational contact present in the field (see for example, Kapucu & Garayev, 2011; Hu et al., 2014; Nowell & Steelman, 2015).

6.2 On factors inherent to the event

In Section 4.2.5, I presented the factor complexity of the emergency and the variables strain, necessity to change plans, and resources. The correlations between these variables and collaboration are presented in the following table:

Table 6: Correlations between variables Strain, necessity to change plans, availability of resources, and collaboration

n = 105			Collaboration
Strain	Pearson's r		-.098
	Sig- (2-tailed)		.317
	Bootstrap[a]	Bias	.006
		Std. Error	.134

[99] Previous contact between organizations helps in acquiring valuable knowledge about counterparts that will benefit the collaborative endeavor. Participants referring more previous contact with other organizations will be more likely to report high levels of collaboration.

[100] Previous contact can also be negative. A history of previous conflict between organizations will be detrimental for the collaborative effort. Participants referring higher levels of previous conflict with other organizations will be less likely to report high levels of collaboration.

		95% CI	**Lower**	**-.348**
			Upper	.170
Necessity to change plans	Spearman's *rho*			-.082
	Sig- (2-tailed)			≥.05
Resources	Pearson's r			.411
	Sig- (2-tailed)			.001
	Bootstrap[a]	Bias		-.008
		Std. Error		.181
		95% CI	Lower	.181
			Upper	.592

a. Bootstrap results are based on 1000 bootstrap samples.

In section 4.2.5, I argued that Emergency response operates in a context that requires high-performance and where the stakes at play are high. The literature mentions that the inherent characteristics of an emergency can pose challenges to collaboration by the means of putting participants under challenging conditions.

The results show that only the composite variable resource availability shows a significant correlation with collaboration.

This suggest that contrary to the arguments of some authors (see for example Kapucu, 2012; Kapucu & Garayev, 2011; Doyle et al., 2015), the complexity of the emergency in general terms might not have much potential to affect collaboration in the context under study. Nevertheless, seeing the significant correlation shown by resource availability this statement cannot be made lightly. As a final note, one could hypothesize that the lack of correlations between strain, dynamism, and collaboration might be influenced by the resilience of the involved organizations. As shown in section 5.2, most of the respondents rate their organizations capability to adapt and their resilience to change as high and that is what it is necessary to avoid disruptions to inter-organizational collaboration.

In light of the mixed results, I suggest that *assumption 7*[101] is not completely supported.

[101] The complexity of the emergency can pose challenges that might affect the performance of the actors involved in the operation, and thus the collaborative effort. Participants referring higher levels of complexity will be less likely to report high levels of collaboration.

6.3 On factors emerging while the operation is ongoing

In Section 4.2.7, I presented two factors that emerged while the operation was undertaken and that appear to have the potential to influence collaboration. These were communication and shared mental models. The correlations between these two factors and collaboration are presented in table 7:

Table 7: Correlations between variables communication, shared mental models, and collaboration.

n = 105				Collaboration
Communication	Pearson's r			.399
	Sig- (2-tailed)			.000
	Bootstrap[a]	Bias		.002
		Std. Error		.122
		95% CI	Lower	.130
			Upper	.620
Shared mental models	Pearson's r			.518
	Sig- (2-tailed)			.000
	Bootstrap[a]	Bias		-.003
		Std. Error		.087
		95% CI	Lower	.330
			Upper	.672

a Bootstrap results are based on 1000 bootstrap samples.

In what regards communication, part of the literature suggests that it is the building pillar of collaboration, and without it, there is no possibility of exchanging ideas or conducting joint decision-making. In other words, without communication, organizations will act individually, not as a group. Some authors (see, for example, Comfort, 1994; Kapucu, 2006a; Weber & Khademian, 2008; Kapucu & Garayev, 2011) argue that an operation with an inadequate communication structure is fated to disorder, unpredictable performance, doubling of tasks, and disintegration. Based on these ideas the expectation is that communication and collaboration must correlate

positively. The result of the test fulfills this expectation. This allows to argue for an increase of confidence in *assumption 8*[102].

The literature presented in chapter 4 also suggests that when organizations participating in an operation have a shared mental model, this is they have knowledge of what is happening, know how things have to be done, and they know about their counterparts, conducting a unitary and collaborative action will be easier.

The results presented here follow the expectation derived from the arguments laid out in chapter 4, this is that shared mental models will positively correlate with collaboration, and support the ideas presented by several authors (see for example, Carignan, 2013; Choi & Kim, 2007; Smith & Dowell, 2000). Thus, based on the result, I suggest that an increase of the confidence in *assumption 9*[103] can be argued.

6.4 On factors with the potential to affect collaboration

In this section of the analysis, I looked at the effects that the identified factors investigated in the previous section had on *collaboration*. For doing this, I conducted a multivariate regression analysis, after testing if the data met the assumption of collinearity. The results suggested that multicollinearity was not a concern. The data met the assumption of independence, normality, and homoscedasticity as well (see appendix D).

In what regards *collaboration,* the 11-predictor model accounted for 42.2% of the variance in *collaboration* $F = 7.912$, $p < 01$, Adj. $R^2 = .422$.

[102] Swift inter-organizational communication will facilitate collaboration. Participants referring higher levels of communication will be more likely to report high levels of collaboration.

[103] A shared mental model, i.e., shared knowledge about a dynamic situation and the actors involved on it, is beneficial for unitary and collaborative responses. Participants referring higher levels of shared mental models will be more likely to report high levels of collaboration.

Table 8: Bootstrap for coefficients, all factors, dep. var. collaboration

Bootstrap for Coefficients

Model		Bootstrap[a] B	Bias	Std. Error	Sig. (2-tailed)	95% Confidence Interval Lower	Upper
1	(Constant)	1,420	,001	,637	,032	,183	2,720
	Trust	,299	1,126E-5	,134	,031	,025	,553
	Previous contact	,179	-,009	,053	,003	,063	,267
	Shared mental models	,127	-,009	,094	,200	-,055	,317
	Homophily	-,123	,003	,075	,099	-,272	,022
	Communication	,127	,011	,102	,205	-,030	,371
	Collaborative culture	,102	-,005	,132	,440	-,151	,350
	Disagreements	-,024	,007	,094	,794	-,196	,174
	Conflict	-,080	-,002	,094	,394	-,272	,111
	Resources	,032	-,001	,033	,363	-,040	,093
	Adaptability	-,027	6,421E-5	,033	,408	-,091	,035
	Strain	-,009	,002	,028	,756	-,058	,051

a. Unless otherwise noted, bootstrap results are based on 1000 bootstrap samples

The tables show that the variables of *trust*, and *previous contact* had significant partial effects. The *Beta*s were .299 and .179, respectively. Considering the evidence that this test confers, it can be argued that one can further increase the confidence in that trust and previous contact have an effect on the phenomenon of collaboration in the context of emergency response operation in the framework investigated in this thesis. Furthermore, the results show that trust and previous contact are the factors that show most salience among the analyzed factors in affecting collaboration in the context of this study.

6.5 Summary

In the previous sections, I have explored the relations between the factors emanating from the literature and *collaboration*. I have done this by looking at correlations to discover what factors could potentially influence collaboration and conducting a multivariate regression analyses to discern which of the factors appears to have an individual effect on it. This explorative work has yielded some interesting results.

The results of the analysis of the factors support assumptions 1, 2, 3, 4, 5, 6, 8, and 9 (see table 3). In what regards assumption 7, I consider that the mixed results are inconclusive to argue for an increase or a decrease of confidence.

In the last section of the chapter, I conducted a multivariate regression analysis including 11 variables. The results showed that trust and previous contact are the only variables that have an individual significant effect. I present this result as the answer to the first part of the research question i.e., *What are the factors that show most salience in influencing collaboration […]?*

PART 4

7 Hypothesizing causal mechanisms

The results presented in chapter 6 showed trust and previous contact as the only variables that had an individual significant effect on collaboration. The next question to be answered is *how can these two factors influence collaboration?*

As mentioned in Chapter 3, I have made use of Process-Tracing in its theory building variant to uncover the causal mechanisms. In this variant it is required to hypothesize the causal mechanism based on existing theorizations prior to data collection. In the following pages, I present and discuss the theory I use to propose the causal mechanism that will guide the analysis presented in chapter 8. I suggest two possible mechanisms that outline the causal process between trust, previous contact, and collaboration, and one mechanism that links previous contact and trust.

7.1 Putnam and Social Capital

In 1993, Robert Putnam published the book *Making a Democracy: Civic Traditions in Modern Italy* where he analyzed the emergence of regional governments from the 1970s and onwards, as well as the reasons behind the different rates of development. Among his conclusions, Putnam pointed that in comparison with the southern regions, the northern regions experienced faster development. This, de Blasio and Nuzzo (2003) clarify, could be explained by a higher endowment of social capital. The argument is that social capital affected development because it allowed communities to overcome resistance to collective action and develop the capacities to join efforts to achieve mutually beneficial gains (Putnam, 1993, p. 167; Boix & Posner, 1996; Agranoff & McGuire, 2001, p. 302; Fountain, 1998, p. 105).

Fountain (1998) argues that the concept of social capital allows us to frame the understanding of collaboration in two different ways: first connecting collaboration to the concept of capital highlights the potential for growth when different actors work

jointly and reinforces the argument to invest in it; and second, social capital defines the structure created to launch the joint effort as capital (Fountain, 1998, p. 105).

Putnam (1993) argues that trust, networks, and norms are the defining characteristics of social capital (pp. 167-169; Fountain 1998, p 105, Agranoff & McGuire, 2001, p. 303), and illustrates its workings with rotating credit associations. A rotating credit association is a type of informal saving institution formed by a group of individuals who have decided to make regular economic contributions to a fund owned by the association. This fund is available at any time to all members, who can withdraw all or part of the money. Once the money has been withdrawn, the member continues contributing to the fund, but will not be allowed to have access to the pot until the rest of the members have withdrawn a sum (Putnam, 1993, p. 167).

This type of association has an inherent risk to it: the default of members once they have collected the money. Due to its informal nature, there is no Leviathan that can impose control to prevent this from occurring. Considering the risk, why does this type of association exist around the globe?

Putnam (1993) argues that this happens because when establishing the association, member selection is conducted with care. Two of the selection criteria are the trustworthiness of potential members, and that they have social connections with other members (p. 168). He refers to Valdez-Ibanez, saying that this combination of perceived trust and social connections is referred to as *confianza* in the circles of rotating credit associations in Mexico (Putnam, 1993, p. 168). As the concept of *confianza* is key to explain the dynamics of this type of credit association in south America, the results presented in the previous chapter show similarly that trust and previous relations has an important role in the emergency response field.

7.2 Trust

As mentioned in chapter 4, trust, or the level of trust, has often been cited as playing an important role in collaborative emergency response operations. Even more, some

authors have suggested that trust is a very important, if not the quintessential element of collaboration (Lane, 2000, p. 1; Oomsels & Bouckært, 2014, p. 579; Vangen & Huxham, 2003, p. 6, 15 Hermansson, 2016, p. 336). This is the case not just in the emergency management field, but also within the fields of psychology, economics, organizational sciences and sociology (see, Lane & Bachmann, 2000; Oomsels & Bouckært, 2014; Vangen & Huxham, 2003).

> Your corn is ripe to-day; mine will be so to-morrow. 'Tis profitable for us both, that I shou'd labour with you to-day, and that you shou'd aid me tomorrow. I have no kindness for you, and know you have as little for me. I will not, therefore, take any pains upon your account; and should I labour with you upon my own account, in expectation of a return, I know I shou'd be disappointed, and that I shou'd in vain depend upon your gratitude. Here then I leave you to labour alone; You treat me in the same manner. The seasons change; and both of us lose our harvests for want of mutual confidence and security. (Hume, qtd. in Putnam, 1993, p. 163)

This often-cited passage exemplifies the importance of trust relationships for collaborative endeavors. The farmers in Hume's story lacked that readiness to take the risk of trusting a counterpart because they perceived that the dangers of misused trust were high. If the farmers had helped each other both of them would have saved their harvest, however, the possibility of default from the responsibility of the owner of the first harvested crops weighted in more than the potential benefits of such a collaboration. Although Hume's passage offers a clear example of the potential effects of trust, or lack of trust in this specific case, it should not be taken for granted that it is solely the idea of reciprocation/non-reciprocation. Trust has been said to reduce transaction costs, both economic and temporal, ease and speed up the transfer of information, accelerate the work pace, and increase every actor's capacities (Lane, 2000, pp. 19-20; Grimen, 2009, pp. 74-75; Oomsels & Bouckært, 2014, p. 579).

As it was the case with earlier explained concepts such as emergency, disaster, collaboration or cooperation, trust is a concept with many meanings (Lane, 2000;

Oomsels & Bouckært, 2014; Vangen & Huxham, 2003, p. 6). Nevertheless, most of the conceptualizations share some common elements. Lane (2000) mentions that generally it is assumed that a degree of interdependence between actors[104] has to exist (see also, Vangen & Huxham, 2003, p. 10). Otherwise, when the goals of an individual or an organization do not require participation of a counterpart trust loses its relevance. The second common element is a functionalist perspective. This is trust allows to cope with the risk of interdependence. The third commonality is that trust is linked to the belief that the risk taken by the trustor will not be used by the trustee for his own benefit (Lane, 2000, p. 3).

The definition adopted in this thesis is in line with these commonalities. That is, the readiness of X to be susceptible to the actions of Y with the understanding that Y will perform an assigned task that is important for X, regardless of X's ability to monitor and control Y.

Notwithstanding the commonalities, Lane (2000) and Vangen and Huxam (2003) have pointed towards diverse grounds in which trust is based. While some see trust to be based on calculation, others point at common cultural, meaning, and value systems or common cognitions. On the one hand, trust may vary in relation to the social context, and typologies combining the above-mentioned grounds have been developed. On the other hand, expectation and predictability are the focus in order to understand trust (Lane, 2000, p. 4; Vangen & Huxham, 2003, p. 10).

In the operationalization of trust that I presented in Chapter 4, trust is understood as partner X's perception of partner Y's competence, explained as professionalism, experience, and capabilities. This understanding is closely linked to the view that trust can be seen as the fulfilment of expectations ascribed to a collaborative partner and predictability of the partner's actions and results (Lane, 2000, p. 4; Grimen, 2009, p. 21;

[104] Trustor and trustee

San Martín-Rodríguez et al., 2005, p. 56; Jalba et al., 2010; Kalkman & de Waard, 2017; Nolte & Boenigk, 2012, p. 4).

The relation between trust and competence can be exemplified with the chain of trust concept (Grimen, 2009). In the context of a traffic accident response operation where the goal is to bring the injured to hospital, the ER personnel relies on the ambulance worker to bring the victim quickly and stable. The ambulance worker relies on the firefighter to liberate the victim from the car. Moreover, the firefighter relies on the police officer to provide a safe working environment by stopping incoming traffic. In this type of work, none of the actors interfere with the others' work. No one controls the quality of the work of the others, as trust in the counterparts' competence is in place (Grimen, 2009, pp. 80-85).

Nevertheless, in situations where there is a reciprocal task interdependence (Hatch, 1997, p. 149), be it a response operation or a rotating credit association, the underperformance of one of the members can easily become the underperformance of the whole enterprise (Kapucu et al. 2009, p. 300), which takes us back to the risk of interdependence. In the emergency management field, underperformance is problematic in two senses. The first is that a low-quality response will enhance the consequences that the situation brings to those affected or are responding. The second relates to the possible effects in participant organizations. Namely, the possible loss of social capital that the participant organizations have. As Putnam (1993) mentions, social capital is in opposition to other forms of capital a public good rather than a private one (p. 171). This means that it is ascribed by the surrounding social structure and can therefore fluctuate out of control of the person or agency that benefits from it.

The effects of lost social capital could occur at two levels: the contained level and the extended level. At the contained level, the effects of loss of social capital jeopardize upcoming collaborative activities. In the case where an organization in an operation has not been perceived as performing as expected by the collaborative partners in that

operation, the partners carry with them this perception of that organization. Thus, at the contained level, future collaborative activities among these organizations are jeopardized. At the extended level, the effects of lost social capital could outspread to other organization participating in the same operation.

When organizations damage their reputation in the eyes of other actors, institutions or the wider society due to their actions in operations it can carry diverse implications such as external intervention or loss of funding.

The effects of the risk of interdependence have an effect on the organizations participating in emergency response operations. This is exemplified by Hermansson (2016) when pointing out that organizations often enter a collaborative effort with a skeptical view of others due to the stakes at play. They know what they can do but cannot know about their counterparts. Nolte and Boenigk (2013) present an illustration of this skepticism when maintaining that "organizations with extensive experience may have doubts about the abilities of less-experienced organizations (p. 153). Waugh (2000) provides a different example when he states that public organizations might be reluctant to rely upon voluntary organizations because:

> they distrust the intentions of the volunteers, lack confidence in the volunteers' skills and resources, fear that volunteers may endanger themselves or others, are concerned that volunteers may get in the way of professional responders, and fear that there may be legal liability for volunteers' actions. (Waugh, 2000, qtd. in Kapucu, 2006b, p. 214)

The lack of trust that an organization might have in another might be based on preconceptions, as illustrated by Nolte & Boenigk (2013) and Waugh (2000) or might be sustained in actual experiences. As Kalkman and de Waard's (2017) study on civil-military cooperation in the Netherlands shows, some civil organizations in an emergency management district decided to stop requesting military assistance due to the actions taken by a military unit during an operation (p.894).

The third commonality among the conceptualizations of trust identified by Lane (2000) is that the trustee will not use the risk taken by the trustor for self-serving purposes (Vangen & Huxham, 2003, p. 11). The results of a study conducted by Edward Banfield (1958) in Montegrano, southern Italy, could be used to exemplify this. The study showed a similar behavior among the population to that described by Hume in the farmers' episode. Banfield (1958) found a culture that set family at the center of all relations. Other families were perceived as competing units at best, and the benefits that other families could achieve or have were perceived as detrimental to one's own family. Trust relationships existed within the family units but were not extended to others regardless of the economic or social consequences, which negated the possibility of inter-familiar collaboration (Banfield, 1958, qtd. in Grimen, 2009, p. 73).

In the context of an emergency response operation, the risk of trusting a counterpart could also be linked to the third commonality. Kalkman and de Waard (2017) identified reluctance within the police of including the military in antiterrorist meetings due to the high number of representatives that the army would send. This because it was perceived as a strategy of taking control over the workforce (p. 894). The context of Kalkman and de Waard's (2017) study, also opens for the possibility of zero-sum thinking among organizations that must compete for scarce resources that is necessary to fulfill the expectations that the system has to them. Regarding voluntary organizations, financing is an illustration of such scarce resources.

Regardless of the origin of the lack of trust, if organization A does not trust that organization B will fulfill its duties, it will most likely avoid engaging them as a partner in the operation (San Martín-Rodríguez et al., 2005, p. 142). On the contrary, when trust is present and organizations perceive the professionalism, experience, and capabilities of the other organizations (San Martín-Rodríguez et al., 2005, p. 56; Jalba et al., 2010), the parties that need to collaborate will be more likely to accept the risk of assigning an important task to a counterpart, regardless of the ability for controlling the other organization (Mayer et al., 1995, qtd. in Kalkman and de Waard,

2017). In the case that the collaborative effort is perceived as positive by the organizations involved, social capital is increased as opinions on the professionalism and capabilities of the other organizations increase. Thus, trust between partners in a collaborative effort allows for lowering protective barriers in spite of the risk of interdependence and of opportunism.

In this section, trust has been described as allowing for transaction costs reduction, both economic and temporal, ease and speed up the of information transfer enhancer, work pace catalizator, and as a result capability booster.

In what regards transaction costs, the existence of trust allows for closing deals with a handshake rather than a binding contract, it allows for conducting a joint project without the necessity of a leviathan. It also eases the strains on the flow of information, as organizations will not have to compartmentalize it due to the risk of misuse from a counterpart. In addition, information coming from trustworthy partners will not have to be double-checked for veracity and will be perceived as *bona fide*. The acceleration of the work pace relates to the last part of the above-mentioned definition, where tasks that are taken by a trustworthy partner will not have to be controlled or repeated (see, Grimen, 2009; Mishra, 1996; Sako 2000).

The understanding that trust opens for better collaboration because organizations will not put protective barriers up to avoid potential risks does not negate the existence of factual risks, but rather implies that factual risks are mediated through trust.

Based on this discussion, I propose the following mechanism as a possible explanation of how trust affects collaboration:

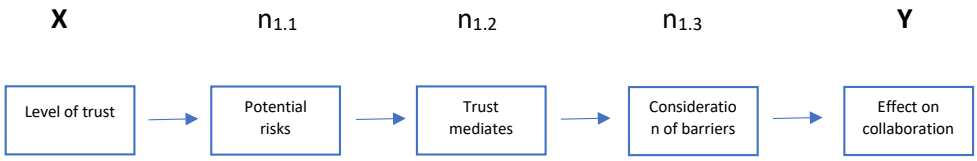


Figure 11: Hypothesized causal mechanism for trust.

The mechanism is composed of three parts ($n_{1.1}$, $n_{1.2}$, and $n_{1.3}$). As mentioned in chapter 3, each part of the mechanism involves an action (n_x) undergone by an actor (a). To follow the procedures set in process tracing the researcher also needs to determine the evidence (e) to be found in the cases where the actor has taken the action, as well as a clarification of where that evidence can be found, or through which means will be acquired. For this mechanism it is as follows:

X: Organizations have ascribed a level of trust to a counterpart

$n_{1.1}$ → consideration of consequences of the potential risks.

a: Emergency response personnel consider risks and consequences.

e: Risks and consequences are considered to be real.

Tools: Interviews.

$n_{1.2}$ → The level of trust in a counterpart mediates the perception of risks.

a: Emergency response personnel that have high trust on a counterpart will rely on organizational characteristics (linked to professionalism) of a counterpart.

e: organizational characteristics will be regarded as a safeguard against potential risks.

Tools: interviews.

$n_{1.3}$ → Protective barriers.

a: Organizations will/will not establish protective barriers to safeguard themselves or the operation.

e: Protective barriers such as increased control are considered.

Tools: Interviews

Y → Barriers (or the lack of them) will influence how the collaborative endeavour is conducted.

7.3 Previous contact

Previous contact among participant organizations falls under social capital as understood by Putnam (1993) as well. The case of rotating credit associations can be used to illustrate one of his arguments to stress the important of contact: when there is a prospective member whose trustworthiness is not known by the association, access to the group is still possible through the recommendation of another member. This recommendation is made to the association based on the relation or previous contact (and the knowledge that stems from that relation) that the member has on the person wanting to join the group (p. 169; see also, Siciliano & Wukich, 2017). Fountain (1998) argues that this phenomenon that she refers to as the transitivity of trust, is a key property of social capital (p. 105). When the contact aspect of social capital is not present prospective members will not be able to access the rotating credit association and in situation where organization have to work together, the actors involved will avoid engaging counterparts and will rather focus on task demands (San Martín-Rodríguez et al., 2005, p. 142; Doyle et al., 2015, p. 10).

In the context of emergency response operations, studies have also argued that organizations responding to emergencies have found it easier to establish collaborative initiatives with organizations with whom they have had previous contact than with others where no previous contact had been established (see, Martin et al., 2016).

The reasons behind this claim are related to Putnam's (1993) idea that contact allows for the development of acquaintance. An organization that has had previous relations with a counterpart has learned about the other. They know what their counterparts know, what they can do, and what they can offer. Previous contact has been described as enabling the process of trust building (Gellert et al., 1994; Nowell & Steelman, 2015; Siciliano & Wukich, 2017; Nolte & Boenigk, 2013).

Trust is built over extended periods of time and through repeated interaction (Vangen & Huxham, 2003, p. 10; Fountain, 1998, p. 105). Grimen (2009) presents four modes: small steps, tit for tat, the leap of faith[105] and through intermediaries (pp. 76-78), that highlight the importance contact between organizations.

The first two modes are similar in nature, the small steps method starts with stablishing a collaboration of minor relevance. In case of default the costs will be negligible, the collaboration will stop, but the actions of the farmer will put him in a better light in the eyes of other potential collaborators. When reciprocity occurs, that first step will be repeated with a small qualitative increase.

The repetition of trusting action and reciprocation takes us to the second mode of building trust: tit for tat. Developed by Anatol Rapoport in relation to the iterative prisoner's dilemma competition organized by American economist Robert Axelrod in 1980, this mode relates to the idea of reciprocity. The program written by Rapoport opened with cooperation as a first move in the first game. Then, in the second game, prisoner A would act in the same way as prisoner B acted in game one. In game three, prisoner A would act as prisoner B did in game 2 and so on.

The third mode described by Grimen (2009) is the leap of faith. As the name indicates, in this mode, actors will suppress the fear for default and take an action that will show their counterpart their good will in a manner that makes it difficult to be interpreted as a trick for later gain.

Kalkman and de Waard (2017) offer an example in the context of emergency management operations and civil-military collaboration in the Netherlands. In their example, a military liaison convinced an army unit to leave their planned activities in order to aid a fire brigade in a debris fire episode. An action that showed the emergency response community that the military was willing to aid, and that earlier promises of assistance were not hollow words (p. 894).

[105] Dramatisk første skritt

The role that the liaison played in Kalkman and de Waard's (2017) example, can also be linked to the fourth mode described by Grimen (2009) and the role played by the member of the rotating credit association that acts as a gate opener for a prospective member. The intermediary is a figure that could be part of an organization or a third party, whose role is to smooth relations, open dialogue, and convince actors of the benefits of collaboration. The prerequisite of an intermediary is to be perceived as impartial or trustworthy. The weakness of this mode is that first, the intermediary has to win trust of the organizations and then the personal trust has to be transferred to the organizations.

What becomes clear from the description of Grimen's (2009) four modes of trust building is that it is a lengthy process, and that repeated interaction is required. This reinforces the salience of Hermansson's (2016) suggestion to build trust prior to the operation. Some authors, however, have argued that building trust before a collaborative project might not be applicable to the context of emergency response operations (Doyle et al., 2015, p. 10; Kalkman & de Waard, 2017, p. 891; Beck & Plowman, 2014, p. 1242). In this context participant organizations cannot choose their potential partners freely since their participation is mandated, and thus, trust must be developed along the way.

Beck and Plowman (2014) use the cases of the Columbia space shuttle accident response operation to exemplify how trust was developed among responding organizations that had not had previous contact among them. In their study, they saw that inter-organizational trust developed in a twostep fashion, from situational swift trust to conventional relationship trust. Swift trust often develops among organizations during short relationships where the novelty and the complexity of a situation exacerbates the perceptions of vulnerability, and the dependence in others appears clear. Potential partners are forced to trust each other. After that first step, and while the operation is ongoing, organizations start to know each other; their capabilities, their resources, their professionality. As Beck and Plowman (2014) saw in their study, that

process derives with time in the conventional form of trust (p. 1242). In a manner, one could understand the process uncovered in the Columbia space shuttle case study as an accelerated form of conventional trust building or as a first step in the trust building process. Regardless of the type of trust, be it swift trust or conventional trust-or the modality for building it-there is a time aspect inherent to the trust-building process, but most importantly that it is a process of getting to know each other.

Nolte and Boenigk (2013) explain that organizations that have a history of previous contact have had the opportunity to develop stronger ties between them, meaning that they are familiar with one another (p. 153). This familiarity implies that organizations know about goals and priorities of their counterparts, and in the cases where goals might have been at odds, that they might have had time to clarify them through negotiation (Vangen & Huxham, 2003, p. 19; Kapucu et al., 2010, p. 455). Familiarity implies as well that organizations have a shared understanding in what regards resources, abilities, and institutional design so that they can adjust and complement each other in an effective way (Kapucu et al., 2010b, p. 455; Doyle et al, 2015, p. 2). In other words, organizations that have gone through a process of repeated interaction can finetune the expectations (and thus the trust) on counterparts.

Even more, previous contact can at times be able to facilitate collaboration in situations where there are no previous trust relationships between organizations. As said before the way in to a rotating credit association where a trust relationship is not stablished is through the relation to a member, in the case of emergency response operations, being a friend of a friend can also facilitate the collaborative endeavor (see, for example, Siciliano & Wukich, 2017).

In addition, Putnam (1993) suggests that previous contact serves a second purpose, namely creating a set of norms that will guide the collaborative endeavor. According to Putnam (1993), norms are the equivalent of transferring the right to control from oneself to others. These norms are usually created when actions have consequences and risks are perceived as real, such as the risk of member default from a credit

association named earlier. These norms are created and sustained by socialization, thereby showing the importance of previous contact (p. 171).

These norms can be useful for goal clarification purposes; speeding information transfer, easing conflicts and creating informal rules that will guide relations and collaboration when pre-stablished norms are inadequate or inexistent (Hu et al., 2014, p. 707; Kapucu, 2006a, p. 210; Kapucu, 2006b, p. 209; Kapucu, 2012, p. 49; Kapucu & Garayev, 2011, p. 373; Gellert et al., 1994, p. 6; Nowell & Steelman, 2015, p. 18; Vangen & Huxham, 2003, p. 19). When previous contact is nonexistent, organizations will have to negotiate those norms or base their relation in pre-stablished rigid guidelines. This would explain why it is harder for organizations that have no contact with each other prior to the operation to collaborate (Martin et al., 2016).

In addition, some authors have suggested that contact allows for the appearance of sympathy and comfort (Nolte & Boenigk, 2013, p. 153; Nowell & Steelman, 2014, p. 6), which in turn eases and facilitates communication and promotes flexibility (Nowell & Steelman, 2015, p. 6; Doyle et al, 2015, p. 6; Song & Jung, 2015)

The result of the development of inter-organizational knowledge and inter-organizational sympathy through contact can help in increasing the effectiveness of the collaborative endeavor as it guarantees the speed of the start and *in situ* organization of the effort (Nolte & Boenigk, 2013, p. 160). Furthermore, Kalkman and de Waard (2017) point that socialization between members of different organizations generate a trust building process.

Based on this presentation, there are two possible mechanisms that can be hypothesized explaining how previous contact effect collaboration. The first mechanism is related to the trust mechanism presented above, and the second is a direct mechanism, meaning that how previous contact affects collaboration is independent of trust.

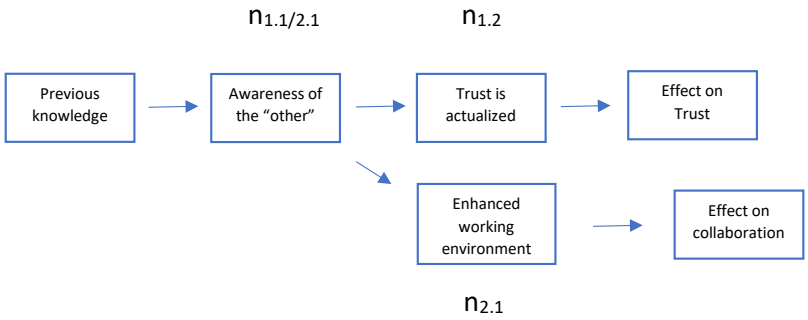


Figure 12: Hypothesized causal mechanism for previous contact.

The mechanism linking previous contact to collaboration is composed of two parts ($n_{1.1}$ and $n_{1.2}$,). The mechanism that connects previous contact and trust is divided in two parts as well ($n_{2.1}$ and $n_{2.2}$,). The clarification of actions, evidence, and tools for these mechanisms are as follows:

X: Previous contact

$n_{1.1}$ → Awareness of the "other"

a: Emergency response personnel learn about each other and their organizations.

e: Emergency response personnel will now about the characteristics, capabilities, and mandates of the other organizations

Tools: Interviews.

$n_{1.2}$ → The level of trust in a counterpart is actualized.

a: Emergency response personnel will actualize their trust in others considering the knowledge they have.

e: Emergency response personnel will adjust their expectations on counterparts based on that knowledge.

Tools: interviews.

Y → Knowledge about the others clarifies the expectations that one may have, and thus, actualizing the level of initial trust.

X: Previous contact

$n_{1.1}$ → Awareness of the "other"

a: Emergency response personnel learn about each other and their organizations.

e: Emergency response personnel will now about the characteristics, capabilities, and mandates of the other organizations

Tools: Interviews.

$\mathbf{n_{2.2}}$ → Enhanced working environment

a: Emergency response personnel are acquainted with each other.

e: Emergency response personnel will perceive relations with members of other organizations as comfortable will be able to communicate, suggest, and give feedback directly to members of other organizations as a routine and will develop norms to rule these interactions.

Tools: Interviews.

Y → The natural interaction will speed, ease, and increase the effectiveness of the collaborative effort as well as opening a learning arena to enhance future operations.

8 Opening the black box

In this chapter, I analyze the interview data and test the three mechanisms presented in Chapter 7, that explain how trust and previous contact can influence collaboration.

The chapter is divided in 3 main sections. Section 8.1 is dedicated to the analysis of the mechanisms that explain the transmission of causal force between trust and collaboration. In section 8.2, I explore two mechanisms related to previous contact. The first mechanism transmits causal force between previous contact and trust, thus indirectly influencing collaboration, while the second mechanism transmits causal force directly to collaboration. The third and last section (section 8.3) presents a summary of the findings.

The sections dedicated to testing the mechanisms are formed following a process-tracing style. Each part of the mechanism is analyzed on its own, where I first define the preconditions for the testing to be considered successful and then the evidence[106] is looked for and analyzed. The analysis uses Bayesian logic as a tool (Beach & Pedersen, 2013). As mention in chapter 3, I use the following formula:

$$p(h|e) = \frac{p(h)}{p(h) + p(e|\sim h) * p(\sim h) \over p(e|h)}$$

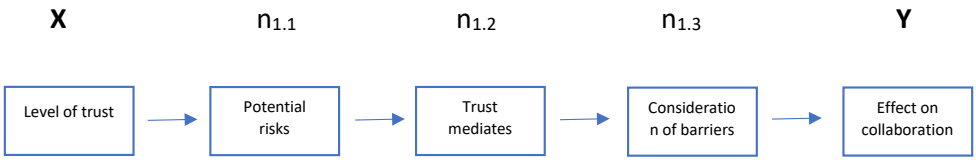
The numbers presented at the opening of each part of the mechanisms and when applying the formula at the end of each section should not be understood as percentages nor as a type of quantitative analysis, but as an attempt to be open and transparent to the reader (Beach & Pedersen, 2016, p. 98).

[106] Data from the interviews

In this chapter, I used the word evidence widely. As mentioned in chapter 3, observations do not equal to evidence. Evidence emanates from the discovery of patterns in the data material and the careful consideration of its validity.

8.1 Unboxing the trust mechanism

The hypothesized mechanism for trust was presented as follows in the previous chapter:



The expectation is that the level of trust in counterparts will have an effect on collaboration following the description presented in section 7.2 In this section I analyze the data gathered through the interviews searching for evidence that can help in actualize the confidence in the existence of this mechanism. Namely, that risks, and consequences are considered to be real, that organizational characteristics will be regarded as a safeguard against potential risks, that in the cases where the level of trust does not mediate the perception of risk protective barriers will considered, and that these barriers have an effect on the collaborative effort.

8.1.1 $n_{1.1}$ → Risk

In the previous chapter I presented the definition of trust adopted in this thesis, which is the readiness of X to be susceptible to the actions of Y with the understanding that Y will perform an assigned task that is important for X, regardless of X's ability to monitor and control Y. This definition acknowledges that trusting involves taking risks, as the monitoring and controlling of Y is set aside in favor of the execution of tasks. The risks that an operative or an organization faces when taking part in an emergency response

operation can be related to the inherent characteristics of an emergency response operation and to the collaborative effort itself.

In what regards the risks inherent to the operation, the very same characteristics that several authors on the field use to define emergencies are related to risk or dangers (see for example Kapucu 2012; Weick & Shutcliff, 2011). The outline of the theory presented in Chapter 7 shows that collaboration can be considered fertile ground for non-reciprocation, turf wars, and the spreading of underperformance among others (Grimen 2009; Putnam, 1993; Kalkman & de Waard, 2017).

In Chapter 7, I mentioned that in collaborative efforts where task interdependence exists, such as in an emergency response operation, underperformance could be problematic in two distinct manners: increase of consequences for those involved and/or responding, and possible consequences for the participating organizations. This last type of consequence was exemplified with the possibility of suffering a reduction of the perceived trust that other organizations or the wider society (both institutions and the population) might have.

The idea of the existence of risks in the type of operations being analyzed in this thesis has support in earlier works. Thus, the confidence I have in the hypothesis (The risk inherent to an emergency response operation influences how the operatives approach their work) reasonably certain (Befani & Stedman-Bryce, 2017, p. 55). Therefore, I ascribe a prior [p (h)[107]] of .95.

The reason for not assigning a higher degree of certainty lays in the fact that most of the literature available stems from research conducted regarding large-scale emergency response operations where the stakes are higher and the number of involved organizations is more conspicuous, a situation that in theory could exacerbate the perception of risks and thus generate a larger amount of defensive behaviors. Nevertheless, the results presented in chapter 6 shows that the difference in the scale

[107] p (h) is the confidence that the hypothesis is correct

of the event does not play a significant role in defining the factors that affect collaboration. Therefore, the idea that the risk inherent to an emergency operation influence how the operatives approach their work is accepted *a priori*, in the context of small-scale emergencies as well. This reiterates the adequacy of assigning a fairly high level of confidence to the presumption that the hypothesis that risk exists in emergency response operations is true.

As p (h) is assigned a value of .95, the value for p (~h)[108] is set to .05. The next step is assigning a value to theoretical certainty p (e|h)[109]. The evidence that I look for is, as mentioned above, that the risks and consequences are considered to be real by first responders. The fingerprints for this evidence would thus be that informants acknowledge the existence of risks and consequences. Based on the theorization presented in the previous chapter and the literature reviewed, the confidence I have in the possibility of finding the evidence supporting the hypothesis is fairly high. Furthermore, the fact that the questions asked are relatively uncontroversial, together with the guarantee of anonymity offered to participants, make it unlikely that the informants might hide information regarding this topic. Thus, after consideration I assign the p (e|h) a value of .95.

In what regards theoretical uniqueness, p (e|~h), I have confidence in that the possibility that the evidence could be caused by an alternative hypothesis is low. The questions asked to the informants are specific and straight forward. Finding an alternative hypothesis to a statement that exemplifies how risks in emergency response operations are real might prove difficult. However, one can never rule out this possibility. It might happen that the researcher oversees certain hypotheses or that the informants have their own agendas or provide inaccurate information. In this case I have no reasons to cast doubts over the informants. Also, the topic is not sensitive enough that it would prompt respondents to convey false information. Following this I

[108] p (~h) is the possibility that the hypothesis is incorrect
[109] the confidence that the evidence can be found

set the p (e|~h) value at .05, as I have a strong confidence in that the evidence is not caused by an alternative hypothesis.

8.1.2 Looking for evidence

When talking about the potential risks of an emergency response operation, respondents talked about the risks related to the increased consequences for those involved, the personnel of the responding organizations and the very outcome of the operation. Nevertheless, some respondents considered as well the damage on trust as a real danger with potential implications for their source of finance.

When talking about dangers inherent to an emergency response operation, most respondents emphasize that it is difficult to point towards specific examples as dangers are diverse and vary between types of operation. One of the informants highlights that even the same type of emergency can have differences that change its nature:

> One can respond to a fire caused by a suicidal person or because of an electric failure. This makes the whole operation different for all the involved organizations (informant 6).

Here, the informant illustrates how responding to fire can have underlying causes that increase the risk of the respondents. Moreover, one of the recurring themes among the dangers of an operation could be demarcated by the potential harm or loss of life for both the people affected by the emergency and the first respondents. Respondents identify two main sources of this risk. The first source is the need for securing the place of the operation and the dangers posed by weather conditions, terrain, or violent situations. In this line, informant 1 mention that securing the place is the main goal in an early phase of the operation. This becomes tantamount to “avoid that oneself and others get hurt” (informant 3). Furthermore, informant 4 emphasizes the necessity of considering the weather and terrain conditions:

> […] we must consider if we will send our people in. Avalanches are the biggest danger [together with] weather, wind, and type of terrain (informant 4)

Both informants show that the risk of physical harm emanating from the characteristics of an emergency response operation is considered as real, or even a natural part of the job (informant 9) by first respondents.

Informant 1's assertion that securing the place where the event has taken place is the main goal suggests that the perception of risk is also shared by the organization as creating a safe space for operations has become a part of the standard operating procedures.

Informant 2 suggests that the organization he/she is a part of also considers physical harm to the operatives a potential danger when relating his/her experience on a particular emergency response operation:

> When we searched the beach, we had to wear helmets and life vests. This can seem ridiculous, I often go there without any equipment [in my free time], but when you are with F, you do as you are told […] there is always risk in life. One can fall and hit the head in that very spot that the helmet does not cover, but at least you have taken all precautions (informant 2)

The seriousness that organizations approach the safety of their operatives becomes patent with informants 2's statement. Here we see that the informant considers the risk of physical harm as minimal, but nevertheless he/she is required by the organization to carry protective equipment.

Although the risk related to the environment appears to be a constant in the narratives of the respondents, natural hazards are not the only ones. Informant 6 explains:

> We go out because we are called to a [specific type of emergency], but when we reach the place, we realize that the biggest problem is that there is an armed person (informant 6)

The possibility of encountering violent individuals does not appear that predominant among respondents, nevertheless the possibility is there. In an ideal situation, violent

individuals are handled by the police, however, the distribution of first responders from different organizations across the country causes that in certain occasion other organizations arrive first to this type of events. The infamous case of the Valdresekspressen in 2013, where members of the fire department together with ambulance workers had to take control over a person that had already taken the lives of three people serves to exemplify the dangers that one could encounter in emergency response operations.

In addition, the introduction of the PLIVO[110] doctrine, that opens for the possibility of firemen and ambulance workers taking actions against individuals armed with sharp or blunt weapons when arriving before the police, reinforces the idea that this type of risk is to be considered real.

The second source of the consequences stems from the actions of first responders. As informant 3 says, when an organization "does not complete the task that they were responsible for, things can happen. Because of that, "what should not occur can happen" (informant 3).

Informant 1 exemplifies the dangers of such failure for the people involved in the emergency:

> Prioritizing of patients can easily go wrong. When evacuating patients to the helicopter or ambulances the right ones must be prioritized (informant 1)

The case of helicopter involvement is used to exemplify the dangers for the respondents:

> [when the helicopter is involved] we have to prepare the landing place for the helicopter. This can be very difficult, when its dark and one has to find a good and safe landing place considering vegetation, electricity cables, and the direction of the wind (informant 1).

[110] Pågående Livstruende Vold

> There is a danger when one uses helicopters, especially if there are two. There is of course the danger for a new type of accident (informant 4)

These three quotes bring to the forefront the physical danger that the failure to complete certain actions, can bring to both victims and first responders. A failure to conduct appropriate triage can signify that the most critical patients are not evacuated first, while the failure to identify a safe landing place can cause a dire scalation of the situation.

Informant 4 also mentions that dangers are not static and that they have to consider new risks as the operation evolves. This is, once the helicopter has landed the risk for a crash has disappeared. Other risks, however, might emerge. Informant 4 gives an example when members of other organizations arrived:

> [We perceived] that there was a very strong willingness to help and to do things by [members of some voluntary organization], so we had to, in a way, to hold them back (informant 4)

The quote shows that dangers do not just emanate, as argued before, from mistakes or incomplete actions, but that also can emanate from the eagerness or good will of respondents. The dangers emanating from a situation as the one described by informant 4, could be physical, such as rushing in entering an avalanche area or could, as it was the case in the aforementioned example, endanger the operation as the actions of those first responders would make impossible the work of the organization that had to go first, but that had not yet arrived to the site.

Informant 10 gives another example where the tasks that an organization has, might be affected by the actions of other organizations:

> I have experienced [that someone from a professional organization that was over us] did not understand how an operation should be conducted, and what was the best way of handling a situation in in regards to resource use, daylight use, prioritizing [name of another organization that was not on site] instead of others while we only had two

> hours of daylight. […] I have experienced many of these situations, not just once (informant 10)

The situation described by informant 10[111] shows that the decision taken by an actor from another organization that was over them in the chain of command was affecting the prospects of being able to conduct the tasks that the informant's organization had assigned. In this case as well the decision of the superior was not done in bad faith, but as informant 10 relates was linked to the inexperience of that individual, the knowledge that the individual had about the organization that was not on site, and the lack of familiarity with the informant's organization and their modus operandi.

A similar example is given by informant 8 when describing an experience where the direction of the operation was taken over by people that were not present on the operation site:

> Decisions where taken by people that were not present, that did not see what we could see. An in that manner they put us, who were on site, in a tight spot (informant 8)

The difficult situation that arises when realizing that the operation is being directed in an inadequate manner is also related by informant 10 when talking about the operation mentioned above, however, the problems that can arise when decisions are being taken from afar can be challenging to navigate. As informant 8 continues pointing, the timespan of the operation did not allow to fully correct the discrepancies between the received orders and the situation's development.

On some occasion the interference can also happen due to the incompatibility of tasks. An informant 7 mentions:

> There can be an operation where B and C are involved, but we [Organization A] have some tasks that demand extended work after the emergency is finished. [The problem

[111] The situation described by informant 10 is not the same as the situation described by informant 4 that was presented earlier.

> is that] the task might be impossible to carry out because the tasks that B and C had assigned have made it impossible (informant 7)

Informant 6 presents the same case, but from B's perspective:

> When we come to an [specific] operation where A will have to do extended work, they can tell us to try to not affect their task. [Then we say] OK we can try. But each organization must appropriately prioritize the tasks they have been assigned, trying not to affect the others. They must find a balance (informant 6)

The quotes from informant 6 and 7 show that task incompatibility is, in certain cases, unavoidable and thus affecting another organizations work is not a question of if, but when. The balance stressed by informant 6 is important but having an understanding about the other's job is essential as well. While informant 6 points to the relevance of A's extended job to build a safer society, informants 7's organization acknowledges that without the work of informant 6's organization their extended job would be impossible.

Some informants highlight the matter of resource availability or mobilization as a potential danger for safety:

> [It happens that] B must take on the tasks of A when there is a [specific] situation. We see that C takes a step back for safety reasons, and B takes over their task as well. It is B who must handle the situation. We send a complain up the chain of command, why does B have to do the tasks of other organizations. When [name of a professional organization] suddenly due to certain reasons is not present in [place], but we are there, should we really take their tasks? We have not received an education for that (informant 6).

Informant 2 provides a description of a specific situation to exemplify the problem with resources:

> We were in [place] and we were going to a [specific situation]. We were going to help B with [secondary task]. When we were there the situation got worse. There were only two people from B, because the [primary task] had concluded, it was night, and they

> went to sleep. We from F had to help with the reactivated [primary task]. We had to help in a different way from what was planned […] it went well. Our leader told us that we were not allowed to go all in. We did not have the knowledge nor equipment for that (informant 2).

The quotes from informant 6 and 2 show that the lack of resources can cause an increase of risk for the responding operatives. Both informants' example refers to dire situations that do not allow to wait for additional personnel. In this situation the members present must act[112] and ad hoc measures have to be taken by field leaders to mitigate these dangers.

The lack of resources can also jeopardize the ability of solving a situation. Informant 1 explains:

> The normal situation that we face we can manage with local resources, but an accident does not have to be very big in the rural areas, if we have a case with three or four injured then that is the maximum we can manage alone without help from others (Informant 1)

He/she continues explaining the importance of having the necessary resources:

> Before, one could experience that maybe We and [another professional organization] were called out to respond to an emergency, but not [a third professional organization]. When we arrived at the site, we realized that [the organization that was not mobilized] was indispensable to solve the issue [since we could not do our job without them]. It was a catastrophe that no one realized earlier that they were essential (informant 1)

Informant 1 specifies that, these situations might not have been directly caused by the responding organization willingness to mobilize but could have been caused by the available information at the time of mobilizing resources. Nevertheless, informant 6

[112] The guidelines of some organizations allow them to pull of in certain situations. The cases related by informant 2 and informant 6, however, did not.

mentions that sometimes, members of certain organizations are less willing to mobilize their assets.

These thoughts can be contrasted with the results of the survey presented in Chapter 5 were we see that the respondents' perceptions severely change when the considered the capacities that the local communities have to respond to events of various scales. The dangers of lack of resources then are not merely an increase of risk for first respondents, but also for the victims involved.

Some informants bring up the psychological danger for the responding personnel. Informant 1 mentions that while going to the location where the operation is taking place, they start a psychological preparation about what they may encounter there.

Informant 5 gave a concrete example of how the psychological aspect can be a serious danger:

> We had a traumatic [situation] where [members of two organizations] were involved. Very visual. We had to gather afterwards and had a session to talk about it (informant 5).

An indirect acknowledgement of this type of danger is also offered by informant 12:

> Sometimes we might need to follow up [our members]. It can happen that we are in an operation where the person has hanged himself and a member of [name of the organization] has seen this. That is something that must be dealt with. The member can ask for follow up and we in [name of the organization] give the member a contact person […] they follow up this member over time and talk about how they are doing, and if they need help from a psychologist, they get it (informant 12)

This statement shows that organizations participating in this type of operation perceive that certain situations might pose psychological dangers to their members serious enough to establish a system of support for those affected.

Earlier in the chapter, I mentioned that in the emergency management field, underperformance is problematic since a low-quality response will enhance the consequences that the situation brings to those affected or responding. From the conducted interviews, the dangers that predominantly emerge are relate to this consequence. However, the dangers for the organizations also emerge from the interviews with the respondents:

> [The designated press contact (from A)] comes to us and asks us, how long is this going to last? Do you have control? […] we can risk that the press contact tells the press that B has control over the situation, and suddenly we do not have control any longer, and the press asks the person from A, why did you tell us that the situation was under control? […] so, A loses face in front of the press (informant 6)

Informant 6 also mentions that the press and mobile cameras have increased this type of danger.

> Things are documented in a different way than before, people stand with their cameras and when B cannot manage their task, people will say they are not doing their job (informant 6)

What we see from informant 6's quotes are that there is a possibility for reputation loss. In this case the loss of reputation is on the eyes of the public. Informant 12 links reputation to organization financing in general terms, while informant 10 offers an explicit explanation:

> It is important to have a good reputation and taken seriously. It is very important how you appear and how you behave in an operation […] for a voluntary organization this can have a huge impact because they are dependent on the population's good will to get economic support. When someone from volunteer organization H has found a missing person, it becomes much easier to get support after it becomes public (informant 10)

Nevertheless, loss of reputation can also affect the relations with other organizations. Informant 10 exemplifies it with the following:

> If we lose our reputation, especially if it is [name of another organization] it can happen that we will not be called out so often to this type of operations, and we think that this bad for the people injured - for those lost - because we think that we are an important resource (informant 10)

What we see from the previous quotes is that, as mentioned in chapter 7, reputation loss can severely affect future operations by excluding organizations from response operations or by reducing the financial power of the involved organizations with the detrimental effects that this can have on equipment or the education of the operatives. A development of emergency response operations in this line can be negative for both victims and operatives as it strains response organizations and might, as pointed earlier exacerbate the scarcity of resources that some locations have.

In general terms, consequences that go beyond the operation, not linked to reputation, are less present in the imaginaries of the respondents. Their existence, however, is also acknowledged:

> If you are going to report someone it has to be because of serious malpractice. People from [name of another organization] cannot fear someone like [informants position]. It is very important that there is a feeling that we all work as a team, so it has to be very serious. [There can be consequences] if there is a serious malpractice or negligence, [but] this is an unknown problem for me. But it is clear that when there is a serious negligence that leads to serious injury, we have to report it. But I have never experienced this situation (informant 9)

> I came to an operation that had already gone for six hours where a person was missing. There was between 20 and 30 people looking for this person. I was asked to help to overlook if there might have been a mistake in the operative. [The problem was that] people had been sent far away. We used our guidelines [for search of missing people] that recommends to look in a close radius to the last point where the person was seen,

> and we found him very near […] the consequence was that [name of another organization] took our guideline more seriously. A self-critical report was written, there was a lot of good learning (Informant 10)

> If someone makes a fatal mistake we have to write a malpractice report, and then there is the law to deal with that, but otherwise the point is that we learn from it for the next operation so it does not happen again (Informant 1).

Through these quotes one can appreciate that informants are somehow reticent to admit the existence of consequences for first responders. This should not be understood as if the consequences of so-called malpractices are not real. As some informants point to, there is always a possibility, but it appears that the ultimate driving force for striving for optimal performance is the willingness to provide a valuable service for society.

This position can be sustained by two arguments. The first is that the idea of learning, growing and becoming better can be connected to the existing Norwegian system of emergency response, its machinery and tools, and the trust that the members of the organizations composing it have placed onto it. The second would be that this context has shaped the behavior of first respondents.

In what regards the first idea, many of the informants mention post-operation meetings, debriefs and evaluations were the main goal appears to be uncovering what went wrong, what could have been dealt with better, and solutions to apply in future operations in order to enhance the quality of the response.

> What it is normal after a big accident is that we evaluate, and we go over everything that was done in a positive way so we can learn from the mistakes. This is done together with other organizations […] it is important to evaluate to analyze if we have acted wrongly. I do not think that there will be consequences for the people in charge because they have done the best they could. That is, it. Maybe they will have to sit and learn, go to courses… this is normal. In my organization we have courses every week

> where we take up one topic which is related to evaluations. If we have done a bad job, we will have a course about it the week after (Informant 1)

> After the operation, if something has happened, we address it. We have these debriefs afterwards to talk about these issues. To understand and to explain, why things were stopped or why they were wrong (Informant 4)

> What happens is that these things are talked about in what we call a hot washup […] this happens in the aftermath, and we can see what has worked and what has not so we learn from it the next time (Informant 8)

The data from the interviews suggests in general terms that this fora function as enhancing and learning tools and that it is part of the emergency management system.

The second idea was that the context, this is the idea that all strive for optimal performance driven by the willingness in providing society with a valuable service, has shaped the behavior of first responders. Emergency response in Norway has from the very beginning been described almost as a *dugnad* and as a collective work involving professionals, social organizations, private organizations, and the lay people.

> We live and breathe for this, helping and contributing. A lot of the material we use is self-financed, we pay for the equipment, we pay for the training, we put a lot of money in it ourselves because we think it's good to contribute […] we pay taxes on all these materials that we have to buy, we pay taxes when we invest in order to do a job that saves the state money […] this is a big *dugnad* (Informant 12)

This view or culture might be so implanted that punitive consequences are not even considered as a reason or a driving force. A good exemplification of this cultural adoption is given by informant 6 when pointing that people that arrives new to his workplace enter a culture of trust, respect and collaboration. People working from previous times to the establishment of that culture had to gradually adopt it, learn to be a part of it, while the people arriving to the already established culture behaves

accordingly as they perceive that it is the natural way of interacting and not something "artificial" or imposed.

This reasoning could be extended to the whole emergency management system. First-responders receive their education and work in organizations that have been part of that *dugnad* perception for decades and thus their way of thinking and operating goes along those lines. The shadow of negative consequences, of reprimands and punishment disappears as the culture embraces learning, growing and becoming better even when mistakes are made to continue serving that system and that society in which they operate and live.

The interview data shows that participants in emergency response operations acknowledge the existence of risks. These risks include physical and psychological dangers for operatives as well as victims, dangers of affecting each other's tasks negatively, losing control over the situation, and consequences that go beyond the scope of the emergency operation such as the loss of trust, and wider economic consequences. I consider that the expected evidence has been found.

The remaining step is calculating the actualization of confidence using the formula.

$$.997 = \frac{.95}{.95 + \left(\frac{.05}{.95}\right) * .05}$$

The formula shows a result .997 after finding the evidence showing that we can increase the confidence in the hypothesis that emergency response operations present dangers and consequences, and that the operatives participating are aware of them in .047 points. Therefore, I argue that the first step of the mechanisms exists with practical certainty and thus we can continue testing $n_{1.2}$.

8.1.3 $n_{1.2}$ → Mediation

in the second step of the hypothesized mechanism of the effect of trust on collaboration, I presented the idea that trusting counterparts helps on weighting dangers and consequences. This is the explored in the next section.

When trust is present among participants in an emergency response operation and the involved organizations perceive the professionalism, experience, and capabilities of counterparts, they will be more likely to accept the risk of such an enterprise (San Martín-Rodríguez et al., 2005; Jalba et al., 2010; Mayer et al., 1995, qtd. in Kalkman and de Waard, 2017)

The description of trust as factor that reduces transaction costs, boosts inter-organizational information transfer, accelerates the work pace, and enhances result capabilities presented in chapter 7 (see also, Grimen, 2009; Mishra, 1996; Sako 2000) can also be linked to the mediation power that trust has over dangers and consequences related to collaborative efforts.

The hypothesis that trust mediates the perception of risk is well established in both the emergency management literature and the literature on the field of trust and collaboration. This hypothesis is supported not only in theoretical tenets, but also in empirical observations as it has been presented in chapter 4 and chapter 7.

The confidence level I have in the hypothesis (trust mediates the perception of risk) is high (Befani & Stedman-Bryce, 2017, p. 55) and therefore I ascribe a a prior [p (h)] of .85. The reason for not assigning a higher degree follows on the one hand the same line presented for the prior ascription of $n_{1.1}$. In addition, the topic regarding this part of the mechanism is more complex than that of $n_{1.1}$. Thus, a more conservative prior is ascribed. As p (h) is assigned a value of .85, the value for p (~h) is set to .1.

The expected evidence for $n_{1.2}$, is that first-responders acknowledge the professionalism, experience, and capabilities of counterparts as a positive factor to

handle the insecurities that can emerge in emergency response operations. Based on the theorization presented in chapter 7, the literature reviewed and the results from the questionnaire presented earlier in this thesis, I have a fairly high confidence in that it is possible to find evidence supporting the hypothesis. The fingerprints for this evidence would be references linking education, training, hands on experience, internal control mechanisms or *bona fide* to trust and coping with the dangers and consequences. Theoretical certainty [p (e|h)] is thus set to a value of .90. the reason to ascribing a lower value than what it was set for $n_{1.1}$ is founded in the assumption that although the questions are uncontroversial and do not point towards specific organizations some might be perceived as opening the floor for criticizing other organizations, which in turn could be perceived as airing the dysfunctionalities of the service each responder's organization is providing in conjunction with the others. Nevertheless, participants were informed of the ethical consideration I have earlier presented in the methodology chapter regarding the actions that would be taken to not harm any of the organizations involved in this project. I do not expect information being hidden or being adorned to give a better image of the emergency management system. The lower value of p (e|h), however, acknowledges this possibility.

As for theoretical uniqueness, p (e|~h), I follow the same reasoning outlined in $n_{1.1}$, together with the argument for caution declared when assigning p(h). Thus, I ascribe the value of .1,

8.1.4 Looking for evidence

Education is one of the recurrent themes in the interviews showing how trust mediates the perception of risk.

> In a way, we all have similar educations and knowledge of the procedures that must be followed (Informant 1)

> They receive an education [referring to other organizations] that is coordinated with the job we [referring to own organization] must do to a certain extent. We have a common goal (Informant 7)

> When someone from [name of an organization] comes and says can you do this, I find it quite easy. It is people with an education that knows how this type of operations works (informant 2)

These quotes emphasize the existence of a common education or knowledge. What it can be interpreted from here is that the education that all operatives undergo, regardless of their organization membership, helps in consolidating the trust relationships between counterparts as the expectations on others are backed by an acquired knowledge, that to a certain point, overlaps or is shared. Informant 2, acknowledges the existence of differences between organizations in what regards acquired specific expertise and specifies:

> One must understand that they might know better than I do. I can ask questions about why we should do that, but I have trust in that they know (Informant 2)

This idea is also put forward by informant 3:

> They can do things that I am not qualified for, we are dependent on each other. If they did a bad job it would not have worked. So, we aid each other (Informant 3)

The last two quotes from informant 2 and informant 3's statement highlight how trust acts on the perception of risk. Both informant 2 and 3 acknowledge that putting up barriers such a control becomes unnecessary as they repeat the premise that a counterpart might know better (or at least as good). Thus, increasing the readiness of the trustor to be susceptible to the actions of the trustee with the understanding that the counterpart will perform an assigned task that is important for the trustor, regardless of his/her ability to monitor and control the other.

Similarly, Informant 1 and informant 8 also take the capacities or abilities of the different organization to the forefront. In this case, however, it is not just linked to education, the hands-on experience that participants ascribe to other organizations:

> [I have trust in professional organizations because] they have received an education and because they deal with this every single day (informant 8)

> It is the experience [that creates trust], that in a way I know that they can do their job, that they know what they must do. It is the experience (Informant 9)

What is highlighted here is that trust is also linked to hands on experience in a manner that brings to the forefront the predictability of counterparts. This is the assurance that other participating organizations will behave and complete the task in accordance with the expectations that the respondents' organizations have place on them.

Common goals and the goodwill of operatives have already been mentioned under $n_{1.1}$. Nevertheless, the *dugnad* narrative presented then can also be highlighted at this point. Informant 6 mentions:

> We understand that everyone has the same goal. The goal is to support society, to help those out there. Ones knows that when one meets people from [organization name] they are there because they want to help people. Most of the members of [name of the organization] join them because they want to safeguard the lives of people. It is the same with the other organizations as well. No matter the background we have, we have a common goal, and that is to help the population out there (Informant 6)

The idea of unity among the different participating organizations is highlighted in this quote. When an organization answers the call and enters an emergency response operation it becomes part of something bigger. The unit composed of several organizations is not just offering a service to the victims, but to society. That sense of belonging, of knowing that all organizations work for the same higher purpose appears to reinforce inter-organizational trust.

As presented previously, in general terms, respondents of the survey declared a high level of trust in counterparts. In the same line interviewees also show a high level of trust in other organizations participating in this type of operation. The data shows that the name of the organization carries a reputation with it. They have a good education, they have expertise, they work with this daily, and that they have good internal control or quality guaranteeing mechanisms:

> I think that those that show up in an operation know what they must do, the same way we know what we have to do (Informant 3)

> One knows [that operatives] are not sent too soon to do tasks if they have not mastered them […] One knows that organizations do not accept sloppiness (informant 9)

> When operatives reach a good level, they are called out to operations It works this way for the other organizations as well […] You have to reach a level in order to participate (informant 12)

Based on these ideas (education, training, hands on experience and internal control mechanisms) participants of other organizations ascribe a set of expectations to the members of those organizations. They know/expect that the operatives that are present on site will be the best available resources of that organization. When there are no reasons to doubt that the counterparts will fail those expectation, participants will readjust the perception of risk accordingly. The following statement by informant 12 can be used to summarize the idea that trust mediates the perception of risk.

> When I need someone helping me in the operation, I might need someone that can use a GPS and give first aid in case we find the missing person […] if the other person tells me that they know both [the GPS and first aid], then I trust that they can do it […] I do not need to [control] him (Informant 12)

In other words, when there is trust, there is no need for protective barriers as the perception of dangers and consequences are minimized.

To sum up, in this section, I have presented and discussed the views of respondents regarding how they perceive trust and how it mediates the perception of risk. The data shows that respondents draw links between the professionalism, experience and capabilities to fulfilled expectations. First-responders refer to the education, training, hands on experience and internal control mechanisms of their counterparts as factors that allow them to relax their own measures to prevent/control/minimize the dangers and consequences that can emerge in an emergency response operation. Respondents appear to highlight similarities between their organization and a counterpart as a marker of professionalism, experience, and capabilities. Having found the expected evidence, the remaining step is calculating the actualization of confidence using the formula:

$$.980 = \frac{.85}{.85 + \left(\frac{.1}{.90}\right) * .15}$$

The formula shows a result .980 after finding the evidence showing that we can increase the confidence in the hypothesis that trust mediates the perception of risk in .13 points. Therefore, I argue that the second step of the mechanisms exists with practical certainty and thus we can continue on testing the third step ($n_{1.3}$).

The analysis shows that we can increase the confidence in that trust mediates the perception of the dangers inherent in an emergency response operation.

As mentioned in the previous chapter, trusting an organization does not mean trust in all plans. As some of the quotes presented earlier show, participants in emergency response operations might compartmentalize that trust. This meaning that they will adjust the expectations in relation to the capacities, abilities and expertise area of the counterparts. I will discuss this further when I present the first mechanisms derived from previous contact.

8.1.5 $n_{2.2}$ → Barriers

The data analysis presented in chapter 6 and the theory presented in chapter 7 suggests that a well-established trust base between organizations participating in an operation appears to have a positive effect on collaboration. Reinforcing this idea, Informant 7 states that:

> We are dependent on trusting those that work around us. We do not have a chance to do all the work ourselves. If someone does not complete a task or do their job as expected […] then one must spend so much extra time in controlling them or even taking on the job (informant 7)

In addition to the importance of trusting counterparts, what we can interpret from this quote is that when trust is not in place, or when the existing level of trust does not mediate the perception of risk, barriers are erected. This is the subject of the next section.

San Martín-Rodríguez et al., (2005) mention that when inter-organizational trust is not present in a collaborative effort, organizations will try to avoid engaging counterparts as a partner in the operation (p. 142). Carr & Jensen (2015), offer an example that follows similar lines when stating that many professional emergency manager operatives argue for the non-involvement of spontaneous volunteers and ad-hoc groups due to doubts around their utility and liability.

Other authors (see for example, Hermansson, 2016; Nolte & Boenigk, 2013; Waugh, 2000, qtd. in Kapucu, 2006b) have argued that organizations that do not have a high level of trust in other participants will approach them taking precautions, or they will enter the endeavor with an skeptical mind, due to the stakes, this is the dangers and consequences, at play.

Avoiding engaging other participants in an operation as partners might appear as the strongest barrier to protect an organizations reputation or to avoid other types of

possible, such as turf wars. This strategy might be feasible in large scale emergency response operation, however, in a context as the on described in chapter 3, this might prove impossible. Comfort (1994) points that it is possible that when trust is missing the leadership becomes involved with the danger of the discussion moving from a problem-solving context to a discussion resorting to legal remedies (p. 404).

The hypothesis that when the existing level of trust does not mediate the perception of risk, barriers are erected is supported by theory and empirical findings. Thus, the confidence I have in the is high (Befani & Stedman-Bryce, 2017, p. 55). Therefore, I ascribe a prior [p (h)] of .90. The value for p (~h) is set to .1

In what regards theoretical certainty [p (e|h)]. The evidence in this case would be that first-responders consider the use of barriers when the level of trust between organizations is not optimal to protect the operation, themselves, and others. The expected fingerprints for this evidence would be that informants acknowledge the use, or at least the consideration, of applying barriers for managing the level of risk emerging from having to collaborate with other organizations. These barriers could be trying to distance themselves from given organizations or operatives of other organizations, attempting to establish control mechanisms, or overlooking the work of counterparts.

Based on the theorization and the literature reviewed, the confidence I have in the possibility of finding the evidence supporting the hypothesis is high. As trust was linked to expectation, we can also look at barriers erected when those expectations are not met. This is, I will not consider just the barriers applied before the operation has started, but also barriers applied during the operation that respond to the perception of a counterpart not meeting the expectations placed on them.

Furthermore, as reasoned for $n_{1.2}$'s p (e|h), the possibility that the questions open for criticizing other organizations might cause cautious responses. At the same time, the anonymity guaranteed, not only to the participants, but also to the counterparts they

were talking about rises my confidence in that it is unlikely that informants hold back information. After these considerations, I assigned a value of .85 to p (e|h).

In what regards theoretical uniqueness, p (e|~h), I follow the same reasoning outlined in and $n_{1.2}$ to ascribe the value of .1

8.1.6 Looking for evidence

Informant 7's suggestion that control has to be established in order to see if things are being done correctly, or even taking control over the tasks that another organization is ascribed, can happen when trust is not present or trust is violated.

From the interview data one can see that most interviewees refer to control as the barrier that it is erected. Nevertheless, informants describe different degrees of control ranging from mild suggestions to expelling operatives from operations.

Informant 1 mentions that when he faces unmet expectation it is important to correct them as quickly as possible:

> It is important to correct the situation as quickly as possible […] one can instruct them in what they will have to do [or] give them the task that they can perform the best (informant 1)

> [if I see someone doing something wrong] I can clarify things in a friendly manner, that it is better to do it this other way (informant 9)

Correcting the situation, giving instructions clarifying things are the key words used by the informants. Terms that are in line with the growing and learning culture that discussed previously. Underneath, however, what informants 1 and 9 relay is a mild form of control that avoids the utilization of hierarchy and rank. The reason for using this "friendlier" manner is explained by informant 9:

> [other operatives] cannot fear someone like [informant's position]. It is very important that there is a feeling that we all work as a team (informant 9)

He expands on this idea by connecting mild control to creating a non-threatening atmosphere to avoiding additional risks and underperformance:

> There can be resourceful people around, but if they feel insecurities, the performance of the whole team will be affected because no one will dare to do anything. No one will dare to take the initiative […] everyone should feel safe. That way, performance will be at its best (informant 9)

Informant 9's reference shows that this "mild" approach has certain advantages over other approaches. In the above quote we see that informant 9 is aware that a certain control over other operatives is required, however, the informant tries to avoid that an atmosphere of fear emerges. A fear that he/she considers as paralyzing for the development of new ideas, way of working or solutions and thus, detrimental for the operation that is being carried as well as for future operations.

However, it is not a given that every operative is able to apply control. In some cases, when the operative member does not have the authority to establish control, other people are involved in the situation:

> You have to tell someone, we are organized in a way that when I participate in [type of operation] I have my leader around me and he has more… [authority]. A leader will always be present (Informant 2)

In this case we can see that informant 2 places a barrier, namely the involvement of a superior that has the authority to place a secondary barrier, a control mechanism similar to those related by informants 1 and 9.

In the case of informant 1 and informant 9, they both hold leader positions and have an established carrier as well as a combined experience of over 40 years in this type of operations.

Their positions also offer the leverage of deciding on harder approaches when the milder ones appear to go unnoticed or unobserved.

> Then I say that I take control. That now it is going to be this way, and that we can talk about that later on (informant 9)

Other informants mention similar approaches to control as well:

> We have to stop it when there can be consequences and explain why it needs to be stopped (Informant 4)

Informant 4 expands on this idea with reference to a specific situation he had experienced:

> I had to tell to wait because [another organization that was on route] had to do their work first […] sometimes one can present information before hand, but if it goes wrong one has to say stop, or start again… or take people out of the operation (informant 4)

Again, we see that the level of authority that each operative has in relation to others plays a role in the barriers they can apply. As the quote from informant 4 shows, the involvement of a superior opens for the possibility of not only taking charge of a task, but also applying direct restrictions on others. This situation, however, can be used to highlight the negative side of barriers. As the time and personnel used to establish barriers or correctives increases exponentially.

Some informants, however, talked about a different kind of barrier, choosing certain partners over others. Although the ability to choose does not manifest that often in this type of operations, certain situations, as the following quote from informant 10 shows, offer a wiggling room.

> It can happen that I have the possibility to choose [to work together with an operative from another organization]. I have had my favorites. Before I started in [name of current organization] I was in [name of another organization]. Sometimes it happened that an operative from another organization needed help from us, and that operative would ask specifically for me (informant 10)

> When I am out [in an operation] I say that I prefer to work together with someone from [name of two organizations]. When we are send to our task, I can say to [another operative of his/her choosing] can you assist me with [specific task] (informant 12)

The quotes show that this type of barrier (choosing specific partners to collaborate) can also happen in the context of small-scale emergency response operations. The reasons the informant had to choose certain people and the reasons why the referred operative from the other organization chose him/her are equal. This was that there was a higher level of trust between them than between them and other operatives from their respective organizations. This idea can be linked to a negative side of trust and the tendencies that excessive trust, or the lack of spread of trust can cause towards cartelization.

Erecting barriers poses challenges to the collaborative process. Informant 4 explains the consequences of such barriers when in the receiving end:

> It happens once in a while between us and [name of another organization]. I have felt many times that [name of organization] gets involved to much in our line of work in a way that they could have done our tasks and we could just have done assisting work […] I think that this affects [the collaboration because] it leads to disagreements (informant 4)

In this case, what we can infer is that the referred organization takes control or tries to take control over the informant's organization, that distrust exist cannot be deduced from the available information, but following the pattern uncovered by looking at the reasons that other informants had to erect barriers one can think that the referred organization at the very least felt that it was necessary to erect the barrier. The reaction expressed by the informant is that of annoyance and complain. He/she acknowledges that experiencing an overtake and the feelings that it generates can negatively affect the collaborative endeavor and maybe future collaboration as in the case presented by Kalkman and de Waard's (2017).

Control as a barrier then affects collaboration in that joint decision making and the relative symmetry of power that is presupposed between participating organizations is severed. In addition, informant 9's statement presented earlier regarding his/her preference of using a mild approach to avoid fear and paralysis shows that exchanging suggests that exercising authority prompts reclusive reactions in counterparts, which de facto makes the sharing ideas harder. As for the barrier of selecting specific partners, the effect on collaboration is a de facto lack of collaboration with counterparts that do not meet the required trust criteria.

Informant 8 points that erecting barriers is not always possible:

> [The operation] only lasted some hours so there was no time to fix that problem. But then we take it in a meeting afterwards (Informant 8)

The importance of post-operation meetings and the learning and growing ideal presented earlier is brought to the forefront again. As mentioned before, growing, evolving, and becoming better appear to be part of the imaginaries of emergency respondents and appear to function as a tool that can substitute barriers. Thus, it appears that the trust that first-responders have on the emergency management system might play a role as well in mediating the perception of the dangers and consequences in an emergency response operation.

As presented in the previous chapter, Nolte & Boenigk (2013) and Hermansson (2016) argue that often organizations enter collaborative efforts with a skeptical mind. The data of the interviews shows that this is also the case in the context of this study, especially when a high level of trust has not developed between counterparts before the time of the operation.

In these cases, participants talk about a step they undergo that could be interpreted as a barrier. This is evaluating the counterpart.

> I greet them properly, ask them what their names are. Then I also ask if they have experience […] they have to say something about their capabilities (informant 10)

> I ask them what they can do, in case I need to find another person (informant 12)

Other informants also relate that they conduct quick evaluations of counterparts when pre-stablished trust relationships are absent. What one can infer from these quotes is that evaluating counterparts can appear as a first barrier that works to helps making the decision regarding the necessity of further barriers. I will argue that the implications of this evaluations slow the collaborative process in the best-case scenario i.e., until the operatives conclude that no further barriers are necessary.

To sum up, I have presented and discussed the establishment of barriers as measure of protection towards the dangers and consequences that can emerge in an emergency response operation and how they affect collaboration. Respondents acknowledge the utilization of barriers. In the context of this study, control appears to be the most prominent one. The data shows that control can be exerted in different manner or degrees that range from suggestions/corrections to a complete overtake of the other organization. Furthermore, the data shows, that not all operatives have the same capabilities to exert control over others. In the cases were operatives that do not have the authority to set up barriers, first responders are dependent on their superiors to enact them. Furthermore, respondents acknowledge the effect that barriers have on collaboration.

Although trust between the researched organizations is high, respondents also relate a certain level of skepticism towards members of other organizations with whom they do not have well stablished trust relationships. In these cases, respondents often relate that they inquire about the capabilities, knowledge, and experience of their counterparts to evaluate if further barriers should be necessary.

Having found the expected evidence, the remaining step is calculating the actualization of confidence using the formula:

$$.980 = \frac{.90}{.90 + \left(\frac{.15}{.85}\right) * .1}$$

The formula shows a result .980 after finding the evidence showing that we can increase the confidence in the hypothesis that barriers are erected when trust in counterparts do not weight out the risks and that those barriers affect collaboration in .08 points. Therefore, I argue that the third step of the mechanisms exists with practical certainty.

The analysis shows that we can increase the confidence in that barriers are erected when adequate levels of trust are not in place between participants in emergency response operations.

8.1.7 Concluding remarks

In chapter 7, I laid out the hypothesized mechanisms for trust and presented the different parts together with the evidence that I expected to find if the mechanism were to exist or be activated.

In the previous three sections I have laid out the evidence found through the interviews of a selection of emergency response operatives.

The first part of the mechanism revolved around the perception of risk. The data presented in section 8.1.2, show that practitioners perceive different types of risk that range from physical dangers to reputation loss. The evidence suggests that we can raise the confidence in the existence of this first step of the mechanism.

The second part of the mechanism was trust's mediation on the perception of risks. The data laid out in section 8.1.4 shows that participants refer to the characteristics of other organizations, the knowledge they have, or the training and schooling that they have undergone in order to downplay the risks that have to be considered and to show why

the Norwegian emergency response system functions and why operations are most often successful. The evidence presented is in line with the theoretical tenets presented in the previous chapter and with the results of other research on the field. This allows us to acknowledge the existence of this part of the mechanism.

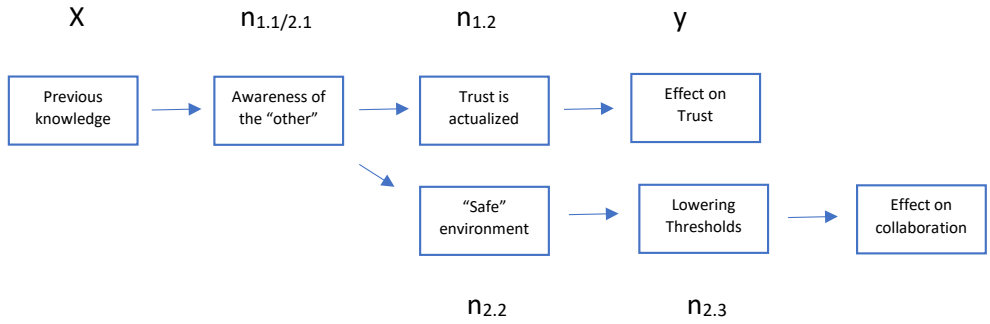
The third part of the mechanism relates to establishment of barriers when the existing level of trust on a counterpart does not suffice to mediate the perception of risks. From the data presented in section 8.1.5 we can see that barriers are not just erected when preexisting trust does not suffice, but also for the cases where expectations are not met and thus, the level of trust on a counterpart is updated.

Informants show that most often the barrier that is set is related to control. We see that this control can be exerted directly or indirectly depending on the level of authority of the operative involved in the situation or the organization. We can also see that on some occasions control is exerted over the situation, this is the operatives or organizations take actions to fix a situation or mitigate possible adverse outcomes, while in other occasions control is exerted over a counterpart. This control also varies in degree. Some respondents approach control in a more diplomatic fashions will others exert the power of hierarchy.

The evidence collected suggests as well that we can raise the confidence in the existence of this third step. Which would in turn be the final step in the transmission of causal force between trust and collaboration.

8.2 Unboxing the previous contact mechanisms

The hypothesized mechanisms for previous contact were presented as follows in the previous chapter:



y

The expectation is that previous contact with counterparts will influence trust and collaboration following the descriptions presented in section 7.3. In this section I analyze the interview data and look for evidence that can actualize the confidence of the existence of these mechanisms. The predicted evidence was, that emergency response personnel learn about the characteristics, capabilities, and mandates of the other organizations through interactions, that emergency response personnel will adjust their expectations on counterparts based on that knowledge, that emergency response personnel will perceive relations with members of other organizations as comfortable will be able to communicate, suggest, and give feedback directly to members of other organizations as a routine and will develop norms to rule these interactions, and that this will have an effect on collaboration.

8.2.1 $n_{1.1}$ → Awareness

Hermansson (2016) mentions that often organizations participating in an emergency response operation approach their counterparts with caution (see also, Nolte & Boenigk, 2013; Kapucu, 2006b).

The definition of trust adopted in this thesis i.e. the readiness of X to be susceptible to the actions of Y with the understanding that Y will perform an assigned task that is important for X, regardless of X's ability to monitor and control Y, shows that trust and risk (or the consideration of risk) go hand in hand. As shown in section 8.1.3, the ponderation of risk is often a reason to erect protective barriers.

The skepticism and subsequent barriers might not always be linked to reality, but to preconceptions or (mis)perceptions (see section 4.2.2). contact between organizations can be useful to develop awareness of the counterpart and a knowledge of what the "other" is able to do or is allowed to do for that matter.

The usefulness of contact and knowledge of the other, is a subject that has been investigated often in many fields of the social sciences and from many angles (see for example, Joule & Beauvois, 2008; Grossman, 1996). The field of emergency management is no exception (see chapter 4).

For the proposed mechanisms to work one must accept the existence of the first step, this is that emergency response personnel learn about each other and their organizations when contact among them exists. This premise has wide acceptance in scientific literature and in practice.

The idea that contact helps in gaining awareness of the counterpart is well supported. Thus, the confidence in the hypothesis (emergency response personnel learn about each other and their organizations through contact) is high (Befani & Stedman-Bryce, 2017, p. 55). Therefore, I ascribe a prior [p (h)] of .90.

As p (h) is assigned a value of .90, the value for p (~h) is set to .1. The next step is assigning a value to theoretical certainty p (e|h). The evidence that I look for is, as mentioned above, that emergency response personnel will learn about the characteristics, capabilities and mandates of the other organizations through interaction with counterparts. The fingerprints for this evidence would thus be that informants acknowledge the existence and results of the learning process. Due to the

absence of controversiality on the matter, the confidence I have in the possibility of finding the evidence supporting the hypothesis is fairly high. After consideration I assign the p (e|h) a value of .90.

In what regards theoretical uniqueness, p (e|~h), I have confidence in that the possibility that the evidence could be caused by an alternative hypothesis is low. To find an alternative hypothesis to a statement that illustrates how knowledge about the other stems from interactions might be challenging. Nevertheless, ruling out the possibility is not viable. As mentioned earlier It might happen that the researcher oversees certain hypotheses or that the informants have their own agendas.

Following this I set the p (e|~h) value at .1, as I have a strong confidence in that the evidence is not caused by an alternative hypothesis.

8.2.2 Looking for evidence

The first point to be made, before looking for evidence is that contact can be of various types. In the survey used in this thesis I inquired about meetings, previous emergency response operations, and joint training. The survey also opened for respondents to select other types of contact. While conducting the interviews other types of contact that helped participants acquiring knowledge about counterparts also surfaced i.e. courses and seminars, regular jobs (for those in voluntary organizations, or informal relations.

Informant 1 mentions that through his/her years of experience in the field he has met a lot of the people that often responds to emergency situations and that through that interaction he/she has been able to learn about the different expertise to be found in counterparts

> They are different and have different strengths […] if we are in an accident so it is F, G, and H that have good experience and expertise. If we talk about an avalanche it would

> be G, the same goes for transport and first-aid. F is good with search operations […] they are also very well equipped (Informant 1)

Informant 8 also does a similar distinction between organizations:

> I do not have more trust in one organization or the other, but if it is [specific situation] I would choose C, if it is [another specific situation] I would say B (Informant 8)

The informants' statements show the usefulness of repeated interaction, both informants have over 20 years of experience in their job, to gain knowledge about other actors that participate in this type of operations. What the others can do and what the other is good doing. Nevertheless, contact over shorter periods also helps in the development of awareness

Joint training is also mentioned as an important tool:

> [from joint training] we learn about each other [name of another organization] can teach us how to approach certain situations and vice versa. We learn how they think… and that they do not just think about [their tasks], that they also consider other aspects, and that we also must consider those aspects. We get to understand each other better (informant 1)

The quote does not just show the significance of joint training exercises for the development of awareness but shows an aspect of awareness that goes beyond the knowledge of the capabilities of the other organization. This might be related to the time aspect of exercises and the lower stress that generates on the participants. Joint training is not just devised to practice each organizations tasks, but to learn about how the different tasks can be integrated, there is room, and time, for consideration, conversations and on site evaluation and thus, it is a good arena for learning. The importance of joint training is also reinforced by the results of the survey where 73.1% of the participants acknowledge that more joint exercises would help enhancing collaboration in emergency response operations.

Informant 3 mentions what he/she got out of an organized seminar were members of other organizations also attended:

> We were in a seminar together and afterwards relations became much better […] when we came to an operation afterwards, we could communicate better, the whole situation became better. It was very useful. It is the good thing with knowing the other and talking to each other. Knowing that we strive for the same that we are similar. Knowing each other is very important (informant 3)

While informants 7 and 11 bring the usefulness of informal contact as well

> I have worked in [place A[113]] and [place B[114]] and in [place B] I had more contact with the others. I met them, in my spare time as well. That made collaboration easier as I knew who they were, and I knew how they worked (Informant 7)

> It happens that when I respond to an operation, I meet people that I know from my daily job (Informant 11).

The statement of informant 7 directly highlights the benefits of the informal type of contact and the possibilities it offers to enhance knowledge, not only on the organization but also at the personal level. This will be further explored under $n_{2.2}$. Informant 11's statement, although not that straight forward follows the same lines, however, he/she mentions that awareness does not always mean knowing about the capacities of the other but also knowing who should be avoided.

To sum up, I have presented the evidence that inter-organizational contact helps in developing awareness among respondents to emergency response operation. Respondents show that the contact can be of different types, real life emergencies joint exercises, seminars, and more informal types of contact. The data shows the participants have learned about their counterparts i.e. the abilities and capacities that the others have. Some types of contact, those that maybe have less time pressure and

[113] Northern Norwegian city
[114] Small municipality in Rural Norther Norway

stress, can facilitate awareness that goes dipper than organization X can fix that and organization Y can do that as they can be used as an arena to learn about the ways in which the others think, organize their work or the limitations that they are subjected to.

Having found the expected evidence, the remaining step is calculating the actualization of confidence using the formula:

$$.987 = \frac{.90}{.90 + \left(\frac{.1}{.90}\right) * .1}$$

The formula shows a result .987 after finding the evidence showing that we can increase the confidence in the hypothesis that emergency response personnel learn about each other and their organizations though contact in .087 points. Therefore, I argue that the first step of the mechanisms exists with practical certainty and thus we can continue on testing the second step.

8.2.3 $n_{1.2}$→ actualization of trust

This step of the mechanism hypothesizes that emergency response personnel will actualize their trust in others in light of the knowledge they have. In chapter 7, I mentioned that contact has been described as enabling the process of trust building (see Gellert et al., 1994; Nowell & Steelman, 2015).

The results of the survey and the statements of the interviewees show that there are high levels of inter-organizational trust, nevertheless this does not mean by any means that the trust building process is stale. Trust is not to be understood as state that can be codified by zeros and ones (see, Grimen, 2009), but as a multifaceted scale. This can be illustrated with one of the statements presented earlier:

> I do not have more trust in one organization or the other, but if it is [specific situation] I would choose C, if it is [another specific situation] I would say B (Informant 8)

Informant 8 states clearly that he trusts other emergency response organization, however, he/she acknowledges that when facing particular situations he/she places more trust in specific organizations due to the knowledge he/she has on the abilities and capacities of all of them. As mentioned in the previous section, this knowledge has been acquired through repeated interaction due to the experience that the informant has on the field.

The literature supporting the hypothesis that contact helps in the trust building process is wide (see also Siciliano & Wukich, 2017; Nolte & Boenigk, 2013; Vangen & Huxham, 2003; Fountain, 1998 for example) and empirical data also supports the idea (Martin et al., 2016; Kalkman & de Waard, 2017 for example). This part of the mechanism mentions trust actualization instead of trust building as the term actualization better acknowledges the possibility of the reduction of the trust that might be placed in an organization.

As Nooteboom (2003) argues, when an organization defaults from the expectations, trust does not automatically shift into distrust, neither will it be perceived necessarily as a breach of trust (p.28; Oomsels & Bouckært, 2014, p. 588). In the same manner that trust building can be considered a process, so is distrust building.

The idea that awareness of the counterpart helps actualizing trust is well supported. Thus, the confidence in the hypothesis (emergency response personnel will actualize their trust in others in light of the knowledge they have) is reasonably certain (Befani & Stedman-Bryce, 2017, p. 55). Therefore, I ascribe a prior [p (h)] of .90.

As p (h) is assigned a value of .90, the value for p (~h) is set to .1. As for theoretical certainty p (e|h). The evidence I look for is that Emergency response personnel will adjust their expectations on counterparts based on that knowledge. The fingerprints for this evidence would thus be that informants acknowledge the adjustment of trust placed in other due to knowledge acquired through interaction. Although this matter might be perceived as more controversial than previous ones, especially due to

experiences that might have created a negative actualization, the confidence I have in the possibility of finding the evidence supporting the hypothesis is fairly high due to the straightforwardness of the questions together with follow up questions posed to the respondents and the guarantee of anonymity. I thus assign the p (e|h) a value of .80.

In what regards theoretical uniqueness, p (e|~h), I have confidence in that the possibility that the evidence could be caused by an alternative hypothesis is low. An alternative hypothesis to a statement that shows how knowledge acquired after an interaction has been used to adjust the level of trust might be hard to find. Following this I set the p (e|~h) value at .2, as I have a strong confidence in that the evidence is not caused by an alternative hypothesis.

8.2.4 Looking for evidence

Informant 1 highlights the shift in the perceptions of one specific organization due the repeated interaction in emergency response operations:

> They [name of another organization] were called out very often to different types of situations and that increased the trust on the organization […] it could be in relation to [description of different situations]. We experienced this very often, and they were called very often […] there were not many other resources. The trust on [that voluntary organization] became quite big, among the civilian population as well (Informant 1)

Informant 11 shared a similar case as well:

> They have shown through many operations… some operations, that when they get the necessary resources, they do have the competence that we expect in place, that they know a lot [about the specific situation informant 11's organization is specialized on] and that makes collaborating with them much easier (informant 11)

Both informants' quotes show cases of positive actualization of trust. In informant 1's case it is related to the realization of the wide competence of one voluntary organization and their ability to assist professional organizations with the necessary

resources that were missing regardless of the event. In informant 1's words notwithstanding it was a blizzard, an avalanche, a car accident or assistance with logistics that organization did the job in a way that the others had not expected. In informant 11's case the superseding of the expectation of competence in conducting a specialized job that is not necessarily a main expertise on the counterpart was the reason for the positive actualization.

Informant 4 talks about a case were negative actualization occurred:

> I have experienced in an operation where [name of organization] were present. The one job that they had did not work out and then [another organization] fixed it […] I do not think it affected the trust [in the organization], but on their techniques and the personnel. I do not think it affects trust on the organization, but on the methods they use (informant 4)

Although the informant is reticent to admit that the trust he/she had on the other organization was damaged the reference he/she does to the methods points toward that conclusion since in this particular case the method under criticism is the specialty of that organization. What we can also appreciate on this quote is the displacement of guilt for unfulfilled expectations from the organizational level to the individual. The informant highlights this by stating the following:

> It happens [that trust on the counterpart is weakened]. But often it remains in the personal level and the field leader level. Actually [the blame] falls on whomever takes the decision (informant 4)

Informant 4 clearly states that trust in other organizations can be damages from experiences of interaction. I would also argue that damaged trust on the leadership or members of a local chapter of an organization should also be considered as negative actualization of the trust level in the counterpart. Local chapters are the representatives of the organization in the area and they will have to participate in future operations

together. Thus, in the case of informant 4, he/she will most likely actualize the level of trust and act accordingly when collaboration with that counterpart is required.

Informant 3 presented a story where the actualization of trust occurred both ways within a time span of months:

> I do not know how much I should say, I have been in a situation with [name of organization] where I though that we should [take an specific action]. They said that that was not necessary, that I had to accept what they had said we should do. I thought [that their decision] was cowardly (informant 3)

Here we see how the view informant one had on his/her counterpart was affected negatively as he/she says that bad decision was taken due to lack of courage and thus he/she could not trust that they were doing what the situation required.

Informant 3 later mentioned that he/she had been in a seminar with the members of the same organization

> I learned how they worked and which [legal] limitations they had, so I got a better perspective of them […] one learns and gets to know the other organization, their limitations and what they do things the way they do. One could ask them, and they explained that they acted that way because of their limitations (informant 3)

In this quote we see that the informant readjusts his/her image on the counterpart again from the insights he/she has gained by participating in the seminar and being able to get an explanation on why the other organization took the decision that caused the first negative actualization. He/she actualizes the level of confidence in the other in the light of knowing that their decision was not causes by incompetence (cowardness) but legal limitations. The expectations that are linked to trust were modified to fit the idiosyncrasies of the counterpart.

The effects of the actualization of trust become clear with the following quote:

> Of course, it has an effect. One saves those things in the back of the mind for the next situation, and [when I have to work with them again] I remember that there are certain things I have to be careful with. I adjust my expectations. I might need to double check what they are doing just in case (informant 9)

Informants 9's statement shows how an interaction with another organization produced a negative actualization of the trust. The statement links as well the actualization step with the mediation step analyzed in section 8.1 and one can appreciate how that mediation is not strong enough, due to the actualization of trust, to avoid the use of barriers (step 3 in the trust mechanism) in order to protect their organization, and those involved in the operation from some of the risks presented when analyzing the first step of the trust mechanism. The quote thus serves to link the first mechanism related to previous contact to the trust mechanism.

Summing up, I have presented and discussed the collected evidence regarding the idea that awareness among respondents to emergency response operation serves to actualize the levels of inter-organizational trust. The data shows that the actualization of trust can be positive or negative, and that it fluctuates following the knowledge that operatives acquire through contact. Useful knowledge is not solely linked to the perception of how an organization acts but also to deeper knowledge about the other, how they think, why they act or what are the constrains they face.

Having found the expected evidence, the remaining step is calculating the actualization of confidence using the formula:

$$.972 = \frac{.90}{.90 + \left(\frac{.2}{.80}\right) * .1}$$

The formula shows a result .972 after finding the evidence showing that we can increase the confidence in the hypothesis that knowledge about other organizations acquired

through interaction helps actualizing the levels of trust that will be placed in a counterpart in .072 points. Therefore, I argue that the second step of the mechanisms exists with practical certainty and thus we can continue on testing the second and last step of the mechanism that links previous contact to the mechanism analyzed in section 8.1 through $n_{1.1}$ and $n_{1.2}$.

8.2.5 $n_{2.2}$ → enhanced working environments

In the previous section I have shown how contact can help the trust building process by developing inter-organizational awareness. Knowledge of the other, however, does not only translate into the actualization of the level of trust, but also in the potential enhancement of working relations. By enhanced working environment, I want to convey the sense that inter-organizational collaboration, and its aspects, become a natural part of the organizational life as intra-organizational relations are. This is the idea that a member of organization A will work with a member of organization B the same way that he/she would do it with a colleague.

The literature suggests that the knowledge emerging from contact helps in creating an enhanced working environment. The confidence in the hypothesis is reasonably certain (Befani & Stedman-Bryce, 2017, p. 55). Therefore, I ascribe a prior [p (h)] of .85.

As p (h) is assigned a value of .80, the value for p (~h) is set to .2. The next step is assigning a value to theoretical certainty p (e|h). The evidence I look for in this step of the mechanisms is that Emergency response personnel will perceive that working with other organizations has become easier. The fingerprints for this evidence would be that informants acknowledge better working relationships after contact in the form of quicker communication, increased share of information, increased participation in decision making processes or perception of the lowering of hierarchical thresholds. Due to the absence of controversiality on the matter, the confidence I have in the possibility of finding the evidence supporting the hypothesis is fairly high. After consideration I assign the p (e|h) a value of .85.

Regarding theoretical uniqueness, p (e|~h), the confidence that the evidence could be caused by an alternative hypothesis is low. An alternative explanation to a statement that illustrates how knowledge about the other has enhanced information sharing cold be traced to trust, thus one has to be careful in interpreting the results Following this I set the p (e|~h) value at .15. by carefully examining the informants' statements I believe I can discern when contact is said to have caused the effects expected above. My confidence in that the evidence is not caused by an alternative hypothesis is high, however, the possibility of misinterpretation is higher than in other steps of the mechanism and thus I assign a higher value.

8.2.6 Looking for evidence

As mentioned earlier one of the key points of contact is that it helps creating norms that rule interactions. informant 6 gives an example of this:

> [regarding certain aspects] we are [each organization] like silos. Here are the people that are at the place where the event has occurred, but they have a connection upwards in the system. The next scale up, where they also meet […] some have operational authority, others […] might have less or almost none. […] the process [explanation of a particular process] can be very long. But when we know each other then [we bypass] the upper levels. We talk to each other because we feel secure. We go to [the counterpart] and talk to them directly (informant 6)

The informant shows how contact has helped in creating a sense of security that has developed in a set of norms that helps speeding up decision making. The existence of the norm, approaching the counterpart and talking directly, is further reinforced with the following:

> We have stablished informal communication lines, [and I was a bit disappointed] once when we were out in an accident site, and [a counterpart] had a problem with where we had parked (….]. So, the others send a message to their leader, their leader contacted ours, and he/she contacted us. That should had been taken at the place. On the moment […] we must talk to each other [...] and things can be fixed (informant 6)

One can infer from the quote that the norms that have been created through relationship have been adopted in the imaginaries of first respondents and have become expectations in a manner similar to that described by Putnam (1993). Informant 6 also mentions that sharing information has also become easier due to the security that has been developed through repeated contact.

Informant 5 mentions the benefits as well for information sharing but highlights that acquaintance, and the safety feeling that acquaintance provides, has lowered the thresholds for engaging counterparts to ask for assistance in various matters. In his/her words over the past two years he/she has witnessed an evolution in the relations between two organizations that have been working closely together in his/her locality. He/she mentions that at the beginning if organization X would need something from organization Y, they would first go up the chain of command in their own organization so as to their leader would contact the leader of the counterpart and that leader would contact the relevant person in the organization. At the moment of the interview the informant argued that that system had been surpassed as there was no necessity to involve superior to act as boundary spanners. The knowledge and confidence developed among operatives in both organizations had made possible that if a member of organization X needed something, that operative would take direct contact with a relevant other in organization Y.

What we can interpret from informant 6's story is that repeated contact, that in this particular case was formal and informal, had helped creating a safe environment and an enhanced working space that speeded up the process of collaboration by the means of bypassing boundary spanners, key personnel that holds relation with both organizations, due to the sense of safety that had been developed.

following informant 5's story, contact has made boundary spanners unnecessary, however, this is not always the case. Informant 11, argues that contact creates boundary spanners:

> Often happens that we have to plan an operation together with [name of organization]. Then one has to be a bit strategic, choose someone from our organization that has a relation, or a better relation, to them. That helps. If I know the leader of the other organization from before [examples of meeting arenas] then it is unproblematic, but if you do not know them… we also se that they do the same […] even though I am the leader, they do not approach me, they go directly to the person they want. When we arrive to the place the first one becomes the leader [until a higher ranking operative arrives] but sometimes I change myself with [name of the operative that has a good relation with the counterpart]. I have a feeling that that is the most natural (informant 11)

What we see here is a contrast with what informant 5 mentioned. In informant 5's experience all operatives had had contact with the operatives of the counterpart, in informants 11's story however, only one of the operatives has had contact. Informant 11 perceives that the relations between that operative and the counterpart makes him/her to a boundary spanner. The counterpart contacts him/her bypassing the leader of the organization and his/her organization knowingly sets that operative in contact with the counterpart so power struggles might be more balanced. Informant 11 perceives that the counterpart is more receptive to suggestions and ideas of that operative and thus the operative is set in a position where he can convey his/her leader's ideas to the counterpart more effectively. Previously I argued that getting rid of the necessity of boundary spanners was positive for the collaboration as it sped the process of information sharing and decision making. In this case however interaction is slowed. I will argue, however, that in the cases were operatives from different organizations do not know each other, and thus trust might not be at the highest, the existence of a boundary spanner is beneficial for the collaboration as it flattens hierarchies.

The effect of flattening hierarchies is also referred by informant 5 in a different manner. He/she mentions that in his/her local area some activities have been stablished for operatives of different organizations to meet and get acquainted to each other and

he/she relates that relations between them have changed drastically. They realized that at first certain operatives were uncomfortable next to others. The informant argues that this was related to the power differences between organizations and how members of some organizations believed that they should behave according to their role. Informant 5 relates that thanks to an extended period of contact this ideas were discarded and operatives from the different organizations started perceiving that they were equally valuable. “different but equally valuable anyways” (informant 5). The informant continues saying that those organized activities created a pleasurable atmosphere that developed into joint activities in leisure time and argues that, at the time of the interview, regardless of the membership of an operative the threshold to ask for things to another operative had been lowered, due to the perception that they were equals in a common endeavor. This can also be related to informants 6’s quote presented earlier.

Summing up, I have presented the evidence that inter-organizational contact helps in developing an enhanced working environment that affects collaboration positively. Respondents show that an environment where operatives awareness and acquaintance of counterparts allows for speedier decision making processes, eases the transfer of information and interpersonal communication and helps in flattening perceived hierarchies. Data from the interviews shows that norms are developed through contact in other to rule the relations. These norms are not codified, but expected to be followed.

Having found the expected evidence, the remaining step is calculating the actualization of confidence using the formula:

$$.957 = \frac{.80}{.80 + \left(\frac{.15}{.85}\right) * .2}$$

The formula shows a result .957 after finding the evidence showing that we can increase the confidence in the hypothesis that knowledge of the other has the potential for creating enhanced working relations that contribute positively to collaboration in .157

points. Therefore, I argue that the step of the mechanisms exists with practical certainty.

8.2.4 Concluding remarks

In chapter 7, I hypothesized two pathways for the previous contact mechanism and presented the different parts and the evidence expected to be found if the mechanism were to exist or be activated. In section 8.2, I have presented and interpreted the evidence emanating from the interviews.

The first part of the mechanism, gaining awareness of the other through contact ($n_{1.1}$) is a common step for both pathways. The data shows, maybe unsurprisingly, that inter-organizational contact helps building inter-organizational awareness. Informants mention that there are different types of contact, ranging from participation in real life operations to spare time interaction, that can activate the process of acquiring knowledge about potential counterparts. The evidence presented shows that knowledge of the other can relate to learning about the capacities and abilities of the other, but that in certain situations, i.e. when there is time and little situational stress can lead to the acquisition of a deeper knowledge such as legal limitations, ways of thinking or the organizational culture of a counterpart.

The second part of the mechanism, $n_{1.2}$, applies solely to the pathway that connects contact to the trust mechanism presented in section 8.1. The hypothesis attached to this step was that awareness of the other causes an actualization process of the trust perception, that will affect the trust mechanisms and thus will have an indirect effect on collaboration. The data laid out in section 8.2.3 suggests that actualization of trust is a phenomenon that occurs in a routine basis. This actualization can be positive or negative. The quotes from the informants suggest that actualization is an iterative process and that subsequent adjustments occur. An operative can adjust the perception of trust negatively regarding another organization after an exercise of joint training and readjust it positively in the common debrief session if he/she find a relatable

explanation for the cause of the first negative adjustment. The data also shows that, an instance of negative trust actualization can cause the establishment of serious barriers in future emergency response operations.

The third part of the mechanism, $n_{2.2}$, refers to the ability to create an enhanced working environment due to the awareness and acquaintance that members of different organizations have on each other. This is the step linking contact directly with collaboration. The data shows that getting to know a counterpart helps in developing norms that rule relations, and this in turn can help in speeding up decision making processes and allowed for information to flow across organization in an easier way. The acceleration of the working environment is in many cases related to the possibility that knowledge open to bypass the formal steps that would have to be followed when acquaintance is not in place. On some occasion knowledge about others, when concentrated in an individual, can help in the creation of boundary spanner roles, that can in turn make inter-organizational relations smoother and flatten out perceived hierarchies. Informants also relate that contact produces a demystification of roles, which can also help in the flattening of hierarchies. This flattening of perceived hierarchies lowers the thresholds for engaging counterparts.

The evidence collected suggests that we can raise the confidence in the existence of both pathways and that there is, in fact, a transmission of causal forces in both an indirect and direct way between contact and collaboration.

PART 5

9 Discussion

The driving force behind this project has been identifying the challenges or factors that have the potential to influence collaboration and to investigate how the causal force is transmitted.

Through a systematic analysis of the literature in the field of emergency management., I identified a series of factors with the potential to affect collaboration. These factors were collaborative culture, adaptability, homophily, trust, previous contact, previous conflict, complexity of the emergency, communication, and shared mental models.

The results of the multivariate regression analysis highlight the potential of trust and previous contact in determining collaboration. Following these results, I hypothesized two causal mechanisms that connect trust and previous contact to collaboration. The mechanism regarding previous contact was hypothesized as having two pathways. The first one linked previous contact to the trust mechanism, thus affecting collaboration indirectly while the second one presented a direct connection.

Both the analysis of the quantitative and the qualitative data help in fulfilling the aim of the project stated above.

In addition, this project has offered two further contribution that I deem important. The first contribution revolves around the idea of the concept of collaboration and the dangers of conceptual stretching. In this thesis I have proposed a definition for collaboration[115], that joins ideas that experts on the field have illustrated separately to capture the complexity of the phenomenon. I argue that this definition is simple and easily understandable, yet it does not oversimplify the nature of the phenomenon an avoids conceptual stretching.

[115] the acts of sharing ideas for action, decision-making, and acting that two or more organizations conduct jointly in a relative symmetry of power to respond to a problem.

The second contribution relates to the idea that large scale emergencies and small-scale emergencies are different typologies of the same phenomenon. The data gathered in the process of conducting the project reinforces this idea. I argue that this has special interest for the practitioner field.

In this chapter I am going to discuss the points presented above. First, I will discuss the value of the learnings extracted from the analysis of the trust mechanisms and the dangers that excessive trust can suppose to the emergency management system, and the usefulness of the learnings extracted from the analysis of the previous contact mechanism as well as some caveats that they can present. Subsequently, I will discuss the dangers of incurring in conceptual stretching when using concepts loosely defined and how the definition proposed in this thesis can contribute to avoiding it. Lastly, I will argue that big-scale and small-scale emergencies can be understood as two typologies of the same phenomenon and that it is possible to transfer lessons learned from one type to the other.

9.1 Reflections around trust and previous contact

As shown in chapter 4, there is no lack of literature that argues for the idea that trust and previous contact have an effect on collaboration in the context of emergency response operations (Kapucu, 2012; Nolte & Boenigk, 2013; San Martín-Rodríguez et al., 2005; Jalba et al., 2010; Hu et al., 2014; Kapucu, 2006b; Kapucu, 2008; Kapucu et al., 2009; Kapucu & Demiroz, 2011; Kapucu & Garayev, 2011; Beck & Plowman, 2014; Kapucu, 2006a; Moynihan, 2008; Turoff et al., 2008; Waugh & Streib, 2006; Nolte & Boenigk, 2013; Kapucu, 2006b; Gellert et al., 1994; Nowell & Steelman, 2015). Thus, the fact that trust and previous contact show a similar result in this research does not come as a surprise.

The contribution of this thesis to the research field, however, is not just to provide a reinforcement to that idea as the outcome of the project has to be understood in conjunction to the control that it has been exerted by other analyzed factors that also

appear to have an effect on the published literature. Trust and previous contact are not just factors that affect collaboration but, at least in the context under study, they are the factors that affect collaboration strongest.

The fact that the project starts casting a wide net and considering multiple factors instead of focusing on one, contributes to the field of emergency management studies as it highlights the salience of these two factors. For the practitioner field these results could be taken as a guideline to increase the successfulness of collaborative endeavors. Increase trust and put operatives in contact with each other and they will work better.

This thesis offers in addition an explanation of the causal pathways between these two factors and collaboration. Putting together the works of different scholars one can grasp the idea that trust's effect on collaboration occurs through the mediation power it has over the perception of risk and the ability it gives to consider the necessity of applying protective barriers that can affect collaboration negatively. And that contact between operatives of different organization can help, in what the literature calls the trust building process, and I have termed trust actualization, and the direct effect that contact can have on collaboration through the generation of an enhanced working environment.

In this project I have tested these theorizations of the mechanisms showing that they can be found in the context of small-scale emergency response operations. This implies that we go beyond statistical results and open the black box of causality to understand the dynamics of the phenomenon under investigation. The results presented describing the causal process offer an insight into the subject that offers the possibility of further discussion and directions for research.

To my knowledge there is no other research in the field that has looked at the causal pathways of trust, previous contact, and collaboration. I thus believe that it is a contribution to the field for two reasons. First it offers a new insight that was not present before. And second, it shows the usefulness of process-tracing, a method that

has gained momentum in other fields, but has been absent in the emergency management studies.

In this thesis, and in most of the literature on the field of emergency management studies, trust is presented as a positive factor for enhanced collaboration. However, some scholars have disputed that this might not always the case. Kern (2000) for example, explains that trust can occasionally be connected with non-optimal performance, since an excess of trust among organizations might derive into a state of cartelization where the trust in the familiar can evolve into distrust of the unfamiliar (pp. 203-204). This situation inhibits organizations from looking for and creating new ties, and thus, missing potential partners, new ideas, and progress (Lane, 2000, p. 19; Kern, 2000, p. 210).

As shown in chapter 8, first responders do select their partners based on the previous experiences and the trust levels they have between them.

Furthermore, one could point that cartelization and the setting of impermeable boundaries between who is to be trusted and "the others", such as exemplified with the Montegrano case (see chapter 7), might force organizations to disregard shortcomings or deficiencies from trusted partners (see section 8.3).

I have also shown that previous contact can speed up collaboration because people that know each other can act as boundary spanners. Some authors, however, have warned about this as they argue that often trust will not be transferred from the boundary spanner to the counterpart and thus when the individuals bridging organizations are not present collaboration might suffer.

All in all, I will argue that developing trust between first responders and facilitating contact between them is positive and beneficial for collaboration.

Although, there is no shortage of literature that supports the idea that trust is important, I will argue that developing contact should not be forgotten. Often times it

might be difficult to justify costs that promoting contact could cause. Organizing meetings, seminars or joint exercises might be a way of circumventing the problem of arguing for the promotion of contact as learning or organizing might be better accepted as a reason for justifying expenses.

Nevertheless, it should be remembered that informal settings e.g., inviting members of another organization for coffee and cake, are also very appropriate to develop relations and should not be lightly dismissed.

9.2 Some words on collaboration

Through the literature review I presented in chapter 4, I showed that much of the literature on the field lacks a definition on collaboration or that makes use of abstract or loosely worded definitions. In the first section of this chapter, I contend that collaboration is suffering from conceptual stretching and argue that this is problematic for both the academic and practitioner fields. The definitions regarding collaboration, coordination and cooperation presented in chapter 4, contribute to both fields by proposing a simple, yet not oversimplified conceptualization of the phenomena that it is easy to operationalize and that helps avoiding conceptual stretching.

In general terms, collaboration has been understood as two or more organizations working together to handle a situation. Nevertheless, it has often been argued that participating in the same operation automatically qualifies it as collaboration. That certain characteristics or requirements have to be met for inter-organizational work to be classified as collaboration. These requirements vary in the degree of inter-organizational embeddedness that they presuppose. Sharing information and resources, creating shared rules and norms, leveraging differences and concerns across organizations, jointly assessing and discussing a situation to draw lines of action, negotiating authority to reach a relative symmetry of power, or joint decision-making are examples of different requirements cited in the literature.

The lack of an unanimously accepted understanding of collaboration has caused researchers to adopt different conceptualizations, that set the focus in different aspects of the phenomenon. These differences, however, should not be an unwanted problem. Discussions, debates, rebuttals, and the like are the way onwards and show that the conceptualization/reconceptualization engagement is active in the field of emergency management studies.

Yet, different conceptualizations bring along different working definitions and ways of measurement. A quick search for scientific articles on the field will show that while a researcher pays special attention to the embedment of organizations by investigating power relations among participating actors, or the process on joint decision-making, another might investigate collaboration through network analysis, where the links between nodes account for instances of communication which equates *de facto* communicating and collaborating. Furthermore, other articles, the measurement of collaboration will not be explored through communication instances, but it will reflect other types of connections such as exchanging resources, being situated in the same command and control post or taking the same helicopter to get an overview of the situation in the place where the operation is being conducted.

Encountering different, and often contradictory, understanding of collaboration might cause confusion on the reader and might ultimately prompt doubts over the existence of a body of knowledge on the topic in some. Still, when the author has been clear about his/her understanding of the phenomenon, the reader will be able to extract bits of information that are useful for further research in order to continue adding to the existing knowledge.

Most worrisome, is the abundance of material that presents no specific definition of collaboration and utilizes terms such as coordination or cooperation interchangeably where not always becomes clear if they are meant to be synonyms to collaboration to help alleviating the flow of the text or to be understood as inherently different phenomena.

At this juncture, the reader will have to ask him/herself: what does the author mean by collaboration? There are three manners of tackling the question: disregarding it, adopting a diffuse understanding or attempting to grasp the authors understanding.

The first option would not solve anything, as ignoring a problem does not make it disappear and would classify the reader as what Sartori (1970) termed the unconscious thinker. In his article, Sartori (1970) argues that the traditional political scientists could leverage that unconsciousness in arguing that previous scholars had already done the thinking (p. 1034). Concepts, such as democracy, had been used for a long time and abundant research had been conducted on the topic. Yet, Sartori (1970) argues that as the topic under investigation widens, both in depth and extension, conceptual tools have to be redesigned and reconsidered (p. 1034). This is, without a "clear" conceptualization, regardless of it being unanimously accepted, misunderstandings can occur. Results might be misinterpreted and comparison that might be problematic could be made.

The second option would be deciding to let a vague understanding guide the reading of the literature and the research at hand. The problem with say conceptualizing collaboration in a general fashion such as *two or more organizations working together in other to achieve a common goal* is that it lacks connotative precision. As Sartori (1970) argues, research needs of universal concepts, but these universals become void if what they create is indefiniteness. Through the literature review I perceived that the concept of collaboration is being stretched to the point that communication, presence in the same place, sharing of resources, coordination, cooperation or joint decision-making become collaboration. This makes comparisons, understood as research control, hypothesis (re)testing and knowledge building tools, riskier.

The third option would be the advisable one if one really wants to understand what is being said in the state-of-the-art literature. This pathway, however, is not a straightforward one. As mentioned previously, not only the understandings and definitions appear contradictory on some occasions while in others the differences

are minimal, but often the reader will have to deal with their absence. The reader will have to interpret from the results of the study what the author's understanding of the phenomenon is. This action, necessary on the readers' side, however, will still have the inherent risk of misunderstanding or misinterpreting. In addition, on many occasions the reader will have to consider not only the meaning of collaboration, but also those of coordination and cooperation. A process that becomes laborious and time consuming.

Conceptual stretching and time spent are problems that will affect research on the field. But often found lack of definitions, or the vagueness of some of these, can also be problematic in another sense. In a field that strives for its research to help enhancing the effectiveness of emergency management operatives and thus, to helps victims, obliging the reader to use time to conduct a sense-making process is forgetting the practitioner camp.

In an attempt to offer what I perceived as missing from much of the published material, namely an explicit presentation of what is under scrutiny, I developed a definition of collaboration that encompass three distinct tendencies that emerge from the literature in the field. The first is that collaboration is a shared effort to face a problem that a single organization cannot manage on its own. The second, a certain level of power symmetry had to be found across organizations[116]. And, the third, a certain level of integration between organizations is presupposed. That is, organizations need to share ideas, discuss measures, plan jointly, and make common decisions. The definition of collaboration I propose is *the act of planning, decision-making, and acting that two or more organizations conduct jointly in a relative symmetry of power in order to respond to a problem*.

The above definition does not solve the debate on the idiosyncrasies of collaboration. Nor how one should approach its study. Yet, I will argue, that it contributes to the discussion of conceptualization/reconceptualization. A simple and easily

[116] This does not necessarily imply that there is not some kind of command structure, but it implies that all participant organizations have, if they want to, the chance to express their ideas and opinions among equals, and that their voices count in the process of defining lines of action.

understandable conceptualization that does not oversimplify the nature of the phenomenon. A definition that can be placed at the middle of the abstraction ladder (Sartori, 1970) that allows for a certain extension, but still offers a level of intension.

Furthermore, it explicitly shows possible ways to explore the phenomenon and that allows to draw lines of distinction with other frequently used terms, i.e. coordination and cooperation (see chapter 4), and thus avoids conceptual stretching.

I suggest that a simple way of understanding these three terms is as part of the same continuum. In such a continuum, cooperation would be located at the end that reflects the lowest level of inter-organizational integration, whereas collaboration would be located at the opposite end with the highest level of integration, while coordination would be located somewhere near collaboration. I also suggest here that collaboration requires a certain level of coordination because collaboration as understood here implies that organizations share ideas, plan jointly, make decisions together, and act as a single entity, which requires that the operational aspect that makes this possible is in place. As collaboration reflects a higher level of integration than coordination, one could find coordination without finding collaboration. An example of this would be an emergency response operation that is organized in a hierarchical management style. In this case, all participating organizations are well connected with each other, duplication of tasks does not occur, this is two organizations do not carry out the same actions, information is disseminated and the actions of one organization do not affect the work carried out by others. However, there is no common decision-making and planning or power symmetry, since one of the organizations takes the leading role. I also suggest that cooperation could be understood as a primary step of the other two. However, one of the characteristics of cooperation might be lost along the continuum: its voluntary nature.

In this thesis, I operationalized the definition through three questions that revolved around the characteristics of collaboration. Testing showed that the items measured the same latent construct. I will suggest, however, that more testing should be

conducted to develop an instrument. This testing should occur in other settings to guarantee transferability. In addition, it might be necessary to develop more questions that capture nuances within the characteristics of collaboration previously identified.

9.3 Large-scale, small scale: managing emergencies

Much of the literature on the topic of emergency management has been conducted in events within a large-scale context. In chapter 4, I have argued in philosophical/theoretical terms that large-scale and small-scale emergencies are just different typologies of the same phenomenon. In section two of this chapter, I contend that large and small are contextual classifications and argue that the data retrieved during the research process shows that the complexity and uncertainty that can be found in large scale emergencies can also be found in minor events within specific contexts. The final argument of this section is that the knowledge extracted from on typology can be useful for the other as well. I pose that, this can be valuable for the practitioner community, especially for those that work with small-scale emergencies.

Often, small-scale emergency response operations are presented as quintessentially different by arguing that they are routine operations or that they lack the complexity or uncertainty present in large-scale events.

Based in the results of the analysis of the quantitative data I will extend the argument presented in chapter 4, i.e., small- and large-scale emergencies are different typologies of the same phenomenon. Knowledge and lessons learned from one type of emergency can be applicable in other types. This can be specially interesting for practitioners that respond to small-scale emergencies as the scientific literature available about this type of events is scarcer.

The first point I will argue for is the idea that small-scale emergencies, just because of their size, do not necessarily lack the complexity and uncertainty that distinguishes an emergency from a routine operation.

One could get lost in the discussion of what can be classified as large- or small-scale. The number of victims, the organizations that have to participate in order to address the problem, the correlation of the two, the economic damages…? If one is to choose one of these measurements, then what is the limit to categorize as small or large. If one takes number of victims as a measurement, would one classify the Boston Marathon bombing as a large-scale emergency. What when it is put in perspective with Hurricane Katrina? And what happens if we look at the 2004 tsunami in Indonesia. I will argue that the key is not in the adjective, but the noun. Namely, emergency.

As presented in chapter 4, there are different ways of defining emergencies, but can be characterized as urgent, dynamic, and complex situations where the availability and reliability of information is required but is not always adequate (Weick and Sutcliffe, 2011; Boin, 2005) and where different organizations have to work together in order to be able to handle such situations in the best possible way (Nowell & Steelman, 2015; Nolte et al., 2012; Hermansson, 2016; Kalkman & de Waard, 2017; Tang et al., 2017; Brooks et al., 2013; Sydnes & Sydnes, 2011; Abbasi & Kapucu, 2012; Curtis, 2015).

There is no doubt that large scale emergencies such as those mentioned above feel up the criteria to be classified as emergencies, however, as mentioned in Chapter 1, I will argue that smaller events within specific context, such as the one where this research was conducted, will also fit the definition of emergency.

The results presented in chapter 5, point that the dynamism of the event, stress, time pressure, resource and information scarcity, or the lack of a shared mental model between the participating organizations among others are setbacks that can be encountered when responding to small-scale emergencies.

Furthermore, and strengthening the idea that scale is contextual respondents to the survey acknowledge the difficulties that first-responder organizations face when encountering events with less than 20 people involved (see chapter 5). One of the

interviews also stressed this idea when comparing emergency response in the districts (rural Norway) and the cities:

> […] it boils up to how many resources are available. It is quite scarce [here]. What can be defined here as a catastrophe I will not be defined as such in the city […] 3 or 4 people that are injured is the maximum we can deal with locally and [this is] when the 4 are not seriously injured. If it is bigger then [we need other organizations to be able to handle the situation] (informant 1)

All in all, what we can see from the results is that small-scale events can be complex, that they might require the participation of multiple organizations and resources must be mobilized from other localities. That respondents might face difficulties from the dynamisms of the emergency, that resources and information might not be available and that they will face stressful situations. In other words, the characteristics that define an emergency are not necessarily linked solely to its size, but also to the context in which it takes place.

Earlier I mention that it has been argued that small-scale emergency response operations are presented as routine operations. In light of what I have presented, I will argue that such statement disregards the significance of context and oversimplifies the phenomenon

Through the literature review I identified nine factors that had the potential to affect collaboration in the context of emergency management, among them there was the specific category termed complexity of the emergency. The literature suggests that factors such as stress, lack of information, available personnel, or shifting condition among other have the potential to affect collaboration in the context of large-scale emergencies. As I have mentioned above the data shows that research participants ascribe similar idiosyncrasies to small-scale emergencies as the one being described in research conducted in a large-scale emergency context. As research in this context suggests that complexity affects collaboration it would be expected as well to have an effect on the context under investigation in this thesis. In chapter 6 I have mentioned

that the data is inconclusive and does not allow to actualize the confidence in the idea that complexity of the emergency affects collaboration.

Nevertheless, the results of the analysis of the survey data show that there is a significant correlation between the composite variable availability of resources and collaboration.. This suggests that although strain and dynamism do not appear to affect collaboration within the context of this study, certain aspects that define the nature of emergencies do have a potential effect in a similar manner to the one pointed in research conducted in large-scale emergency response operations.

Once I have argued that small-scale and large-scale emergencies are different typologies of the same phenomenon, I will argue that the lessons learned from one type can be applied to the other. This is that by comparing studies set in these typologies we are not falling in futile comparison due to conceptual stretching.

In chapter 6 I mentioned that the results of the analysis support assumptions 1, 2, 3, 4, 5, 6, 8, and 9. As these assumptions are derived from research that focuses widely on large-scale emergencies, the results appear to reinforce the idea that dynamics within the two different typologies are similar and that lessons extracted from one can be applied in the other. Differences in results are to be expected as contextual traveling does not occur only in a scale plane but also in a geographical one.

I will argue that what has been presented here contributes to the academic field as well as the practitioner field. On the one side it reinforces the camp that argues that both types of events are emergencies and that their study can be approached in similar manners and acts as an argument against ideas that cast doubt over the usefulness of conducting research on operation of this scale. To the practitioner field it offers an increased security in that lessons learned from large-scale emergencies can be applicable to smaller contexts.

10 Concluding remarks

Emergencies are characterized as dynamic and complex situations where the availability and reliability of information is not always optimal, and where different organizations have to work together to handle such a situation.

Traditionally, emergency response has been organized following a hierarchical scheme. In recent times, however, a non-hierarchical collaborative model has gained momentum among practitioners and scholars alike. This type of management is often presented in the literature as the solution to overcome the challenges and shortcomings of the hierarchical model. Nevertheless, non-hierarchical collaboration should not be taken as an ideal solution, as it also presents numerous challenges on different fronts.

The aim of this thesis has been identifying the factors that have the potential to influence collaboration and to investigate how causal force is transmitted. Therefore, I proposed the following as the research question guiding the thesis:

What are the factors that show most salience in influencing collaboration among first responders in the context of small-scale emergency response operations and how is causal power transmitted between them?

Through a systematic analysis of the literature in the field of emergency management, I identified a series of factors that were classified as before-event factors, factors inherent to the event, and factors emerging while the operation is ongoing. Namely, collaborative culture, adaptability, homophily, trust, previous contact, previous conflict, complexity of the emergency, communication, and shared mental models. All nine factors appear to be theoretically sound, and many of them have been confirmed to different degrees through empirical analysis.

When analyzing all factors together and controlling for their effect, the results highlight the potential of trust and previous contact in influencing collaboration.

Taking the results of the quantitative analysis as a guide, I hypothesized two causal mechanisms that connect trust and previous contact to collaboration. The mechanism regarding previous contact was hypothesized as having two pathways. The first one linked previous contact to the trust mechanism, thus affecting collaboration indirectly the second one presented a direct connection.

The trust mechanism hypothesized that organizations are aware of the risks and consequences present in an emergency respond operation and use the perception of trust in counterparts as a mediating tool. When the trust level is high organizations will take the risk of trusting the counterpart, when the level is not high enough to mediate the perception of risk, they will stablish protective barriers. I hypothesized that these barriers could affect collaboration negatively and thus that trust has to be seen as having a positive effect on collaboration in the context under study. The analysis of the data suggest that we can confidently acknowledge the existence of the mechanism.

In what regards the previous contact mechanism I hypothesized that contact helps in creating awareness and acquaintance between counterparts. This knowledge about the other makes possible to actualize the levels of trust that an organization might have on counterparts. This actualization can be positive and negative; however the argument is that knowledge about the other will help adjusting expectation. In other words, not expecting from a counterpart what they cannot offer. The second pathway of the mechanisms hypothesized that awareness and acquittance help creating enhanced working environments and that this environment allow for quicker joint decision-making processes and information sharing, and that it flattens perceived hierarchies, which in turn lowers the threshold to engage counterparts. The analysis suggests that we can acknowledge the existence of both pathways.

Both the analysis of the quantitative and the qualitative data help answering the research question.

This project offers two further contributions that I deem important for both the academic and the practitioner field.

I proposed a definition for collaboration. This is *the acts of sharing ideas for action, decision-making, and acting that two or more organizations conduct jointly in a relative symmetry of power to respond to a problem*. This definition joins ideas that experts on the field have illustrated separately to capture the complexity of the phenomenon.

The definition is simple and easily understandable, yet it does not oversimplify the nature of the phenomenon an avoids conceptual stretching. In this thesis, I operationalized the definition through three items that revolved around the ideas of experiencing domination attempts, the sharing of ideas on action lines, and joint decision-making. Each of these items reflected one of the distinct characteristics of collaboration.

When the three items were tested to see if they measured the same latent construct, the results pointed on that line. Although the results were positive and have been used to measure collaboration in this thesis, I do not present it as an instrument. I suggest that more testing must be conducted to do this. This testing should occur in other settings to guarantee transferability. In addition, it might be necessary to develop more questions that capture nuances within the characteristics of collaboration previously identified. Nevertheless, I suggest that the presented characteristics of collaboration are adequate for measuring collaboration.

The final contribution relates to the idea that large scale emergencies and small-scale emergencies are different typologies of the same phenomenon. The data gathered in the process of conducting the project reinforces this idea. I suggest that this has special interest for the practitioner field, especially for organizations working in the context of small-scale emergencies. Most of the literature on the field is conducted in the context of large-scale emergencies. Knowing that lessons learned from that context can be

transferred to the context of small-scale emergencies widely expands the available literary corpus from where knowledge can be extracted.

10.1 Further research

In this final section, I will present shortly some points that could inform directions for future research.

First, I have presented a working definition for collaboration that specifies three characteristics that could be used to measure the phenomenon. In this thesis, I have used three items to build a composite variable that reflected the level of collaboration in emergency response operations. Additional research could be conducted to build and validate a more complete instrument.

Second, the definition of collaboration that I have presented stems from the literature published in the field of emergency management. It could be beneficial for future research to include the understandings of practitioners to continue developing the concept.

Third, in this thesis, trust and collaboration have been identified as the factors that have the greatest effect on collaboration. Nevertheless, future research should not disregard the influence of other factors. As this study has shown, the potential is still there.

Fourth, these results are based on a study conducted within the geographical boundaries of Northern Norway. Additional research could be conducted in other regions of the country and the globe to test the generalizability of the findings.

Fifth, I have hypothesized and traced the pathways of two mechanism that transfer causal force from contact and trust to collaboration. Research that would test further these mechanisms in the context of one emergency response operation would be valuable to further actualize the confidence in them.

Bibliography

ABBASI, A. & KAPUCU, N. 2012. Structural dynamics of organizations during the evolution of interorganizational networks in disaster response. Journal of Homeland Security and Emergency Management, 9.

ABBASI, A. & KAPUCU, N. 2016. A longitudinal study of evolving networks in response to natural disaster. Computational and Mathematical Organization Theory, 22, 47-70.

AGRANOFF, R. & MCGUIRE, M. 2001. Big questions in public network management research. *Journal of public administration research and theory,* 11**,** 295-326.

AXELSSON, R. & AXELSSON, S. B. 2006. Integration and collaboration in public health a conceptual framework. International journal of health planning and management, 21, 75.

BAERT, P. 2005. Philosophy of the social sciences: Towards pragmatism, Polity.

BDEIR, F., CRAWFORD, J. W. & HOSSAIN, L. 2017. Informal networks in disaster medicine. Disaster Medicine and Public Health Preparedness, 11, 343-354.

BEACH, D. & PEDERSEN, R. B. 2012. Case Selection Techniques in Process-Tracing and the Implications of Taking the Study of Causal Mechanisms Seriously, APSA 2012 Annual Meeting Paper.

BEACH, D. & PEDERSEN, R. B. 2013. Process-tracing methods: Foundations and guidelines, University of Michigan Press.

BECK, T. E. & PLOWMAN, D. A. 2014. Temporary, emergent interorganizational collaboration in unexpected circumstances: A study of the Columbia space shuttle response effort. Organization Science, 25, 1234-1252.

BEFANI, B., & STEDMAN-BRYCE, G. (2017). Process tracing and Bayesian updating for impact evaluation. *Evaluation*, *23*(1), 42-60.

BENNETT, A. & CHECKEL, J. T. 2014. Process tracing, Cambridge University Press.

BLAIKIE, N. 2009. Designing social research, Polity.

Boin, A. 2005.Disaster Research and Future crises: Broadening the research agenda. International journal of mass emergencies and disasters. 23:3, 199-214

BOIN, A. & HART, P. T. 2003. Public leadership in times of crisis: mission impossible? Public Administration Review, 63, 544-553.

BOIN, A., HART, P. T., STERN, E. & SUNDELIUS, B. 2005. The politics of crisis management: Public leadership under pressure, Cambridge University Press.

BOIX, C. & POSNER, D. N. 1996. Making social capital work: a review of Robert Putnam's making democracy work, civic traditions in modern Italy, Center for International Affairs, Harvard University Cambridge, MA.

BRANDSHAUG, H. 2011. Den norske redningstjenesten: en studie av en kompleks samhandling

BRANN OG EKSPLOSJONSLOVEN. 2002. *Lov om vern mot brann, eksplosjon og ulykker med farlig stoff og om brannvesenets redningsoppgaver.* LOV-2002-06-14-20

BROOKS, J. M., BODEAU, D. & FEDOROWICZ, J. 2013. Network management in emergency response: Articulation Practices of state-level managers interweaving up, down, and sideways. Administration and Society, 45, 911-948.

BRYMAN, A. 2012. Social research methods, Oxford University Press.

BUTTS, C. T., ACTON, R. M. & MARCUM, C. S. 2012. Interorganizational collaboration in the Hurricane Katrina response. Journal of Social Structure, 13, 1-36.

BØAS, M. E. A. 2006. Dealing with conflicts and emergency situations, in DESAI, V. A. P., R. (ed.) Doing Development Research. London: Sage Publications.

CARIFIO, J. & PERLA, R. 2008. Resolving the 50-year debate around using and misusing Likert scales. Medical education, 42, 1150-1152.

CARIGNAN, S. A. 2013. Factors associated with collaboration in disaster response. MSc, North Dakota State University

CARR, J. & JENSEN, J. 2015. Explaining the pre-disaster integration of Community Emergency Response Teams (CERTs). Natural Hazards, 1-21.

CHOI, S. O. & KIM, B.-T. 2007. Power and cognitive accuracy in local emergency management networks. Public Administration Review, 67, 198-209.

CHRISTENSEN, T., LÆGREID, P., & RYKKJA, L. H. 2015. The challenges of coordination in national security management: the case of the terrorist attack in Norway. *International review of administrative sciences*. 81/2, 352-372.

CHURCHMAN, C. W. 1967. Guest editorial: Wicked problems. JSTOR.

COLES, J. B., ZHUANG, J. & YATES, J. 2012. Case study in disaster relief: A descriptive analysis of agency partnerships in the aftermath of the January 12th, 2010 Haitian earthquake. Socio-Economic Planning Sciences, 46, 67-77.

COLLIER, A. 1994. Critical realism: an introduction to Roy Bhaskar's philosophy.

COMFORT, L. K. 1994. Self-organization in complex systems. Journal of Public Administration Research and Theory: J-PART, 4, 393-410.

COMFORT, L. K. 2000. Response operations following the Chi-Chi (Taiwan) earthquake: Mobilizing a rapidly evolving, interorganizational system. Journal of the Chinese Institute of Engineers, 23, 479-492.

COMFORT, L. K. 2007. Crisis management in hindsight: Cognition, communication, coordination, and control. Public Administration Review, 67, 189-197.

CURTIS, C. A. 2015. Understanding communication and coordination among government and service organisations after a disaster. Disasters, 39, 611-625.

DANERMARK, B. 2002. Explaining society: Critical realism in the social sciences, Psychology Press.

DE BLASIO, G. & NUZZO, G. 2003. Putnam's social capital and the Italian regions: an empirical investigation. mimeo, Bank of Italy, Rome.

Direktoratet for Samfunnssikkerhet og Beredskap. 2017. Melding om brannvernet 2017: analyse av resultater fra melding om brannvernet 2017. Direktoratet for Samfunnssikkerhet og Beredskap

DONG, Y. & PENG, C.-Y. J. 2013. Principled missing data methods for researchers. Springer Plus, 2, 222.

DOYLE, E. E. H., PATON, D. & JOHNSTON, D. M. 2015. Enhancing scientific response in a crisis: Evidence-based approaches from emergency management in New Zealand. Journal of Applied Volcanology, 4.

DRABEK, T. E. & EVANS, J. 2005. Sociology, disasters and emergency management: History, contributions, and future agenda. Disciplines, Disasters and Emergency Management: The Convergence of Concepts Issues and Trends From the Research Literature.

DWYER, S. C. & BUCKLE, J. L. 2009. The space between: On being an insider-outsider in qualitative research. International journal of qualitative methods, 8, 54-63.

FEDOROWICZ, J., GOGAN, J. L. & WILLIAMS, C. B. 2007. A collaborative network for first responders: Lessons from the CapWIN case. Government Information Quarterly, 24, 785-807.

FIMREITE, A. L., GRINDHEIM, J. E. 2007. *Offentlig Forvaltning*. Oslo, Umiversitetsforlaget

FIMREITE, A. L., LANGO, P., LÆGREID, P. & RYKKJA, L. H. 2014 Organisering, Samfunnssikkerhet og Krisehåndtering, Universitetsforlaget.

FIMREITE, A. L., LÆGREID, P. & RYKKJA, L. H., 2014. Organisering for sanfunnssikkerhet og krisehåndtering, in FIMREITE, A. L., LANGO, P., LÆGREID, P. & RYKKJA, L. H. (EDS.) Organisering, Samfunnssikkerhet og Krisehåndtering, Universitetsforlaget.

FISCHER, H. W. 2003. The sociology of disaster: definitions, research questions, & measurements. Continuation of the discussion in a post-September 11 environment. International Journal of Mass Emergencies and Disasters, 21, 91-108.

FLEMING, C. J., MCCARTHA, E. B. & STEELMAN, T. A. 2015. Conflict and collaboration in wildfire management: the role of mission alignment. Public Administration Review, 75, 445-454.

FORSKRIFT OM ORGANISERING AV BRANNVESENET. 2002. *Forskrift om organisering og dimensjonering av brannvesenet*. FOR-2002-06-26-729

FOUNTAIN, J. E. (1998). Social capital: Its relationship to innovation in science and technology. *Science and Public Policy*, *25*(2), 103-115.

GELLERT, G. A., DAUGHERTY, S. J., RABIEE, L., MAZUR, M. & MERRYMAN, R. E. 1994. California American trader oil-spill - effective interagency and public-private collaboration in environmental disaster response. Journal of Environmental Health, 57, 7-12.

GEORGE, A. L., BENNETT, A. 2005. Case studies and theory development in the social sciences, Cambridge, Mass, MIT Press.

GILLESPIE, D. F. & MURTY, S. A. 1994. Cracks in a postdisaster service delivery network. American Journal of Community Psychology, 22, 639-660.

GREEN, D. M. 2013. Agency notification and mobilization. In Penuel, K. B., Statler, M. & Hagen, R. *Encyclopedia of crisis management.* London, Sage

GRIMEN, H. 2009. Hva er tillit. Oslo, Universitetsforlaget

GROSSMAN, D. 1996. On killing: the psychological cost of learning to kill in war and society. Back Bay Books

GUO, X. S. & KAPUCU, N. 2015. Examining coordination in disaster response using simulation methods. Journal of Homeland Security and Emergency Management, 12, 891-914.

HASNAIN-WYNIA, R., SOFAER, S., BAZZOLI, G. J., ALEXANDER, J. A., SHORTELL, S. M., CONRAD, D. A., CHAN, B., ZUKOSKI, A. P. & SWENEY, J. 2003. Members' perceptions of community care network partnerships' effectiveness. Medical Care Research and Review, 60, 40S-62S.

HATCH, M. J. 1997. Organization Theory. Modern, Symbolic and Postmodern Perspectives Oxford University Press. Oxford, UK.

HEAD, B. W. & ALFORD, J. 2013. Wicked problems: implications for public policy and management. Administration & society, 0095399713481601.

HEDSTRÖM, P. & YLIKOSKI, P. 2010. Causal mechanisms in the social sciences. Annual Review of Sociology, 36, 49-67.

HEIDAR, K. 2001. *Norway. Elites on Trial*. Boulder, Co.: Westview Press.

HERMANSSON, H. M. L. 2016. Disaster management collaboration in turkey: assessing progress and challenges of hybrid network governance. Public Administration, 94, 333-349.

HERANZ, J. 2010. Network performance and coordination. Public performance & management review. 33:3, 311-341.

HOVEDREDNINGSSENTRALEN. 2020. 50 år i folkets tjenneste: Hovedredningssentralen 1970-2020. Hovedredningssentralen

HOWSON, C. & URBACH, P. 1993. Scientific reasoning: The Bayesian Approach, Chicago/La Salle, IL: Open Court.

HU, Q. & KAPUCU, N. 2014. Information communication technology utilization for effective emergency management networks. Public Management Review, 1-26.

HU, Q., KNOX, C. C. & KAPUCU, N. 2014. What have we learned since september 11, 2001? A network study of the Boston marathon bombings response. Public Administration Review, 74, 698-712.

ISRAEL, M. 2014. Research ethics and integrity for social scientists: beyond regulatory compliance. London: SAGE Publications.

IVANOVA, M. & SYDNES, A. K. 2010. Interorganizational coordination in oil spill emergency response: A case study of the Murmansk region of Northwest Russia. Polar Geography, 33, 139-164.

JALBA, D. I., CROMAR, N. J., POLLARD, S. J. T., CHARROIS, J. W., BRADSHAW, R. & HRUDEY, S. E. 2010. Safe drinking water: Critical components of effective interagency relationships. Environment International, 36, 51-59.

JAMIESON, S. 2004. Likert scales: How to (ab) use them. Medical education, 38, 1217-1218.

JENNINGS, E. T. &EWALT, J. A. G. 1998. Interorganizational coordination, administrative consolidation, and policy performance. Public administration Review. 58:5, 417-428.

JOULE, R. V. & BEAUVOIS, J. L. 2008. Pequeno tratado de manipulacion para gente de bien. Ediciones Piramide

KALKMAN, J. P. & DE WAARD, E. J. 2017. Inter-organizational disaster management projects: Finding the middle way between trust and control. International Journal of Project Management, 35, 889-899.

KAPUCU, N. 2006a. Interagency communication networks during emergencies boundary spanners in multiagency coordination. The American Review of Public Administration, 36, 207-225.

KAPUCU, N. 2006b. Public-nonprofit partnerships for collective action in dynamic contexts of emergencies. Public Administration, 84, 205-220.

KAPUCU, N. 2007. Non-profit response to catastrophic disasters. Disaster Prevention and Management: An International Journal, 16, 551-561.

KAPUCU, N. 2008. Collaborative emergency management: better community organising, better public preparedness and response. Disasters, 32, 239-262.

KAPUCU, N. 2012. Network governance in response to acts of terrorism: comparative analyses, Routledge.

KAPUCU, N., ARSLAN, T. & COLLINS, M. L. 2010a. Examining intergovernmental and interorganizational response to catastrophic disasters: Toward a network centered approach. Administration and Society, 42, 222-247.

KAPUCU, N., ARSLAN, T. & DEMIROZ, F. 2010b. Collaborative emergency management and national emergency management network. Disaster Prevention and Management, 19, 452-468.
KAPUCU, N., AUGUSTIN, M. E. & GARAYEV, V. 2009. Interstate partnerships in emergency management: Emergency management assistance compact in response to catastrophic disasters. Public Administration Review, 69, 297-313.
KAPUCU, N. & DEMIROZ, F. 2011. Measuring performance for collaborative public management using network analysis methods and tools. Public Performance & Management Review, 34, 549-579.
KAPUCU, N. & GARAYEV, V. 2011. Collaborative decision-making in emergency and disaster management. International Journal of Public Administration, 34, 366-375.
KERN, H. 2000. Lack of trust, surfeit of trust: causes of the innovation crisis in German industry. In Lane, C. & Bachmann, R. (eds.). Trust between and within organizations: conceptual issues and empirical applications. Oxford, Oxford University Press
KGL. RES. 03.11.2000: instruks om innføring av internkontroll og systemrettet tilsyn med det sivile beredskapsarbeidet i departementene.
KIM, K., ANDREW, S. A. & JUNG, K. 2017. Public Health network structure and collaboration effectiveness during the 2015 MERS outbreak in South Korea: An institutional collective action framework. International Journal of Environmental Research and Public Health, 14.
KING, G., KEOHANE, R. O. & VERBA, S. 1994. Designing social inquiry: Scientific inference in qualitative research, Princeton University Press.
KOVATS-BERNAT, J. C. 2002. Negotiating dangerous fields: Pragmatic strategies for fieldwork amid violence and terror. American Anthropologist, 104, 208-222.
KREPS, G. A. & DRABEK, T. E. 1996. Disasters as non-routine social problems. International Journal of Mass Emergencies and Disasters, 14, 129-153.
KRUMSVIK, R. J. & RØKENES 2016. Litteraturreview i phd-avhandlingen, in KRUMSVIK, R. J. (ED.) En doktorgradsutdanning i endring : et fokus på den artikkelbaserte ph.d.-avhandlingen, Bergen, Fagbokforlaget.
LANE, C. 2000. Introduction: theories and issues in the study of trust. In Lane, C. & Bachmann, R. (eds.). Trust between and within organizations: conceptual issues and empirical applications. Oxford, Oxford University Press
LANE, C. & BACHMANN, R. 2000. Trust between and within organizations: conceptual issues and empirical applications. Oxford, Oxford University Press

LANGO, P. & LÆGREID, P. 2014 Samordning for samfunnssikkerhet, in FIMREITE, A. L., LANGO, P., LÆGREID, P. & RYKKJA, L. H. (EDS.) Organisering, Samfunnssikkerhet og Krisehåndtering, Universitetsforlaget.

LIN, D. Y. M. & SU, Y. L. 1998. The effect of time pressure on expert system based training for emergency management. *Behaviour & Information Technology,* 17**,** 195-202

LONGHOFER, J. L., FLOERSCH, J. & HOY, J. 2013. Qualitative methods for practice research, Oxford, Oxford University Press.

LU, Y. & XU, J. P. 2015. NGO collaboration in community post-disaster reconstruction: field research following the 2008 Wenchuan earthquake in China. Disasters, 39, 258-278.

MARTIN, E., NOLTE, I. & VITOLO, E. 2016. The Four Cs of disaster partnering: communication, cooperation, coordination and collaboration. Disasters, 40, 621-643.

MERTUS, J. 2009. Maintenance of personal security: Ethical and operational issues, in SRERAM, C. L. E. A. (ED.) Surviving Field Research: Working in Violent and Difficult Situations. London: Routledge.

MICKO, H. & LEITNER, J. 2006. Network enabled decision support for civil emergency management. Journal of Decision Systems, 15, 287-308.

MISHRA, A. K. 1996. Organizational responses to crisis: the centrality of trust. In Roderick, K. & Tyler, T. Trust in organizations: frontiers of theory and research Newbury Park, CA, Sage

MORRIS, J. C., MORRIS, E. D. & JONES, D. M. 2007. Reaching for the philosopher's stone: Contingent coordination and the military's response to Hurricane Katrina. Public Administration Review, 67, 94-106.

MOYNIHAN, D. P. 2008. Learning under uncertainty: Networks in crisis management. Public Administration Review, 68, 350-365.

MURRAY, J. 2013. Likert data: What to use, parametric or non-parametric? International Journal of Business and Social Science, 4.

MURRIA, J. 2004. A disaster, by any other name. International Journal of Mass Emergencies and Disasters, 22, 117-130.

NEDREVÅG, L. 2015, Utvikling av norsk redningstjeneste i lys av beslutningsteori

NESH. 2016. Guidelines for research ethics in the social sciences, humanities, law and theology. Oslo: NESH The Norwegian National Research Ethics Committees

NOLTE, I. M. & BOENIGK, S. 2011. Public-nonprofit partnership performance in a disaster context: The case of Haiti. Public Administration, 89, 1385-1402.

NOLTE, I. M. & BOENIGK, S. 2013. A study of ad hoc network performance in disaster response. Nonprofit and Voluntary Sector Quarterly, 42, 148-173.

NOLTE, I. M., MARTIN, E. C. & BOENIGK, S. 2012. Cross-sectoral coordination of disaster relief. Public Management Review, 14, 707-730.

NOOTEBOOM, B. 2003. The trust process. In Nooteboom, B., & Six, F. (Eds.). *The trust process in organizations: Empirical studies of the determinants and the process of trust development*. Edward Elgar Publishing.

NOHRSTEDT, D., BYNANDER, F., PARKER, C., 'T HART, P. 2018. Managing crises collaboratively: Prospects and problems – a systematic review. Perspectives in public management and governance. 1:4, 257-271.

NOU 1997:3. Om Redningshelikoptertjenesten. Oslo, Justis- og politidepartementet.

NOU 2000:24. Et sårbart samfunn. Utfordringer for sikkerhets- og beredskapsarbeidet i samfunnet. Oslo, Justis- og politidepartementet.

NOWELL, B. & STEELMAN, T. 2015. Communication under fire: The role of embeddedness in the emergence and efficacy of disaster response communication networks. Journal of Public Administration Research and Theory, 25, 929-952.

OOMSELS, P., & BOUCKAERT, G. (2014). Studying Interorganizational Trust in Public Administration: A Conceptual and Analytical Framework for" Administrational Trust". *Public Performance & Management Review*, *37*(4), 577-604.

ORGANISASJONSPLAN FOR REDNINGSTJENESTEN. 2019. Organisasjonsplan for Redningstjenesten. LOV-1995-08-04-53-§27

PENG CYJ, HARWELL M, LIOU SM, EHMAN LH. 2006. Advances in missing data methods and implications for educational research. In *Real data analysis*. Edited by: Sawilowsky SS. Charlotte, North Carolina: Information Age Pub

PHILLIPS, N., LAWRENCE, T. B. & HARDY, C. 2000. Inter-organizational collaboration and the dynamics of institutional fields. Journal of management studies, 37.

POLITILOVEN. 1995. Lov om politiet. LOV-1995-08-04-53

PUTNAM, R. 1993. Making democracy work: civic traditions in modern Italy. Princeton University Press

QUARANTELLI, E. L. 1997. Ten criteria for evaluating the management of community disasters. Disasters, 21, 39-56.

QUARANTELLI, E. L., LAGADEC, P. & BOIN, A. 2007. A heuristic approach to future disasters and crises: New, old, and in-between types. Handbook of Disaster Research. Springer.

REASON, J. T. 1997. Managing the risks of organizational accidents, Farnham, Ashgate Aldershot.

RONG, H., XUEDONG, L., GUIZHI, Z., YULIN, Y. & DA, W. 2015. An evaluation of coordination relationships during earthquake emergency rescue using entropy theory. Cadernos de Saude Publica, 31, 947-959.

RUSCIO, J. 2008. Constructing confidence intervals for Spearman's rank correlation with ordinal data: a simulation study comparing analytic and bootstrap methods. Journal of Modern Applied Statistical Methods, 7, 7.

RYKKJA, L. H. 2009. Coordinating «Wicked Issues»: the county governor's role in norwegian internal security. Stein Rokkan Center for Social Studies

SABAN, L. I. 2015. Entrepreneurial brokers in disaster response network in Typhoon Haiyan in the Philippines. Public Management Review, 17, 1496-1517.

SAKO, M. 2000. Does trust improve business performance? In Lane, C. & Bachmann, R. (eds.). Trust between and within organizations: conceptual issues and empirical applications. Oxford, Oxford University Press

SAMFUNNSSIKKERHETINSTRUKSEN. 2017. Instruks for departementenes arbeid med samfunnssikkerhet. FOR-2017-09-01-1349

SAN MARTÍN-RODRÍGUEZ, L., BEAULIEU, M.-D., D'AMOUR, D. & FERRADA-VIDELA, M. 2005. The determinants of successful collaboration: a review of theoretical and empirical studies. Journal of interprofessional care, 19, 132-147.

SARTORI, G. 1970. Concept misformation in comparative politics. American political science review, 64, 1033-1053.

SAYER, A. 2000. Realism and social science, Sage.

SEARLE, J. R. 1995. The construction of social reality, Simon and Schuster.

SICILIANO, M. D. & WUKICH, C. 2017. Network formation during disasters: Exploring micro-level interorganizational processes and the role of national capacity. International Journal of Public Administration, 40, 490-503.

SIVILBESKYTTELSESLOVEN. 2010. Lov om kommunalberedskapsplikt, sivile beskyttelsestiltak og sivilforsvaret. LOV-2010-06-25-45

SIVILFORSVARSLOVEN. 1953. Lov om kommunal beredskapsplikt, sivile beskyttelsestiltak og sivilforsvaret. LOV-1953-07-17-9

SMITH, W. & DOWELL, J. 2000. A case study of co-ordinative decision-making in disaster management. Ergonomics, 43, 1153-1166.

SOLANSKY, S. T. & BECK, T. E. 2009. Enhancing community safety and security through understanding interagency collaboration in cyber-terrorism exercises. Administration & Society, 40, 852-875.

SOLBERG, S., HALVORSEN, J., URDAL, A., SØRSDAL, S., AASGAARD, M., PARNEMANN, O. P., SKOGSTAD, W., EGGERTSSON, Y. 2018. Håndbok for redningstjennesten: systembedkrivelse, prinsipper, verdier. Hovedredningssentralen, Oslo

SONG, M., & JUNG, K. (2015). Filling the gap between disaster preparedness and response networks of urban emergency management: Following the 2013 Seoul Floods. *Journal of emergency management*, *13*(4), 327-338.

STATENS HAVARIKOMMISJON FOR TRANSPORT. 2012. *Rapport om møteulykke mellom personbil, buss og minibuss i Lavangsdalen i Troms 7. Januar 2011. Lillestrøm, Statens Havarikommisjon for Transport*

STEEL, D. 2004. Social mechanisms and causal inference. Philosophy of the Social Sciences, 34, 55-78.

ST.MELD. NR. 10 (2016-2017): Risiko i et trygt samfunn – samfunnssikkerhet. Oslo, Justis og Beredskapsdepartementet.

ST.MELD. NR. 17 (2001-2002): samfunnssikkerhet – veien til et mindre sårbar samfunn. Oslo, Justis og politidepartementet.

SULLIVAN, G. M. & ARTINO JR, A. R. 2013. Analyzing and interpreting data from Likert type scales. Journal of graduate medical education, 5, 541-542.

SYDNES, M. & SYDNES, A. K. 2011. Oil spill emergency response in Norway: coordinating interorganizational complexity. Polar Geography, 34, 299-329.

SYLVES, R. 2014. Disaster policy and politics: Emergency management and homeland security, CQ Press.

TALEB, N. N. 2007. The black swan: The impact of the highly improbable, Random house.

TANG, P., DENG, C., SHAO, S. & SHEN, G. Q. 2017. Leveraging intergovernmental and cross-sectoral networks to manage nuclear power plant accidents: A case study from China. Journal of Cleaner Production, 162, 1551-1566.

THERRIEN, M.-C., BEAUREGARD, S. & VALIQUETTE-L'HEUREUX, A. 2015. Iterative factors favoring collaboration for interorganizational resilience: The case of the greater Montréal transportation infrastructure. International Journal of Disaster Risk Science, 6, 75-86.

TOPPER, C. M. & CARLEY, K. M. 1999. A structural perspective on the emergence of network organizations. Journal of Mathematical Sociology, 24, 67-96.

TRAMPUSCH, C & PALIER, B. 2016. *Between X and Y: how process tracing contributes to opening the black box of causalit*y. New Political Economy 21.5, 437-454.

TUROFF, M., WHITE, C., PLOTNICK, L. & HILTZ, S. R. 2008. Dynamic emergency response management for large scale decision making in extreme events. Proceedings of the 5th International ISCRAM Conference, 2008. ISCRAM Washington, DC, USA, 462-470.

VANGEN, S. & HUXHAM, C. 2003. Nurturing collaborative relations: building trust in interorganizational collaboration. Journal of applied behavioral science. 39(1), 5-31

VEIL, S. R. 2013. Routine emergencies versus true crisis. In Penuel, K. B., Statler, M. & Hagen, R. *Encyclopedia of crisis management.* London, Sage

WAUGH, W. L. & STREIB, G. 2006. Collaboration and leadership for effective emergency management. Public administration review, 66, 131-140.
WEBER, E. P. & KHADEMIAN, A. M. 2008. Wicked problems, knowledge challenges, and collaborative capacity builders in network settings. Public administration review, 68, 334-349.
WEICK, K. E. & SUTCLIFFE, K. M. 2011. Managing the unexpected: Resilient performance in an age of uncertainty, John Wiley & Sons.
ZHANG, S. 2012. Nearest neighbor selection for iteratively kNN imputation. Journal of Systems and Software, 85, 2541-2552.

Appendix A Survey

INTERORGANISATORISK SAMARBEID I NØDSITUASJONER

Denne studien foretas i regi av Nord Universitet. Studien handler om samfunnssikkerhet. Formålet er å se på faktorene bak forskjellige samarbeidsmønstre mellom førsteresponsgrupper i Nord-Norges distrikter.

Spørreskjemaet har 41 spørsmål og er delt i fire deler. Den første delen skal tegne en grov skisse av beredskapskapasiteten i Norge, Nord-Norge og distriktene i Nord-Norge. Del to og tre skal kartlegge de forskjellige faktorene som på en eller annen måte kan påvirke samarbeid på tvers av organisasjonene. Mens det i andre del stilles generelle spørsmål, så vil spørsmålene i tredje del ha fokus på en tidligere hendelse som du deltok i. Den siste delen handler om din organisasjon og de erfaringer som organisasjonen har gjort seg.

Spørreskjemaet behandles konfidensielt. Kun Ph.d. student/forsker, Mikel Domínguez Cainzos, vil ha adgang til svarene. Det spørres ikke etter navn, adresse, bostedskommune eller annet som kan bli brukt for å gjenkjenne deg.

Studien og spørreskjemaet er meldt inn til personvernombudet for forskning, Norsk Samfunnsvitenskap Datatjeneste AS (NSD). Standardene for persontilsyn, etikk og konfidensialitet er godkjente.

Dersom du har spørsmål til studien eller om ivaretakelse av dine personopplysninger, ta kontakt med meg: mikel.d.cainzos@nord.no

Din identitet vil holdes skjult.
Les om retningslinjer for personvern. (Åpnes i nytt vindu)

1) * Jeg ønsker å delta i prosjektet

○ Ja

DEL 1

I denne studien karakteriseres småskala nødsituasjoner som landbaserte situasjoner (ulykker, ras, flom, snøskred, brann o.l.) der mindre enn 30 personer er innblandet

2) Hvordan vil du generelt karakterisere...

	Veldig dårlig	Dårlig	Nøytral	Bra	Veldig bra	Vet ikke
Beredskapskapasiten for å håndtere småskala nødsituasjoner i Norge?	○	○	○	○	○	○
Beredskapskapasitet for å håndtere småskala nødsituasjoner i Nord-Norge?	○	○	○	○	○	○
Beredskapskapasitet for å håndtere småskala nødsituasjoner i Nord-Norges distrikter?	○	○	○	○	○	○

3) Hvordan vil du karakterisere ditt distrikts beredskapskapasitet i nødsituasjoner der...

	Veldig dårlig	Dårlig	Nøytral	Bra	Veldig bra	Vet ikke
1-4 personer er innblandet?	○	○	○	○	○	○
5-10 personer er innblandet?	○	○	○	○	○	○
11-20 personer er innblandet?	○	○	○	○	○	○
Mer enn 20 personer er innblandet?	○	○	○	○	○	○

4) Tror du at det er mulig å øke beredskapskapasiteten i ditt distrikt?

- ○ Ja
- ○ Nei
- ○ Vet ikke

5) Hvis ja, hva er nødvendig for å øke kapasiteten?

- ☐ Mer økonomisk støtte
- ☐ Mer personale
- ☐ Bedre kommunikasjonssystemer
- ☐ Bedre utstyr
- ☐ Bedre retningslinjer
- ☐ Mer trening og øvelser
- ☐ Forbedret samarbeid med andre organisajoner
- ☐ Samtrening med andre organisasjoner
- ☐ Annet

DEL 2

6) Si deg enig eller uenig i følgende påstander:

	Veldig uenig	Uenig	Nøytral	Enig	Veldig enig	Vet ikke
Nødsituasjoner må håndteres i samarbeid med andre organisasjoner	○	○	○	○	○	○
Min organisasjon har en god forståelse av hvordan forskjellige organisasjoner bør jobbe sammen for å takle nødsituasjoner	○	○	○	○	○	○
Min organisasjon har klare retningslinjer om hvordan samarbeid med andre organisasjoner bør gjennomføres	○	○	○	○	○	○
Min organisasjon arbeider for å finne en felles løsning hvis et problem oppstår med en annen organisasjon i en nødsituasjon	○	○	○	○	○	○
Min organisasjon har et forum hvor						

alle fritt kan utrykke sine meninger og ideer	○	○	○	○	○	○
Min organisasjon åpner opp for at alle deltakere i en nødssituasjon må være med på å definere mål og aksjonslinjer	○	○	○	○	○	○
Min organisasjon tar hensyn til alle medlemmenes ideer og bekymringer under operasjoner	○	○	○	○	○	○
Min organisasjon hjelper sine medlemmer med å oppnå ferdigheter til å kunne samarbeide med andre organisasjoners medlemmer på en mest mulig effektiv måte	○	○	○	○	○	○

7) Si deg enig eller uenig i følgende påstander:

	Veldig uenig	Uenig	Nøytral	Enig	Veldig enig	Vet ikke
Min organisasjon kan tilpasse sine innøvde rutiner til den skiftende dynamikken i en nødssituasjon	○	○	○	○	○	○
Min organisasjon endrer innøvde rutiner hvis det er nødvendig for å tilpasse seg til andre organisasjoner	○	○	○	○	○	○
Min organisasjon opplever avvik fra etablerte og innøvde rutiner som forstyrrende	○	○	○	○	○	○
Min organisasjon leter etter nye måter å løse problemer på	○	○	○	○	○	○
Min organisasjon er åpen for å lære av tidligere suksess og fiasko fra andre organisasjoner, og inkorporerer disse erfaringene i våre rutiner	○	○	○	○	○	○
Medlemmene fra min organisasjon må ha tillatelse fra sin nærmeste leder når de tar beslutninger	○	○	○	○	○	○
Feltledere i min organisasjon må rådføre seg med sine overordnede (som ikke er tilstede der hendelsen skjer) når de tar beslutninger som avviker fra innøvde rutiner	○	○	○	○	○	○

8) Har din organisasjon hatt tidligere kontakt med følgende organisasjoner?

	Ja (Møter)	Ja (Tidligere nødsituasjon)	Ja (Øvelser)	Ja (Annet)	Nei	Vet ikke
Politiet	☐	☐	☐	☐	☐	☐
Brannsvesenet	☐	☐	☐	☐	☐	☐
Ambulansetjenesten	☐	☐	☐	☐	☐	☐

Flyambulansen	☐	☐	☐	☐	☐	☐
330 skvadronen	☐	☐	☐	☐	☐	☐
Sivilforsvaret	☐	☐	☐	☐	☐	☐
Røde Kors	☐	☐	☐	☐	☐	☐
Norsk Folkehjelp	☐	☐	☐	☐	☐	☐
Norske Redningshunder	☐	☐	☐	☐	☐	☐

9) Min organisasjon ser følgende organisasjoner som likeverdige partnere:

	Veldig uenig	Uenig	Nøytral	Enig	Veldig enig	Vet ikke
Politiet	○	○	○	○	○	○
Brannvesenet	○	○	○	○	○	○
Ambulansetjenesten	○	○	○	○	○	○
Flyambulansen	○	○	○	○	○	○
330 skvadronen	○	○	○	○	○	○
Sivilforsvaret	○	○	○	○	○	○
Røde Kors	○	○	○	○	○	○
Norsk Folkehjelp	○	○	○	○	○	○
Norske Redningshunder	○	○	○	○	○	○

10) Jeg oppfatter at følgende organisasjoner er godt forberedt på å håndtere kriser:

	Veldig uenig	Uenig	Nøytral	Enig	Veldig enig	Vet ikke
Politiet	○	○	○	○	○	○
Brannvesenet	○	○	○	○	○	○
Ambulansetjenesten	○	○	○	○	○	○
Flyambulansen	○	○	○	○	○	○
330 skvadronen	○	○	○	○	○	○
Sivilforsvaret	○	○	○	○	○	○
Røde Kors	○	○	○	○	○	○
Norsk Folkehjelp	○	○	○	○	○	○
Norske Redningshunder	○	○	○	○	○	○

11) Jeg oppfatter at følgende organisasjoner er godt utstyrt for å håndtere kriser:

	Veldig uenig	Uenig	Nøytral	Enig	Veldig Enig	Vet ikke
Politiet	○	○	○	○	○	○
Brannvesenet	○	○	○	○	○	○

Ambulansetjenesten	○	○	○	○	○	○
Flyambulansen	○	○	○	○	○	○
330 skvadronen	○	○	○	○	○	○
Sivilforsvaret	○	○	○	○	○	○
Røde Kors	○	○	○	○	○	○
Norsk Folkehjelp	○	○	○	○	○	○
Norske Redningshunder	○	○	○	○	○	○

12) Jeg oppfatter at deltakelsen til følgende organisasjoner bidrar positivt til utfallet av operasjonen:

	Veldig uenig	Uenig	Nøytral	Enig	Veldig enig	Vet ikke
Politiet	○	○	○	○	○	○
Brannvesenet	○	○	○	○	○	○
Ambulansetjenesten	○	○	○	○	○	○
Flyambulansen	○	○	○	○	○	○
330 skvadronen	○	○	○	○	○	○
Sivilforsvaret	○	○	○	○	○	○
Røde Kors	○	○	○	○	○	○
Norsk Folkehjelp	○	○	○	○	○	○
Norske Redningshunder	○	○	○	○	○	○

13) Jeg har oppfattet konflikter mellom min organisasjon og følgende organisasjoner:

	Veldig uenig	Uenig	Nøytral	Enig	Veldig enig	Vet ikke
Politiet	○	○	○	○	○	○
Brannvesenet	○	○	○	○	○	○
Ambulansetjenesten	○	○	○	○	○	○
Flyambulansen	○	○	○	○	○	○
330 skvadronen	○	○	○	○	○	○
Sivilforsvaret	○	○	○	○	○	○
Røde Kors	○	○	○	○	○	○
Norsk Folkehjelp	○	○	○	○	○	○
Norske Redningshunder	○	○	○	○	○	○

14) Jeg har oppfattet uenigheter mellom min organisasjon og følgende organisasjoner:

	Veldig uenig	Uenig	Nøytral	Enig	Veldig enig	Vet ikke
Politiet	○	○	○	○	○	○
Brannvesenet	○	○	○	○	○	○

Ambulansetjenesten	○	○	○	○	○	○
Flyambulansen	○	○	○	○	○	○
330 skvadronen	○	○	○	○	○	○
Sivilforsvaret	○	○	○	○	○	○
Røde Kors	○	○	○	○	○	○
Norsk Folkehjelp	○	○	○	○	○	○
Norske Redningshunder	○	○	○	○	○	○

15) Jeg oppfatter at det er kulturelle forskjeller mellom min organisasjon og følgende organisasjoner:

	Veldig uenig	Uenig	Nøytral	Enig	Veldig enig	Vet ikke
Politiet	○	○	○	○	○	○
Brannvesenet	○	○	○	○	○	○
Ambulansetjenesten	○	○	○	○	○	○
Flyambulansen	○	○	○	○	○	○
330 skvadronen	○	○	○	○	○	○
Sivilforsvaret	○	○	○	○	○	○
Røde Kors	○	○	○	○	○	○
Norsk Folkehjelp	○	○	○	○	○	○
Norske Redningshunder	○	○	○	○	○	○

16) Jeg oppfatter at det er identitetsforskjeller mellom min organisasjon og følgende organisasjoner:

	Veldig uenig	Uenig	Nøytral	Enig	Veldig enig	Vet ikke
Politiet	○	○	○	○	○	○
Brannvesenet	○	○	○	○	○	○
Ambulansetjenesten	○	○	○	○	○	○
Flyambulansen	○	○	○	○	○	○
330 skvadronen	○	○	○	○	○	○
Sivilforsvaret	○	○	○	○	○	○
Røde Kors	○	○	○	○	○	○
Norsk Folkehjelp	○	○	○	○	○	○
Norske Redningshunder	○	○	○	○	○	○

17) Jeg oppfatter at det er sjargongforskjeller mellom min organisasjon og følgende organisasjoner:

	Veldig uenig	Uenig	Nøytral	Enig	Veldig enig
Politiet	○	○	○	○	○
Brannvesenet	○	○	○	○	○

Ambulansetjenesten	○	○	○	○	○
Flyambulansen	○	○	○	○	○
330 skvadron	○	○	○	○	○
Sivilforsvaret	○	○	○	○	○
Røde Kors	○	○	○	○	○
Norsk Folkehjelp	○	○	○	○	○
Norske Redningshunder	○	○	○	○	○

DEL 3

I denne delen bes du om å besvare spørsmål rundt en av de siste nødsituasjonene som du deltok i.

18) Kryss av for organisasjonene som deltok i en av de siste nødsituasjonene du var med på:

- ☐ Politiet
- ☐ Brannvesenet
- ☐ Ambulansetjenesten
- ☐ Flyambulansen
- ☐ 330 skvadronen
- ☐ Sivilforsvaret
- ☐ Røde Kors
- ☐ Norsk Folkehjelp
- ☐ Norske Redningshunder
- ☐ Annet

19) Hvor lang tid tok det for deg å komme til operasjonsstedet?

- ○ Mindre en 15 minutter
- ○ Mellom 15 og 30 minutter
- ○ Mellom 30 minutter og 1 time
- ○ Mer en 1 time

20) Hvor kjent var du på operasjonsstedet?

Veldig ukjent	Ukjent	Nøytral	Kjent	Veldig kjent
○	○	○	○	○

21) I hvor stor grad var det nødvendig å endre planer som var lagt før operasjonen ble igangsatt?

Veldig unødvendig	Unødvendig	Nøytral	Nødvendig	Veldig nødvendig	Vet ikke
○	○	○	○	○	○

22) Hvordan oppfattet du...

	Ikke i det hele tatt	Mindre enn vanlig	Som vanlig	Mer enn vanlig	Veldig mye	Vet ikke
stressnivået under operasjonen?	○	○	○	○	○	○
tidspresset under operasjonen?	○	○	○	○	○	○
presset fra eksterne aktører under operasjonen?	○	○	○	○	○	○

23) Hvordan opplevde du værforholdene under operasjonen?

Veldig vanskelige	Vanskelige	Nøytral	Positive	Veldig positive
○	○	○	○	○

24) Hvordan oppfattet du tilgjengeligheten til...

	Veldig utilgjengelig	Utilgjengelig	Nøytral	Tilgjengelig	Veldig tilgjengelig	Vet ikke
Informasjon under operasjonen?	○	○	○	○	○	○
nødvendig personell?	○	○	○	○	○	○
nødvendige materielle resurser? (kjøretøy, radio, verktøy, telt...)	○	○	○	○	○	○

25) Si deg enig eller uenig i følgende påstander:

	Veldig uenig	Uenig	Nøytral	Enig	Veldig enig	Vet ikke
I denne operasjonen visste alle organisasjoner hva som foregikk	○	○	○	○	○	○
I denne operasjonen visste alle organisasjoner hva som måtte gjøres	○	○	○	○	○	○
I denne operasjonen visste alle organisasjoner hvem som kunne gjøre / sørge for hva	○	○	○	○	○	○

26) Hvilke kommunikasjonskanaler brukte du mest?

- ○ Radio
- ○ Telefon
- ○ Direkte kontakt

Annet

27) Er kommunikasjonsenhetene som brukes i din organisasjon kompatibel med kommunikasjonsenhetene som brukes av andre organisasjoner?

	Ja	Nei	Vet ikke
Politiet			
Brannvesenet			
Ambulansetjenesten			
Flyambulansen			
330 skvadronen			
Sivilforsvaret			
Røde Kors			
Norsk Folkehjelp			
Norske Redningshunder			

28) Jeg oppfattet at det var en bra kommunikasjonsflyt mellom min organisasjon og følgende organisasjoner:

	Veldig uenig	Uenig	Nøytral	Enig	Veldig enig	Vet ikke
Politiet						
Brannvesenet						
Ambulansetjenesten						
Flyambulansen						
330 skvadronen						
Sivilforsvaret						
Røde Kors						
Norsk Folkehjelp						
Norske Redningshunder						

29) Jeg oppfattet at det hadde vært mulig å forbedre kommunikasjonen mellom min organisasjon og andre organisasjoner:

Veldig uenig	Uenig	Nøytral	Enig	Veldig enig	Vet ikke

30) Jeg oppfattet at det var et bra samarbeid mellom min organisasjon og følgende organisasjoner:

	Veldig uenig	Uenig	Nøytral	Enig	Veldig enig	Vet ikke
Politiet						
Brannvesenet						

Ambulansetjenesten	○	○	○	○	○	○
Flyambulansen	○	○	○	○	○	○
330 skvadronen	○	○	○	○	○	○
Sivilforsvaret	○	○	○	○	○	○
Røde Kors	○	○	○	○	○	○
Norsk Folkehjelp	○	○	○	○	○	○
Norske Redningshunder	○	○	○	○	○	○

31) Jeg oppfattet at det hadde det vært mulig å forbedre samarbeidet mellom min organisasjon og andre organisasjoner:

Veldig uenig	Uenig	Nøytral	Enig	Veldig enig	Vet ikke
○	○	○	○	○	○

32) Jeg oppfattet at følgende organisasjoner dominerte/prøvde å dominere over andre organisasjoner:

	Veldig uenig	Uenig	Nøytral	Enig	Veldig enig
Politiet	○	○	○	○	○
Brannvesenet	○	○	○	○	○
Ambulansetjenesten	○	○	○	○	○
Flyambulansen	○	○	○	○	○
330 skvadronen	○	○	○	○	○
Sivilforsvaret	○	○	○	○	○
Røde Kors	○	○	○	○	○
Norsk Folkehjelp	○	○	○	○	○
Norske Redningshunder	○	○	○	○	○

33) Jeg oppfattet at min organisasjon tok felles beslutninger om fremdriften av operasjonen med følgende organisasjoner:

	Veldig uenig	Uenig	Nøytral	Enig	Veldig Enig	Vet ikke
Politiet	○	○	○	○	○	○
Brannvesenet	○	○	○	○	○	○
Ambulansetjenesten	○	○	○	○	○	○
Flyambulansen	○	○	○	○	○	○
330 skvadronen	○	○	○	○	○	○
Sivilforsvaret	○	○	○	○	○	○
Røde Kors	○	○	○	○	○	○
Norsk Folkehjelp	○	○	○	○	○	○
Norske Redningshunder	○	○	○	○	○	○

34) Jeg opplattet at min organisasjon delte ideer og synspunkter om fremdriften av operasjonen med følgende organisasjoner:

	Veldig uenig	Uenig	Nøytral	Enig	Veldig enig	Vet ikke
Politiet	○	○	○	○	○	○
Brannvesenet	○	○	○	○	○	○
Ambulansetjenesten	○	○	○	○	○	○
Flyambulansen	○	○	○	○	○	○
330 skvadronen	○	○	○	○	○	○
Sivilforsvaret	○	○	○	○	○	○
Røde Kors	○	○	○	○	○	○
Norsk Folkehjelp	○	○	○	○	○	○
Norske Redningshunder	○	○	○	○	○	○

35) Kunne deltakelsen av en annen organisasjon forbedret resultatet av operasjonen?

○ Ja ○ Nei ○ Vet ikke

36) Hvis ja, hvilken organisasjon?

Del 4

37) Du er...

○ Mann ○ Kvinne ○ Annet

38) Din tilhørighet

Velg alternativ ▼

Annet

39) Hvor lenge har du vært i organisasjonen du jobber i nå?

○ 0-1 år
○ 1-5 år
○ 5-10 år
○ Mer enn 10 år

40) Har du vært eller er du medlem av en annen organisasjon?

○ Ja ○ Nei

41) Hvis ja, hvilken organisasjon?

Velg alternativ

Annet

Appendix B Interview guide

- Hva gjør din organisasjon i en redningsoperasjon?
- Hva er din rolle?
- Hvor lenge har du jobbet der?
- Er du, eller har du vært, i en annen organisasjon?
- Kan du beskrive forløpet til en redningsoperasjon?
    - Hvordan var det organisert?
    - Deltok dere direkte i organiseringen?
- Har du opplevd komplikasjoner i operasjoner du har deltatt i noen gang?
    - Kan du beskrive dem?
- Hva kan gå galt i en operasjon?
    - Er det konsekvenser?
    - Hva skjer når noe går galt?
- Hvis en Org. Eller medlem av en annen org. Gjør noe galt, hva kan du gjøre?
- Hvordan er relasjonene med andre organisasjoner?
- Stoler du mer på noen organisasjoner?
- Hva er det som gjør at du sier at du har tillit til disse organisasjonene?
- Gjør tilliten samarbeidet lettere?
    - Hvorfor?
- Har det skjedd at du måtte samarbeid med noen som du ikke hadde tillit til?
    - Hvordan var det?
    - Hvar det forskjeller med samarbeidet med de andre organisasjonene?

- Har du opplevd at du stolte for mye på en organisasjon?
    - Hva skjedde?
    - Var det konsekvenser for det eller din organisasjon?
- Har du opplevd at tilliten du hadde til en organisasjon ble større etter en operasjon?
    - Hvorfor?
    - Hva skjedde?
- Har du opplevd det motsatte?
    - Hvorfor?
    - Hva skjedde?
- Treffer du ofte nye folk i operasjonene?
- Hvordan håndterer du det?
    - Er det noe du gjør når du treffer nye folk?
- Er det lettee å samarbeide med folk du kjenner fra før?
    - Hvorfor det?
- Når du må jobbe med noen du ikke kjenner fra før, hvordan blir samarbeidet påvirket?
- Er det noe du synes jeg burde ha spurt, eller er det noe annet du vil si?

Appendix C Definitions

Definitions of coordination

Article	Proposed definition
Nolte et al. (2012)	[…] Overt strategic thinking to align, organize and differentiate participating organizations' activities between beneficiaries, tasks, regions or tactics (p. 709)
Guo and Kapucu (2015)	Managing dependencies among activities (p. 6)
Brooks et al. (2013)	[The process to] connect a broad range of (network) sources of resource provision to specific needs (resource requirements) in specific locales (p. 935)
Comfort (2007)	Aligning one's actions with those of other relevant actors to achieve a shared goal. (p.
Kapucu (2006a) and Kapucu (2006b)	The degree to which there are adequate networks among the organizational parts for intra- organizational communication or among the organizations for inter-organizational communication to accomplish goals (2006b, p. 209)
Kapucu et al. (2010b)	[…] An effort to eliminate redundancies (p. 463)
Ivanova and Sydnes (2010)	A process – the act of coordinating – and a goal: the bridging together of diverse elements into a harmonious relationship in support of a common objective (p. 142)
Martin et al. (2016)	The collaborative process in which organizations align their actions with the actions of other organizations to achieve a common objective (p. 624)
Abbasi and Kapucu (2016)	The management of dependencies amongst activities (p. 50)
Curtis (2015)	Deliberate actions of interdependent autonomous units for a common purpose (p. 613)

Morris et al. (2007)	[Dividing work] by function […] through the use of hierarchical positions, legal-rational authority, specialization of tasks, and merit among members of the organization (2007, p. 95) Interaction of interdependent actors outside traditional hierarchical structures (p. 95)
Davidson 1976 in Sydnes and Sydnes (2011)	[…] A form of organizational relationship (p. 301)
Saban (2015)	[Distribution of] information to different actors of the desired outcome in a given transaction (p. 1497)

Definitions of cooperation

Article	Proposed definition
Nolte et al. (2012)	[…] To operate alongside other stakeholders, exchanging and sharing as appropriate to the setting (709)
Martin et al. (2016)	Short-term, often informal and voluntary relationships between organizations or parts of an organization that are characterized by low levels of intensity and risk (p. 624)
Kapucu et al. (2010b)	[…] A mutual agreement on who is going to perform effectively (p. 455)
Coles et al. (2012)	Interaction between agencies that does not require sharing of any resources, but provides for increased efficacy in both operations primarily through communication and potentially sharing other information (p. 68)
Saban (2015)	[…] Invest[ing] in the social capital and social underpinnings necessary to create mutually beneficial trade-offs (e.g., better outcomes for all partners) (p. 1497)

Appendix D Multivariate regression analysis

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	strain, collaborative culture, disagreements, previous contact, communication, trust, homophily, resources, SMM, adaptability, conflict[b]	.	Enter

a. Dependent Variable: collaboration

b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	,695[a]	,483	,422	,50900	,483	7,912	11	93	,000	2,129

a. Predictors: (Constant), strain, collaborative culture, disagreements, previous contact, communication, trust, homophily, resources, SMM, adaptability, conflict

b. Dependent Variable: collaboration

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	22,548	11	2,050	7,912	,000[b]
	Residual	24,094	93	,259		
	Total	46,642	104			

a. Dependent Variable: collaboration

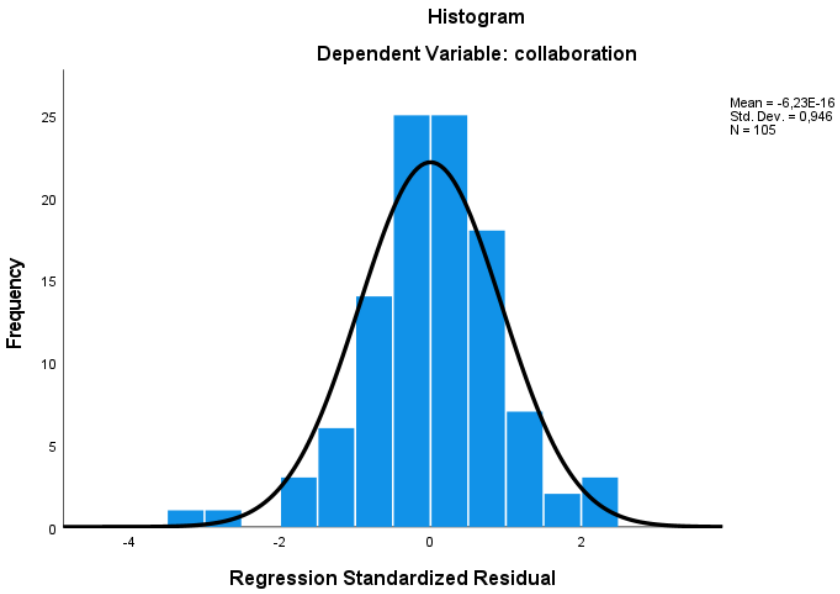
b. Predictors: (Constant), strain, collaborative culture, disagreements, previous contact, communication, trust, homophily, resources, SMM, adaptability, conflict

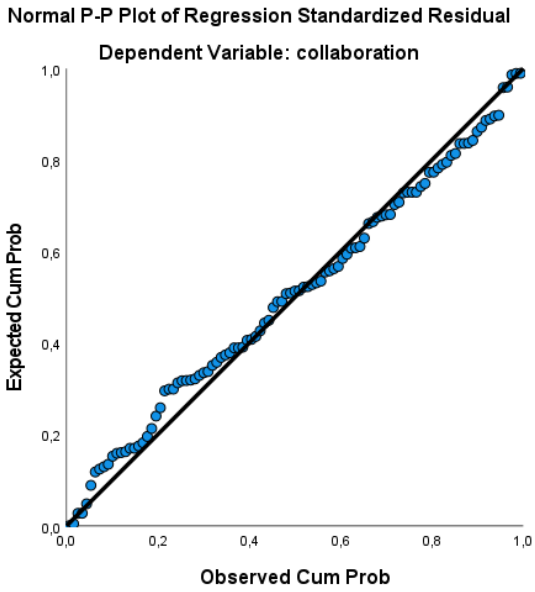
Model		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	trust	,651	1,536
	Previous contact	,799	1,252
	SMM	,578	1,730
	homophily	,719	1,392
	communication	,726	1,377
	Collaborative culture	,381	2,623
	disagreements	,371	2,699
	conflict	,389	2,569
	resources	,594	1,684
	adaptability	,391	2,560
	strain	,917	1,091

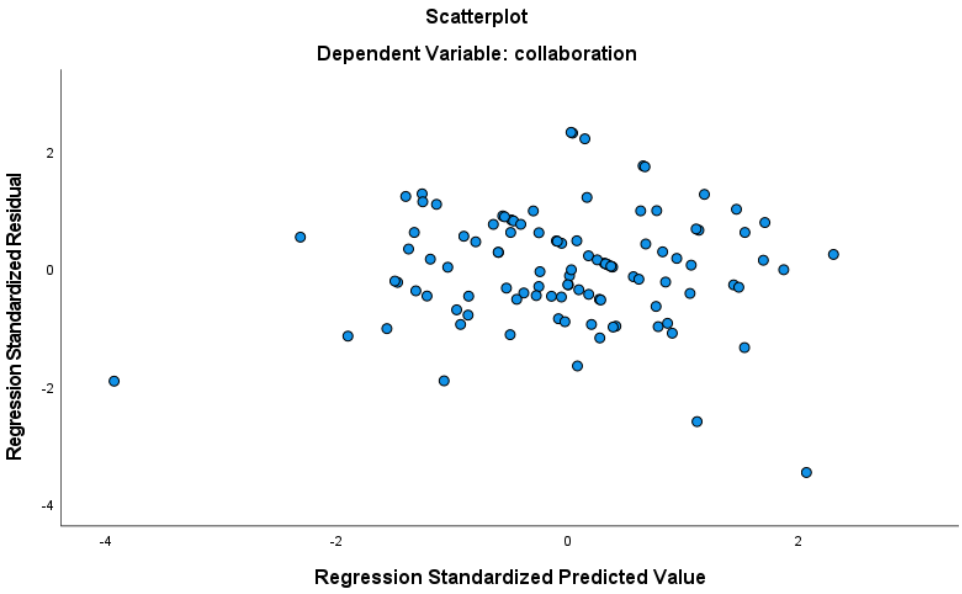
Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	1,9781	4,8792	3,8066	,46563	105
Residual	-1,77008	1,17932	,00000	,48133	105
Std. Predicted Value	-3,927	2,304	,000	1,000	105
Std. Residual	-3,478	2,317	,000	,946	105

a. Dependent Variable: collaboration




Normal P-P Plot of Regression Standardized Residual
Dependent Variable: collaboration
Expected Cum Prob
Observed Cum Prob
0,0
0,2
0,4
0,6
0,8
1,0


Scatterplot
Dependent Variable: collaboration
Regression Standardized Residual
Regression Standardized Predicted Value
2
0
-2
-4

Emergencies are characterized as dynamic and complex situations where, most often, different organizations have to collaborate in order to address them successfully.

The driving force of this dissertation has been identifying the factors that have the potential to influence collaboration and to investigate how the causal force is transmitted. Data retrieved through a systematic literature review, a survey and semi-structured interviews were used for this purpose.

Through the review of the literature on the field of emergency management, factors with the potential to affect collaboration were identified. The analysis of the survey data highlighted two of them. Namely, *trust and previous contact*. Following these results, the thesis presents two causal mechanisms that connect *trust and previous contact* to collaboration. These mechanisms were tested with the help of interviews.

In addition, this dissertation offers two further contributions. The first revolves around the idea of the concept of collaboration and the dangers of conceptual stretching. The second relates to the debate regarding the differences between large scale emergencies and small-scale emergencies. This last contribution is of special interest for practitioners.

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