When does the phoenix rise? Factors and mechanisms that influence crisis-induced learning by public organizations

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"In a crisis, be aware of the danger – but recognize the opportunity."
(John F. Kennedy, 1959)

"If organizations embrace the opportunity to acquire new knowledge and to enact new strategies, they can emerge from crises with renewed vitality"
(Seeger et al., 2003, p. 266)

CHAPTER 1

Introduction

1.1 CRISIS MANAGEMENT AND CRISIS-INDUCED LEARNING

Although crises do not happen on a frequent basis, they have an enormous and long-lasting impact on the lives of citizens. Vast global challenges and complex technological systems have made modern-day societies increasingly vulnerable to crises (Weick and Sutcliffe, 2011; Muller *et al.*, 2009). In recent decades, one thinks, for example, of, hurricane Katrina in the United States in 2005, the cyber-attacks in Estonia in 2007, the Q fever outbreak in the Netherlands in 2008, the Fukushima nuclear disaster in Japan in 2011, the MH17 plane crash in Ukraine in 2014, and the earthquake in Nepal in 2015. These crises were triggered by different kinds of incidents, maybe caused by a safety or security issue, were natural or man-made, and impacted different policy fields. Yet, in essence, crises all share the same elements. We define the concept of a 'crisis' as *a non-routine situation in which the core interests of a society are under severe threat with potentially devastating consequences* (drawing on Rosenthal *et al.*, 1989). A crisis is typically accompanied by high levels of perceived uncertainty, urgency, and surprise, and requires high-impact decisions under time pressure and stress (Rosenthal *et al.*, 2001; Boin and 't Hart, 2003). Crises differ from incidents and disasters in that incidents are disruptions with less potential loss and scale and can be dealt with by the normal system, but which, if not contained, could escalate into a crisis, while a disaster can be understood as a 'crisis with a bad ending' (Boin and Rhinard, 2008, p. 3; Perry and Quarantelli, 2005). Crises are extraordinary and undesirable situations of disorder and collective stress that *"defy widely held beliefs that such things must not and cannot happen 'here'"* (Boin *et al.*, 2008, p. 3). Compared to 'classical' crises, modern-day crises are characterized by a high degree of technical complexity, mediatization, a large number and wide variety of actors involved, and a large-scale and often transboundary impact (Ansell *et al.*, 2010).

Guaranteeing the security of citizens has traditionally been one of the core tasks and responsibilities of public organizations, and public organizations have extensive powers to safeguard security. A central component of safeguarding security consists of protecting citizens against crises. Public organizations therefore have to be involved in crisis management, that is, all activities that are aimed at preventing crises, managing crises, and recovering from crises (Pearson and Mitroff, 1993; Coombs, 2012). The sheer number of crises and their large-scale impacts upon society have resulted in increased attention and capacities being given to the field of crisis management in recent decades. However, academic research in this field is lagging behind practice and needs a more solid grounding. Studying crisis management is important because the adequacy of crisis management directly affects the well-being of citizens. *Organizational learning* is one of the central processes in crisis management (Boin *et al.*, 2005; Boin *et al.*, 2008; Pearson and Clair, 1998). Together with sense-making, decision making, meaning making, and terminating, it is one of the

most critical tasks for public leaders in times of crisis (Boin *et al.*, 2005). Organizational learning is of such importance because, through the process of organizational learning, public organizations can improve their crisis management (Cooke and Rohleder, 2006). Crises tend to expose organizational failures, which subsequently need to be addressed by implementing organizational changes. Public organizations must learn from crises to be capable of preventing future similar crises from occurring (Carley and Harrald, 1997) and, if a crisis has not been avoided, to improve the crisis response during the crisis so as to mitigate the consequences, rebuild reputations, and return to normality. In other words, through crisis-induced learning, public organizations build resilience, both for the organization and for society at large (Crichton *et al.*, 2009). Learning is the fundamental process for creating high performing organizations that are able to carry out complex and high-risk tasks in a demanding environment while maintaining a high level of safety (La Porte and Consolini, 1991; Sagan, 1993).

1.2 PROBLEM DEFINITION

1.2.1 The difficulties in achieving crisis-induced learning

In the present study, we examine crisis-induced learning by public organizations. Organizational learning is a key process in the practice of crisis management and achieving organizational learning in response to a crisis can be considered one of the major challenges in crisis management (Boin *et al.*, 2005; Moynihan, 2008; Stern, 1997; Roux-Dufort, 2000). We observe, however, that learning by public organizations from crisis situations is often limited. This is reflected in recent evaluation reports on crises, of which we highlight some examples. On September 18th 2017, in an investigation report on a mortar accident during a Dutch army operation in Mali, the Dutch Safety Board concluded the following: *"The Board identifies serious deficiencies in the care for security of Dutch soldiers during the operation in Mali […] previous investigations of the Board exposed similar patterns. Therefore the Board is concerned regarding the lack of apparent motivation of the defense organization to learn from the events"*[1] (2017, p. 100). In their report on a Turkish Airlines plane crash near Schiphol airport in 2009, the Dutch Safety Board concluded that government had failed to learn important lessons regarding the provision of medical assistance, lessons that had already been raised after five previous crisis investigations. The Board observed that significant problems identified after the Turkish Airlines crisis appeared to largely resemble the problems that materialized after the Hercules plane disaster in Eindhoven in 1996, the Dakota incident above the Wadden Sea in 1996, the fireworks disaster in Enschede in 2000, and the fire in the Schiphol airport detention center in 2005 (Dutch Safety Board, 2010). A large and increasing number of academic studies confirm that public organizations tend

1 Translated from Dutch.

to have major difficulties in learning from a crisis (Smith and Elliott, 2007; Stern, 1997; Deverell, 2009; Toft and Reynolds, 2005; Moynihan, 2009; Senge, 1990; Carley and Harrald, 1997). Some are even stronger in their views, arguing that learning from crises by public organizations is often barely achieved if at all (Roux-Dufort, 2000; Boin *et al.*, 2005; Elliott, 2009; Birkland, 2009). As Roux-Dufort puts it, organizations *"are very reluctant to learn from crises […] The organization's priority is to come back and maintain the status quo as soon as possible, rather than exploring the extent to which the crisis is a privileged moment during which to understand things differently"* (2000, p. 26).

1.2.2 Variation in crisis-induced learning

In addition to the difficulty that public organizations in general have in learning from crises, studies also point to the great variation in the degree to which organizations learn (Birkland, 2006; Deverell, 2009; Boin *et al.*, 2016). Taking a closer look at some of the major crises in the past, we observe that while public organizations often learn little from a crisis, suddenly they seem to learn extensively from another, similar, crisis. For example, after the swine fever outbreak in 1997, the Dutch food safety services (NVWA) demonstrated extensive learning: renewing crisis protocols, introducing a crisis archiving system, and laying the foundations for an internal crisis management division. Differences in learning outcomes between crises can be observed across different types of crises and across different policy fields. We observe this phenomenon, for example, in the field of maritime safety, particularly in the prevention of oil-spill disasters in European waters. In response to the Sea Empress disaster off the Welsh coast in 1996, the European Union did not adopt any major legislation (Krämer, 2007). However, only a few years later, after the Erika oil-spill disaster off the Brittany coast in 1999, the European Union adopted major policy reforms. These reforms were reflected in the "Erika I" and "Erika II" legislative packages that established the European Maritime Safety Organization, strengthened port state control and classification societies that control the technical safety standards of ships. The packages further established a comprehensive compensation fund and initiated the phasing out of single-hull oil tankers (EC 2003; Wene 2005). The reforms, literally named after the crisis, demonstrate that the European Union learnt profound lessons from the Erika disaster. The major difference in learning outcomes between the two oil-spill crises is striking given their remarkable similarity: both took place in the European Atlantic; were caused by an oil tanker breakdown; had dramatic and long-term impacts on the marine environment and the fishing and tourist industries; led to great social and political turmoil; and were transboundary in nature (CEDRE 2018; ITOPF 2018).

1.2.3 Lack of theoretical explanation

The observation that differences in learning outcomes recur in many crisis contexts, across different policy fields, and across different types of crises, draws attention to underlying factors, operating according to deeper mechanisms, that could explain this variation. To date, the literature on crisis management does not provide a clear and satisfying answer to the question as to why there is variation in crisis-induced learning. The process of crisis-induced learning has remained poorly understood (Carley and Harrald, 1997; Deverell, 2009). Compared with the vast number of studies on organizational learning in regular, non-crisis, situations (e.g., Bennett and Howlet, 1992; Crosson *et al.*, 1999), the process of crisis-induced learning by public organizations has remained understudied (important exceptions are Van Duin, 1992; Carley and Harrald, 1997; Stern, 1997; Dekker and Hansén, 2004; Deverell, 2010; Birkland, 2006; Smith and Elliott, 2007). The gaps in the knowledge center around questions concerning what factors drive the crisis-induced learning and what mechanisms underpin this process, with a solid theory yet to be developed (Smith and Elliott, 2007; Deverell, 2009; Stern, 1997). In the present study, we aim to unravel the main factors and mechanisms that explain crisis-induced learning. This is the main goal of the present study, which leads to the following main research question: *"How do public organizations learn from crises; and what factors and mechanisms explain this process of crisis-induced learning?"*

1.3 RESEARCH DESIGN

The present research consists of an explorative study into the factors and mechanisms that affect crisis-induced organizational learning by public organizations. Given the complexity of the learning process, we aim to provide insights into underlying mechanisms that work in different policy and crisis contexts. By unravelling the mechanisms linking variables, one can create a better understanding of the fundamental processes that work in various contexts (Pawson and Tilly, 1997; De Vaus, 2001). The main objective of this study is to gain an understanding of the crisis-induced organizational learning process through a systematic empirical analysis of data from multiple crises. On the basis of these insights, we aim to build an initial theoretical model of public organizations' crisis-induced learning and the main factors that explain it. This will provide a basis for further research on the topic and form the first step towards creating a solid theory on why, or why not, public organizations learn from crises.

The present study is predominantly explorative in the sense that the empirical data are leading. However, although the empirical data have a leading role, we also use crisis management, public administration and organizational learning literature to create a general basis for understanding factors, concepts, and processes (see Dubois & Gadde, 2002). In line

with the recommendation of Dekker and Hansén (2014, p. 141), we take an open, dynamic, and integrated approach to crisis-induced learning in public organizations. This means that we do not, in advance, exclude any organizational learning processes and/or factors. We use theoretical insights to create a general framework for crisis-induced learning (section 1.6) and to understand factors potentially related to crisis-induced learning (chapter 2). The units analyzed in this study are public organizations, which we assume to be entities that are capable of drawing lessons. The approach we take in identifying organizational learning is to look at changes made by an organization in response to a crisis, and subsequently trace back the cognitive basis for these changes (cf. Birkland, 2006). In the present research, we study organizational learning by analyzing specific lessons drawn by public organizations.

The present study is broken down into four sub-studies, which are discussed in the final section of this chapter. Each sub-study focuses on a particular aspect of crisis-induced learning. We used a combination of different research designs, determined by which best fitted the goal of each sub-study. We used both qualitative (systematic case studies; Yin, 2014), quantitative (statistics), and mixed-method designs. Data were collected using in-depth interviews [sub-studies 1 and 3], a survey [sub-study 4], and secondary sources [sub-studies 1 and 2]. Data analysis methods include latent coding (Babbie, 2014) [sub-study 1] political claims analysis (Koopmans and Statham, 1999), pattern-matching (Trochim, 1989) [sub-study 2], research synthesis (Cooper *et al.*, 2009) [sub-study 3], and factor and regression analysis [sub-study 4]. These methods allowed the collection and analysis of a large volume of data from a significant number of crises. For each sub-study, cases were selected that best suited the goal of the sub-study. The cases selected for sub-study 1 were the learning by the Dutch Food and Consumer Product Safety Authority ('Nederlandse Voedsel- en Warenautoriteit', NVWA) from the swine fever crisis (1997–1998), the foot-and-mouth disease crisis (2001), the avian influenza crisis (2003), and the Q fever crisis (2007–2010). Sub-study 2 considers the learning by the European Union after the Braer (1993), the Sea Empress (1996), the Erika (1999), and the Prestige (2002) oil-spill disasters in European waters. Sub-study 3 investigates learning by the Dutch crisis management organization during 60 crises in the Netherlands. Finally, sub-study 4 considers the learning orientations of the 209 Dutch municipalities in response to a hypothetical crisis. The advantages of basing the first two sub-studies on the NVWA and on the EU is that both these organizations have faced several crises, allowing us to keep the organization constant in each study. We collected data from various sources: 16 in-depth interviews with key experts [sub-study 1], 1,449 political claims in newspaper articles and in parliaments [sub-study 2], 114 post-crisis evaluation reports [sub-study 3], and survey data from 209 mayors [sub-study 4].

1.4 THEORETICAL, METHODOLOGICAL, AND PRACTICAL RELEVANCE

1.4.1 Theoretical relevance

The public management literature mainly reports studies on processes in public organizations in their regular stable environment. There is relatively little attention for organizational processes in complex turbulent periods, such as crises. This is perhaps surprising given that these turbulent periods have an exceptionally large impact on public management structures. As such, there is need for more research on processes in times of chaos, not least because of the disproportionate impact these periods have on public institutions and wider society. In the crisis management and public administration literature, the circumstances that explain the kind of impact that crises have are generally rather unclear. Therefore, *"one of the mayor challenges for crisis analysis in the 21st century is to understand the conditions under which crises have different types of political and institutional impacts"* (Rosenthal *et al.*, 2001, p. 43). Organizational learning can result in crises having a long-lasting institutional impact. Increasing knowledge on crisis-induced learning is especially relevant because it crosses all disciplines in social science (see Stern, 1997).

We have discussed the difficulties that public organization have with organizational learning from crises, and that the variation in crisis-induced learning is not explained well in the literature. Further, within the considerable literature on organizational learning (Bennett and Howlet, 1992; Crosson *et al.*, 1999; Easterby-Smith and Lyles, 2011), relatively little attention is given to organizational learning in the context of a crisis. Therefore, in the present study, we aim to provide deeper theoretical insights into the process of crisis-induced organisational learning and, more specifically, increase knowledge on the factors and underlying mechanisms that drive crisis-induced organizational learning by public organizations. Deverell (2010) observed that *"there is a [general] need to increase knowledge on the relation between crisis and learning"* (2010, p. 126). Smith and Elliott similarly observed that *"it is clear that considerable research is needed to ascertain the manner in which organizations can effectively learn to prevent crisis events"* (2007, p. 533). Typical crisis circumstances seem to make general organizational learning theory only applicable to crisis-induced learning to a limited extent (Moynihan, 2008). Elliott identified this gap in the literature and claims that there is an *"absence of an all-embracing framework of organizational learning from crisis"* (2009, p. 158). More specifically, there is a theoretical gap as to what factors drive crisis-induced learning by public organizations and through which underlying mechanisms these operate in different contexts (Smith and Elliott, 2007; Deverell, 2009; Stern, 1997). Currently, the literature lacks a theoretical model that adequately explains the observed variation in crisis-induced learning. The few theoretical

insights on factors potentially related to crisis learning available are scattered and not well grounded empirically (see sub-study 1). Moreover, the process of learning during crises has gained little attention in the literature, with most studies on crisis-induced learning examining post-crisis learning (Moynihan, 2009).

1.4.2 Methodological relevance

A further reason for the lack of knowledge concerning the factors and mechanisms that drive the process of crisis-induced learning is the lack of systematic empirical foundations (Smith and Elliott 2007, p. 534). Scholars have noted that there is *"a striking lack of empirical studies in the field of organizational learning"* (Dekker and Hansén, 2004, p. 127). To date, the field of crisis management in general, and studies on crisis-induced learning in particular, are dominated by conceptual works and low-*n* case studies (Veil, 2011; An and Cheng, 2012). Most case studies on crisis management tend to amount to thick descriptions of individual crises. There is a striking need to build more extensive, and more systematic, empirical evidence. This would enable a more comprehensive understanding of the conditions and mechanisms that affect learning from a crisis (Smith and Elliot, 2007; Cooke and Rohleder, 2006). Here, our use of systematic comparative qualitative, quantitative, and mixed methods is innovative in the field of crisis management. Using these methods enables us to identify patterns in learning across different crises. Collecting data on public organizations that have experienced multiple crises is also rather unusual. We study organizational learning on the level of distinct lessons learnt (or not learnt) within a case context, which is rather novel in studies on organizational learning. Finally, one of the main reasons for the lack of empirical data on crisis-induced learning is the absence of both a framework and a measurement instrument to adequately operationalize the concept. Overall, we aim to contribute to the literature with rich empirical research and by taking a first step towards a framework for a more refined operationalization of crisis-induced organizational learning.

1.4.3 Practical relevance

There is a great practical relevance in gaining a better understanding of crisis-induced learning by public organizations because this can contribute to improving crisis management practice. Boin *et al.* (2005) speak of organizational learning as *"one of the most underdeveloped aspects of crisis management"* (p. 14). Crises can have devastating and long-lasting consequences for society, in social, political, physical, economic, environmental, and institutional terms. By learning during a crisis, public organizations can improve the effectiveness of their crisis response activities, which will contribute to reducing the damage and ending the crisis. In crisis situations, learning or failing to learn can literally mean a difference between life and death, since learning can ensure that crisis response activities are effective (Elliott, 2009). Learning after a crisis helps to restore the reputation of the organization and the system in

general. Implementing organizational changes helps to prevent the disastrous events from happening again in the future and, if they nonetheless happen, to respond better to them. The consequences of not being able to learn from a crisis can be very tangible. For example, after the Prestige oil-spill disaster in 2002 (one of the largest environmental disasters to ever hit Europe), the EU Energy and Transport Commissioner Loyola de Palacio explained in the European Parliament that *"We could have avoided the Prestige oil spill." (…) "Had the timetable proposed by the Commission been upheld, the Prestige would have had to be taken out of service on 1 September 2002"* (EC, 2002, p. 1).

In addition, crisis-induced learning is very relevant for public organizations in retaining their legitimacy because citizens, and all kinds of other actors in society, expect them to learn from crises. In contrast to the problems that organizations experience in learning, there is a widespread and persistent belief among citizens, the media, and within public organizations themselves, that they can and should learn extensively from crises (Birkland, 2006). When a crisis occurs, demands from citizens, politicians, and the media typically coalesce around questions of accountability – that the people who are responsible for the crisis occurring should be identified and punished – and learning – that the causes of the crisis should be investigated and subsequently fixed (Boin *et al.*, 2017). Strong claims are made in a range of formal and informal political forums, such as parliaments, television shows, and newspapers, with the recurrent narrative that 'government' should ensure that 'these awful events' are prevented from 'ever happening again' and that it 'should have learned' from previous crises (Dekker and Hansén, 2004). For example, within hours of the start of a large fire in the Grenfell Tower in London on June 14th 2017, a newspaper article in the Guardian under the heading *"Disaster was waiting to happen: fire expert slams UK tower blocks. Architect Sam Webb says breaches of fire safety standards in UK are common and lessons from Lakanal House have not been learned"* suggested the crisis could have been prevented if lessons had been learnt.

1.5 THE RELATIONSHIP BETWEEN CRISES AND LEARNING

The link between a crisis and organizational learning is unclear and ambivalent (Deverell, 2009; Stern, 1997; Carley and Harrald, 1997). Although studies on the impact of crises agree that crisis circumstances have a distinct impact on organizational learning and that crisis-induced learning differs from learning in a regular context (Moynihan, 2008), they differ in how they see the relationship between crises and learning. On the one hand, crises are seen as facilitating organizational learning but, on the other hand, as impeding organizational learning.

1.5.1 Crises as an opportunity for learning

On the one hand, crises are seen as creating excellent opportunities for learning by functioning as a catalyst for generating knowledge and implementing change, which are viewed as the two core aspects of learning (Fiol and Lyles, 1985). Punctuated equilibrium theory posits that public organizations tend to experience long periods of stability with only minor, incremental, or no changes at all in their structure or policies. These long periods of institutional lock-in are from time to time interrupted by sudden short periods of major organizational change (Baumgartner and Jones, 1993). In the literature, these short periods that allow drastic organizational change are known as 'windows of opportunity' (Kingdon, 2011) or 'critical junctures' (Capoccia and Kelemen, 2007). Crises can be interpreted as focusing events that are needed to open these windows by shaking the system up and bringing proposals for change to the agenda (Kingdon, 2011; Schein, 1972).

The process of organizational learning from crises might appear rather straightforward: after a crisis, investigations and evaluations reveal its causes, which are subsequently addressed by adopting improvements in the organization to prevent such failures reoccurring (Birkland, 2006; Birkland, 2009; Carley and Harrald, 1997). Although crises are generally perceived as 'terrible events', crises can also be viewed as opportunities to improve a malfunctioning organization or societal system. Veil (2011) argues that *"[a] crisis, when viewed as an opportunity to learn, can actually benefit an organization"* (p.117). The premise here is that crises are symptoms of an underlying structural weakness. Crises direct attention to and reveal underlying flaws in a system that would otherwise have remained undetected (Birkland, 2006). Crises thus, by definition, generate a strong potential for lesson drawing. Several studies illustrate a crisis's dual role using the Mandarin symbol for crisis, which suggests that a crisis is intrinsically an ambivalent situation since the symbol can be understood as not only meaning 'dangerous' but also 'opportunity' (Ulmer *et al.*, 2015), although the correctness of this translation has recently been questioned.

Some typical aspects of crisis circumstances facilitate learning. For example, crises tend to create upsurges of information suddenly becoming available. All kinds of societal actors bring in information through different communication channels, such as through investigative journalism reported in television and newspapers, public inquiries, internal evaluations, judicial reports, and scientific studies (Dekker and Hansén, 2004). Extensive public scrutiny during a crisis puts pressure on public organizations to find solutions to the problems and act on the events. Crises typically create a political atmosphere that is focused on action in which divergent stakeholders become willing to cooperate and share a general recognition that things need to change, which in a regular context would be unlikely.

1.5.2 Crises as an impediment to learning: the crisis-induced learning paradox

However, despite the great relevance of crisis-induced learning and the theoretical opportunities that crises generate for learning, a substantive number of studies show that, in reality, crises create many barriers to organizational learning. That is, typical crisis circumstances can complicate organizational learning (Stern, 1997; Roux-Dufort, 2000; Elliott, 2009; Carley and Harrald, 1997) as we discuss below. Given that crises highlight the need for learning, one can observe a paradox in the relationship between crisis and learning: *"the need for learning is regarded highest under circumstances in which it is most difficult to achieve"* (Dekker and Hansén, 2004, p. 211). In other words, the very crisis that makes learning imperative – a situation of chaos, threat, and uncertainty – also impedes the ability to learn because the political and organizational capabilities to adopt lessons are limited. This paradox when it comes to crisis-induced learning has been recognized by several crisis-management scholars (Dekker and Hansén, 2004, p. 211; Boin *et al*., 2005, p.120; Birkland, 2006, p. 162; Roux-Dufort, 2000). Birkland explains that *"whereas such [large] events provide significant fodder for learning, they are also likely to overwhelm the ability of a system to respond with routine procedures and therefore may limit learning"* (2006, p. 162).

Typical crisis circumstances that complicate learning are that, in a crisis, there is shortage of time and the calm needed for adequate reflection on events. As a result, responses to a crisis are not based on well thought out and rational assessments of alternative courses of actions and consequences (Allison and Zelikow, 1999). Rather, there is limited understanding and oversight. The huge complexity and the unexpected and uncertain nature of crisis situations result in crisis responses being largely based on public leaders' improvisation, expert intuition, trial-and-error, and ad hoc adjustments to changing circumstances (Gilpin and Murphy, 2008). The understanding of what actually happened is limited because of the surprise, uniqueness of circumstances, rapid sequence of events, and blurring from the onslaught of unreliable, contradictory, and changing information (Dekker and Hansén, 2004; Rosenthal *et al*., 2001). There is little time to verify knowledge and consult expertise from outside the organization. Public leaders are preoccupied with dealing with the acute problems related to resolving the crisis, such as blame avoidance and external communication, more than with learning. The political component of a crisis can obstruct learning because many actors use the political vacuum to promote their own interests and end up in a political struggle of blaming and framing (Boin *et al*., 2008; Stern, 1997). Actors might not agree on how to make sense of the events and what lessons should be learnt (Olson, 2000).

1.6 TOWARDS A FRAMEWORK FOR CRISIS-INDUCED LEARNING

Before we discuss the structure and design of the four sub-studies, we now discuss a conceptual framework for crisis-induced learning. The aim of this framework is to clarify the focus of the present study, and the main assumptions that we build upon. In the present study, we take an integrated approach to organizational learning. In our framework, after first defining what we mean by organizational learning, we distinguish between "who learns", "what is learnt", "why it is learnt", and "when it is learnt", thus building upon commonly used distinctions in the organizational learning and crisis management literature (cf. Crossan *et al.*, 1999; Bennett and Howlett, 1992; Moynihan, 2008; Deverell, 2009).

1.6.1 Defining organizational learning

Since the initial works of Cyert and March (1963) and Argyris and Schön (1978), organizational learning has become an active field of study with a large body of literature developed around the process of learning by organizations (Easterby-Smith and Lyles, 2011). Seminal research has been carried out by, for example, Argyris and Schön (1978), Fiol and Lyles (1985), Senge (1990), March (1991), Huber (1991), and Rose (1993). Although organizational learning is a frequently used concept that has been studied extensively, the concept has remained rather elusive. Scholars have defined and demonstrated organizational learning in a variety of ways (cf. Bennett and Howlett, 1992; Crossan *et al.*, 2009; Fiol and Lyles, 1985). Studies have demonstrated learning by identifying changes in many organizational aspects, such as organizational strategies, ideas, beliefs, culture, routines, legislation, policies, protocols, and structures (Bennett *et al.*, 1992; Carley and Harrald, 1997).

However straightforward the term "organizational learning" might seem, in the literature organizational learning can be regarded as a 'conceptual minefield' (Levy, 1994) with scholars approaching learning by organizations from different angles. In the present study, we argue that many of the concepts used in the literature for learning by organizations, such as 'lesson-drawing' (Rose, 1993); 'goal-based learning' (Moynihan, 2005), and 'policy learning' (May, 1992) can be reduced to two core processes. In the literature, organizational learning is viewed either from a cognitive perspective (the acquisition of new knowledge by an organization) or from a behavioral perspective (the transposing of new knowledge into improved organizational actions) (Fiol and Lyles, 1985; Argyris and Schön, 1978; Argote, 2013). In the present study we integrate these two perspectives and define organizational learning as: *the process of acquiring new knowledge and understanding (cognitive) and the transposing of this new knowledge and understanding into improved organizational actions (behavioral).* This integrated approach covers the various definitions of organizational learning seen in the literature. Organizational learning thus is about the relationship between knowledge and action (Freeman, 2007).

1.6.2 Who, what, why, when distinctions

Who learns? An important distinction with regard to learning is the entity that draws the lessons. Here, scholars distinguish between organizations, groups/teams, and individuals as entities that can learn (Argote, 2013). In the present research we study learning by organizations, but assume that these include an agglomeration of individuals and groups. One must recognize that organizational learning is to some extent an abstract process since it is the individuals within organizations that have the cognitive capacity to interpret knowledge, draw lessons, and translate these lessons into actual behaviors (Sabatier, 1987; Busenberg, 2001; Van Duin, 1992). Although individuals are the building blocks of organizational learning, organizational learning is not the sum of what individuals learn. Organizations have cognitive systems and collective understandings that are shared by their members, which can be held in, for example, legislation, handbooks, and protocols (Hedberg, 1991). An important consequence of the micro-foundations of organizations is that information, in order for it to be understood and translated into actions, often needs to be transferred from one part of an organization to another. It is this process of knowledge dissemination among organizational members that constitutes the process of learning (Huber, 1991). Groups and teams are important in organizational learning because communication channels and implementation of decisions work on the level of groups of individuals.

What is learnt? Organizational learning can be understood as adaptations to many different aspects of an organization, such as insights, protocols, organizational routines, norms, legislation, and policies (Carley and Harrald, 1997, pp. 105-106). In the present study, we do not focus exclusively on one type of lesson but take an integrated approach in which we combine organizational learning and policy learning that have developed as two distinct literature streams. We argue that, at their core, they consist of the same processes (Common, 2004). In the present study, we consider policy learning to be one aspect of organizational learning: organizations can change a range of organizational aspects, including their policies. Several scholars distinguish between different levels of learning, most commonly between "single-loop learning" and "double-loop learning" (Argyris and Schön, 1978). Single-loop learning occurs when organizations detect and improve existing organizational aspects, while double-loop learning refers to changing an organization's underlying assumptions, objectives, and norms. However, we have decided not to adopt such distinctions since, as previous studies have shown, they are primarily theoretical and problematic to operationalize empirically (e.g., Van Duin, 1992).

Why is it learnt? A public organization can learn from a crisis for different purposes. For example, crisis-induced learning processes could be aimed at preventing future similar crisis. This learning for *prevention* is about finding out what caused a crisis to happen, and what organizational actions could avoid these causes reoccurring. Crisis-induced learning

processes can also be aimed at improving the response to a current or future crisis. This learning for *response* is about identifying inefficiencies in activities undertaken to manage a crisis and actions to improve these activities (Veil; 2011; Moynihan, 2008; 2009; Deverell, 2009).

When is it learnt? Related to the purpose of learning is the moment of learning. Several crisis management models view crisis management as a cyclical process and distinguish subsequent stages in crisis management. In the crisis management literature, it is common to distinguish between a pre-crisis phase, an in-crisis phase, and a post-crisis phase (Coombs, 2012; Smith, 1990). These models assume that different conditions are present in each of these phases and that an organization is involved in different crisis management activities, which are also linked to different organizational learning processes (Smith and Elliott, 2007; Veil, 2011). *Pre-crisis* learning takes place before a crisis and is considered to be about learning from signals and incidents to prevent these leading to a full-blown crisis – the incubation phase of a crisis (Turner, 1976). *In-crisis learning* takes place under complex crisis conditions, such as chaos, uncertainty, and stress, and is aimed at improving the response to the acute crisis. Given these complex conditions, in-crisis learning is generally thought to be more challenging than post-crisis learning (Moynihan, 2009). *Post-crisis learning* takes place when normal conditions have largely returned and is about reflecting upon crisis events and improving both prevention and response. The present study examines crisis-*induced* learning, that is learning *from* a crisis, which implies that a crisis has occurred, and lessons are drawn based on the events. Therefore, in the present study, we exclude pre-crisis learning *ex ante*.

Finally, distinctions in the purpose of learning and the moment of learning might seem to coincide: in-crisis learning to improve the crisis response, and post-crisis learning to improve crisis prevention. Note, however, that this is not the case, since improving the prevention of a future crisis can already be initiated in an ongoing crisis and responses to a crisis can be improved not only during a crisis, but also after a crisis has ended.

1.7 RESEARCH PLAN

The study is structured as four sub-studies as shown in Figure 1.1. Each sub-study has a different focus. In the first sub-study, we explore the major factors that affect crisis-induced organizational learning and through which mechanisms. The outcomes of the first sub-study provide a basis for Sub-studies 2, 3, and 4 of this research, which focus on the role of particular factors in crisis-induced learning. The results of Sub-study 1 showed that additional research was needed to gain an adequate understanding of the role of politicization in the crisis-induced learning process (Sub-study 2), the role of external experts in organizational learning during crisis situations (Sub-study 3), and the role that

public leaders' characteristics play in the wake of a crisis (Sub-study 4). These sub-studies are presented as individual chapters, each containing a theoretical framework for the specific sub-study based on general insights from the crisis management and public administration literature, including the 'who-what-why-when' framework, and from several earlier studies on crisis-induced learning.

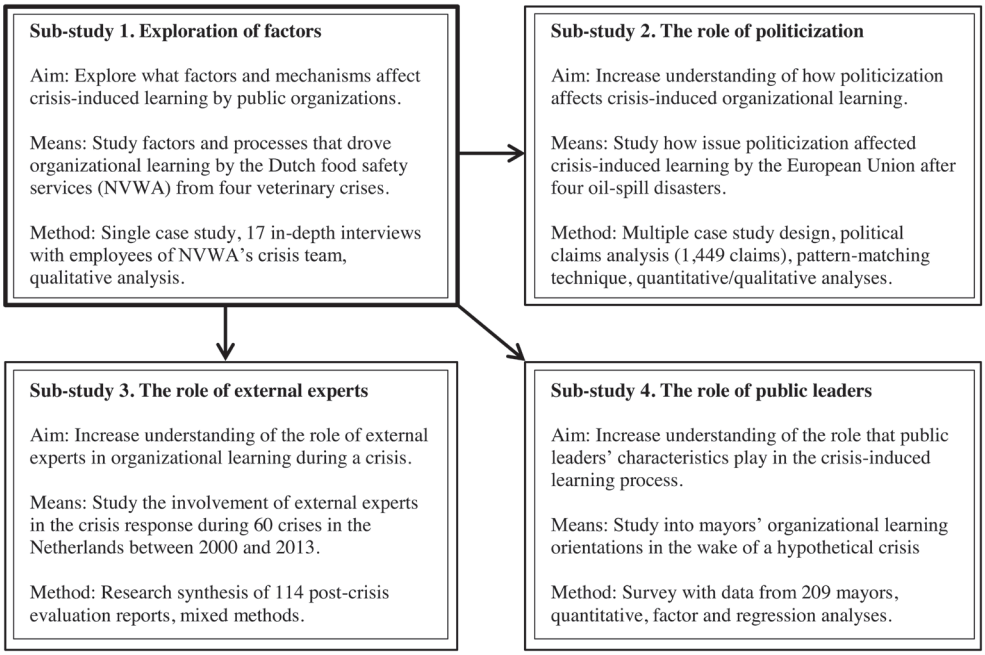

Figure 1.1 Structure of the dissertation

Sub-study 1 explores the factors and mechanisms that drive the process of organizational learning from a crisis. The literature appears to lack a model that includes the various kinds of factors that influence crisis-induced organizational learning. We use concepts distilled from the general crisis management and public administration literatures: 'politicization', a 'shared sense-making' of what lessons to learn, 'organizational culture', 'organizational structure', the 'stage in crisis management', 'post-crisis evaluation reports', and 'public leadership'. In this sub-study, we focused on learning by The Netherlands Food and Consumer Product Safety Authority ('NVWA') in response to four large veterinary crises that the organization has faced since 1997. The cases included in the study are the outbreaks of swine flu in 1997, foot-and-mouth disease in 2001, avian influenza in 2003, and Q fever in 2007. The NVWA was selected for this study as an exceptional case due to the multiple crises it has faced, the exceptional learning outcome, and its wide-ranging crisis-management authority. We use

an in-depth case study design based on 17 in-depth semi-structured interviews with 'key experts' in the NVWA crisis management organization ('NVIC')[2] and a document analysis of internal and external crisis handbooks, emergency action plans, crisis protocols, internal memos, crisis evaluation reports, and general reports. The findings in this first explorative sub-study provide argumentation for more detailed research into the roles of politicization (Sub-study 2), of external expertise during a crisis (Sub-study 3), and of public leaders' characteristics (Sub-study 4). The present sub-study, carried out together with scholars Daphne van Kleef and Trui Steen, is part of the 'Double Bind' VIDI research program of the Netherlands Organization for Scientific Research ('NWO')[3]. Sub-study 1 is presented in Chapter 2 of this dissertation and has been published in the Journal of Contingencies and Crisis Management (2017, volume 25, issue 4, December 2017, pp. 326–340); see Broekema *et al.* (2017).

Sub-study 2 addresses the role of politicization in the crisis-induced organizational learning process. While the literature proposes that politicization can affect organizational learning, it is argued both as having a promoting and an impeding effect (May, 1992; Stern, 1997; Dekker and Hansén, 2004). In this study, we examine the relationship between issue politicization and learning by the European Union in response to four large oil-spill disasters: accidents with the oil tankers MV Braer in 1993, the MV Sea Empress in 1996, the MV Erika in 1999, and the Prestige in 2002. We chose to study these oil-spill disasters in European waters because of their great similarity in terms of geographical area, events, and consequences, but different learning outcomes. In this study, we conduct a political claims analysis (Koopmans and Statham, 1999) on newspaper articles (*The Guardian* and *The Times* for the Braer and Sea Empress cases, *Le Monde* and *Le Figaro* for the Erika case, and *El Mundo* and *El País* for the Prestige case) reporting debates in the national parliaments of the United Kingdom, France, and Spain, and on debates in the European Parliament. We also conduct a document analysis of the six evaluation reports published in response to these four oil-spill disasters and the subsequent new legislation adopted by the European Union. To understand the relationship between politicization and learning we use a pattern-matching technique (Trochim, 1989; Yin, 2009) and compare the subjects of politicized issues with the subjects of recommendations made in the evaluation reports, and with the legislation adopted by the European Union. Sub-study 2 is presented in Chapter 3 of this dissertation and was published as a single-authored article in the journal Public Administration (June 2016, Volume 94, Issue 2, pp. 381–398); see Broekema (2016).

Sub-study 3 explores the role that external experts play in the crisis management response to crises, and thus addresses in-crisis learning. Although the literature suggests an important role for experts in times of crisis (Rosenthal and 't Hart, 1991; Grönvall,

2 'NVWA Incident en Crisis Centrum'.

3 Nederlandse Organisatie voor Wetenschappelijk Onderzoek.

2001), this aspect does not seem to have been comprehensively studied empirically, that is, over a large number of crises. Sub-study 3 consists of two parts. In the first part, we examine the characteristics of external experts who are involved in crisis situations and the characteristics of their involvement. In the second part, we analyze how external experts affect the crisis response, and under what conditions their involvement contributes to adequate crisis management. Although external experts are in a position to contribute to an in-crisis learning process by the internal crisis management organization, their involvement has not yet been systematically studied empirically. For this study, we selected 60 crises that occurred in the Netherlands between 2000-2013. We conduct a research synthesis including data from the 114 post-crisis evaluation reports that were published after these crises. This method allows one to systematically identify general patterns over a large number of cases. We quantitatively analyze information on the characteristics of external experts and their involvement as detailed in the 114 reports. In addition, we qualitatively analyze the statements in the reports that refer to the relationship between expert involvement and adequate crisis management. Sub-study 3 builds on a larger research project undertaken with scholars Carola van Eijk and René Torenvlied that was conducted for the Research and Documentation Centre (WODC)[4] of the Ministry of Security and Justice (Van Eijk *et al.*, 2013). This study is presented in Chapter 4 of this dissertation and has been published with the same co-authors in the International Journal of Disaster Risk Reduction (2018, volume 31, October 2018, pp. 20-29); see Broekema *et al.* (2018).

Sub-study 4 addresses the role of public leaders' characteristics in the crisis-induced learning process. While the literature on crisis leadership seems disconnected empirically from that on crisis learning, public leaders' characteristics are often suggested as affecting crisis-induced learning (De Vries, 2016). Sub-study 4 therefore examines the learning orientation of public leaders in the wake of a crisis and the influence of not only their public service motivation (PSM, see for example Perry, 1996) but also several other characteristics of public leaders. We expect that a public leader with a strong public service motivation to be oriented more towards instrumental learning than towards political learning in the immediate aftermath of a crisis. To investigate this, we sent out a survey to all Dutch mayors in the Netherlands with items probing their priorities regarding organizational learning processes from a hypothetical crisis situation occurring in their municipality. The items used were derived from previous surveys on organizational learning and from the general crisis management literature. Using data collected from 209 mayors, we conduct factor and regression analyses. An additional aim of this study is to provide an initial basis for a framework that enables a more refined operationalization of the crisis-induced learning concept. This sub-study was also part of the 'Double Bind' research program funded by the Netherlands Organization for Scientific Research (see sub-study 1) and carried out

4 'Wetenschappelijk Onderzoek- en Documentatiecentrum'.

together with scholars Jan Porth, Trui Steen, and René Torenvlied. Sub-study 4 is presented in Chapter 5 of this dissertation and is currently under review (revise and resubmit) at an international journal.

In a final Chapter 6, we integrate the findings of the four sub-studies and come to an overall conclusion. We propose a conceptual theoretical model outlining the main factors affecting crisis-induced organizational learning. Further, we discuss the present study's theoretical contributions, and its limitations. Finally, we make suggestions for follow-up research on crisis-induced learning, and end with some practical implications for crisis management.

CHAPTER 2

What factors drive organizational learning from crisis? Insights from the Dutch food safety services' response to four veterinary crises

This chapter is co-authored by Daphne van Kleef and Trui Steen and has been published as: Broekema, W., Van Kleef, D., Steen, T. (2017). What factors drive organizational learning from crisis? Insights from the Dutch food safety services' response to four veterinary crises. *Journal of Contingencies and Crisis Management,* 25 (4): pp. 326-340.

2.1 ABSTRACT

Although organizational learning has been studied extensively, empirical studies in relation to crises and theory building have remained scarce. This study explored what factors affect the learning process from crises of a public sector organization. We studied the responses of the Dutch food safety services (NVWA) to the veterinary crises classical swine fever (1997–1998), foot-and-mouth disease (2001), avian influenza (2003) and Q fever (2007–2010). Data from in-depth interviews with key experts in the organization and from crisis management documents pointed to political–economic context, social–emotional understanding, organizational structure, organizational culture, crisis management stage and organizational forgetting as key factors. Remarkably, post-crisis evaluation reports, leadership and a shared sense-making of what lessons to learn were not found to play a central role.

2.2 INTRODUCTION

Public organizations experience major difficulties in learning from crises. Contrary to a common assumption, many studies sustain that they often learn poorly or not at all (c.f. Smith & Elliott, 2007; Stern, 1997; Deverell, 2009; Roux-Dufort, 2000; Elliott, 2009). Learning from a crisis is a complex and challenging affair. Crises often are highly unique and unpredictable situations, in which complex circumstances of chaos and stress, politicization and a lack of reliable information make it difficult to distil clear crisis lessons (Boin *et al.*, 2008; Dekker and Hansén, 2004). At the same time, it is of the utmost relevance that organizations learn from crises in order to prevent or adequately respond to future ones, because the consequences of crises are severe and the tolerance for mistakes is low. Effective government action can in some crises literally mean a difference between life and death. The Dutch food safety services, named the 'NVWA',[5, 6] responsible for the management of veterinary crises in the Netherlands, is an exceptional case in that it seems to have actually learned extensively from crises over the past two decades. Among other things, it established a special crisis division, refined crisis protocols, created training and simulation programs, developed the use of personal protective equipment and created quick response teams. As a result, within the EU, many aspects of the NVWA's crisis management organization are now used as best practice for food safety services in other EU member states (cf. FVO [Food and Veterinary Office] 2013, 2014). Why did the NVWA manage to learn extensively from crises, while public sector organizations in general have such difficulty with this process?

There is a large literature on organizational learning (cf. Argote, 2013; Crossan *et al.*, 1999; Easterby-Smith and Lyles, 2011), as it is the key process through which an organization can improve its performance. Only a limited number of these studies, however, have delved in a systematic way into the process of organizational learning in the context of crisis situations (some important exceptions are Birkland, 2006; Deverell, 2010; Smith *et al.*, 2007; Stern, 1997; Toft and Reynolds, 1994). So far the process of crisis-induced learning remains not well understood – especially with regard to what factors drive the process (Smith *et al.*, 2007; Deverell, 2009). The building of theory on the basis of empirical research in this field has remained very scarce. Dekker and Hansén explain the complexity of learning in the context of a crisis: 'the need for learning is regarded highest under circumstances in which it is most difficult to achieve' (2004, p. 211). Aiming to clarify the process, we posed the question: *What factors drive a public sector organization's learning from crises?*

The aim of this explorative study was to gain insight into the different factors that affect the process of organizational learning from crises and to provide a framework for further research on the subject. Recognizing both a cognitive and an action perspective (see Fiol and Lyles, 1985), we understand organizational learning in this study as the acquisition of new

5 'Netherlands Food and Consumer Product Safety Authority'.

6 If we mention 'NVWA' in this article, we refer to either the NVWA itself or one of its predecessors.

knowledge and the translation of this knowledge into more effective organizational action. Using a structured single case study design (Yin, 2014), we studied the learning process of the NVWA from crises in the past two decades, by tracing back the factors behind the lessons learned (see Blatter and Haverland, 2012). In this period, the NVWA (or one of its predecessors) was faced with outbreaks of the classical swine fever (1997– 1998), the foot-and-mouth disease (2001), the avian influenza in (2003) and the Q fever (2007–2010). The NVWA is a relevant object of study because it can be viewed as a 'positive' case due to the extensive learning it accomplished, the special authorities and responsibilities it holds in the Netherlands regarding the management of veterinary crises and the exceptional fact of having faced multiple crises in the past decades. We used data from internal and external crisis management documents – evaluation reports, emergency action plans, crisis protocols and internal memos – as a basis for 17 in-depth interviews with key experts in the crisis management division of the NVWA. Taking an explorative approach, we used general insights from the literature as a starting point, yet led the experts indicate how learning manifested itself and what factors influenced the process and how.

We will start with a description of useful insights from the literature on organizational learning, the link between crisis management and learning and general insights on concepts related to the process of learning from crises. We describe the context of the crisis management in the field of food and consumer safety and animal health in the Netherlands, followed by an explanation of the research design including our choice of the NVWA as an object of study, and a brief discussion of the four major veterinary crises investigated. We then discuss the factors we found that affect learning from crisis in the NVWA and end with a discussion of the findings.

2.3 THEORETICAL FRAMEWORK

2.3.1 Organizational learning processes

Although the concept of organizational learning has been studied extensively (cf. Argote, 2013; Easterby-Smith *et al.*, 2011), so far no generally accepted definition or framework has been developed. Organizational learning is defined and measured in many different ways (see Bennett and Howlett, 1992; Crossan *et al.*, 1999; Howlett *et al.*, 2009). We argue that the many perspectives on learning by organizations [e.g., 'lesson drawing' (Rose, 1991), 'policy learning' (May, 1992), 'goal-based learning' (Moynihan, 2005)] inherently boil down to the same core mechanisms. Some scholars understand learning as a cognitive process, while others see it merely as an action process. Following the approach of Fiol *et al.* (1985), who recognize both a cognitive and an action dimension, we define organizational learning as

the acquisition of new knowledge and the translation of this knowledge into more effective organizational action.

The concept of organizational learning is to some extent metaphorical because it is only individuals within organizations that have the cognitive capability to draw lessons, and not organizations as such (Sabatier, 1987). Linking individual learning to an organizational setting, we see that several important learning processes come at play that are related to communication, which are discussed by Huber (1991). First, after new knowledge has been acquired, it needs to be 'distributed' through the organization. Distribution of information is important, as 'organizations often do not know what they know' (1991, p. 100). Multiple studies show that within an organization, groups play an important role in the distribution of knowledge between individuals (see Argote, 2013; Crossan *et al.*, 1999). Second, through the process of 'interpretation', individuals within an organization create a shared understanding of information. Finally, through 'organizational memory', new knowledge can be embedded in the organization, so that it can be retrieved when needed (see Argote, 2013; Levitt and March, 1988).

In the literature, organizational learning has been demonstrated in many different ways: as changes in beliefs, ideas, culture, policies, knowledge, procedures, routines, structures, protocols, legislation and behavior (Bennett *et al.*, 1992; Carley and Harrald, 1997). Taking an instrumental and open approach here, we do not exclude any of these in advance, but take into account those aspects that are perceived as representing learning by the employees of the organization studied. We will now link organizational learning to a crisis context, which brings in a new dimension. Or, as Moynihan explains, 'the topic of learning during crises [also] needs special attention because it is different from learning in routine situations' (2008, p. 350).

2.3.2 Learning as a challenge in crisis management

In the crisis management literature, organizational learning is generally viewed as one of the central processes as well as challenges in crisis management. Through learning, an organization can enhance its crisis management capabilities and build resilience (Crichton *et al.*, 2009). Public organizations generally experience long periods of stability or incremental change, which are suddenly interrupted by unsettling events that create opportunities for major change (Baumgartner and Jones, 1993; Kingdon, 2014). Typically, crises – situations of high uncertainty and urgency, in which the vital interests of a society are under threat (see Rosenthal *et al.*, 2001) – function as a trigger for organizational change. Because change is a central part of the concept of organizational learning, in theory, crises can be major initiators for learning as well. People also *expect* public organizations to learn from crises in order to safeguard them from future disaster. In theory, learning from a crisis is a rather straightforward process: the causes of the crisis event are revealed through evaluation, after

which flaws are addressed by the implementation of changes in the organization (Birkland, 2006). Learning following a crisis, for example through readjustments in culture (Turner, 1978), leads to improved management processes within the organization. Improved management processes subsequently make an organization less vulnerable for the incubation of crisis – the process through which an incident evolves into a crisis (Turner, 1976; 1978). In theory, through a continuous process of learning from errors, a 'high-reliability organization' could be created – an ideal type of organization carrying out vital tasks in society that is resilient to crises as it adapts quickly to changes in a complex environment (see Weick & Sutcliffe, 2001).

However, as Smith and Elliott explain, 'despite contrary evidence, an underlying assumption of many studies is that organizational learning tends to follow a crisis' (2007, p. 519). In reality, public organizations are found to experience major problems with crisis-induced learning and often fail to learn (see Deverell, 2009; Elliott, 2009; Roux-Dufort, 2000; Stern, 1997). Learning in the context of a crisis is an inherently complex affair for several main reasons. First, social and technological systems in modern society are complex and tightly coupled, which makes it hard to obtain a comprehensive view of potential causes of incidents (see Sagan, 1993). Second, crises are uncommon and highly unique occasions, as consequences of a contingent combination of events, which makes drawing general lessons difficult (see Crichton *et al.*, 2009). Third, crises happen unexpectedly and are often largely unpredictable, so that it is difficult to prepare for them through adopting organizational changes. Finally, the evaluation of 'latent' crises – events with a potential of disaster that have turned out well or have been prevented from happening – is rather problematic as one does not know how events would have developed, although important as regards learning. Having outlined the key challenges of learning from crises and related characteristics of the process, we will now discuss what insights the literature offers on the potential factors affecting learning from crises.

2.3.3 Concepts related to crisis-induced learning

As discussed earlier, studies that have a main focus on organizational learning, explicitly addressing learning in a crisis context, are scarce and the factors that drive the process are as yet unclear (Deverell, 2009; Smith *et al.*, 2007). However, the literature on public administration and management, particularly the streams of crisis management and organizational learning, do provide useful insights into factors that are potentially related to the crisis-induced learning process. In the current literature, we can distinguish the following seven broadly defined factors, that we used as theoretical background for our study and as a point of departure to formulate sensitizing concepts for the empirical data collection.

Politicization

Crises can become intensely politicized in a short time frame. Because the political stakes are high, various kinds of stakeholders struggle to push through their interests. Several studies suggest that politicization is an important factor influencing the organizational learning process (Dekker *et al.*, 2004; Stern, 1997). However, what exact role politicization plays remains unclear, because both positive and negative roles are attributed to it (Broekema, 2016). On the one hand, politicization puts pressure on an organization to adopt lessons from a crisis. On the other hand, because actors involved struggle over different interests through blaming and framing (Brändström and Kuipers, 2003), a situation is made more complex so that distracting clear crisis lessons becomes increasingly difficult (Boin *et al.*, 2008). In addition, political pressure creates an incentive for an organization to (quickly) adopt changes that are not firmly based on increased knowledge and thorough reflection and therefore reflect mere change rather than 'real' learning (see Broekema, 2016; May, 1992).

Shared sense-making (of what lessons to learn)

Crisis can be seen as a social phenomenon strongly related to people's perceptions of events. Typically, after a crisis, multiple interpretations circulate on what happened, the causes of the events, questions of responsibility and what lessons should be learned (see Olson, 2000). Crises create a strong sense of chaos, disrupting people from their regular day-to-day routines (Torenvlied *et al.*, 2015). 'Sense-making' is a central part of the process of returning to normality again, as meaning is given to events and a shared understanding is created (Boin *et al.*, 2005; Weick, 1995). In this process, stories, emotions and symbols play a central role (see 't Hart, 1993). Due to cognitive limitations, people are bounded in understanding the full complexity of the events. The many interpretations that circulate in the media together with large streams of subjective and ambivalent information make it difficult to formulate concrete crisis lessons (Dekker *et al.*, 2004). A shared understanding of the causes of events and what changes should be made to prevent future crises might facilitate the effective implementation of crisis lessons.

Organizational culture

In the literature, the culture of an organization is often related to organizational learning and crisis management (e.g., Reason, 1997; Turner, 1978; Wang, 2008). As outlined earlier, organizational learning largely takes place in groups of individuals. Shared ideas, values and norms influence the communication between individuals and hence the dissemination of knowledge (Huber, 1991). In a safe and open environment without any fear of blame, people are more willing to admit errors. In a safety culture, in which there is strong commitment to learning, people focus on detecting and communicating of errors (Weick *et al.*, 2001). In particular, in times of chaos and stress, an informal culture with close personal ties might

contribute to an adequate exchange of knowledge. A reinforcing culture that motivates people to improve and innovate encourages people to acquire knowledge and actually implement changes (see Argote, 2013). Schein refers to this as the 'learning culture', in which 'members must hold the shared assumption that learning is a good thing worth investing in' (2010, p. 366). However, a strong organizational culture can also be less open to change, for example because it increases a risk of group think, which limits a critical reflection of deviating information and viewpoints.

Organizational structure

The structure of an organization generates the conditions in which learning can take place (Fiol *et al.*, 1985). The capacity of an organization delimits the opportunity to actually acquire knowledge and implement changes based on that knowledge. The decision-making structures determine how an organization responds to drastic changes in the external environment (see Fiol *et al.*, 1985). To accomplish learning, an organization needs to have sufficient capacity. Structuring processes, for example adopted in protocols and plans, can facilitate learning because they encourage people to take part in learning processes such as exchanging information (see Moynihan, 2009). At the same time, protocols can also inhibit learning, because learning from crisis requires change in regular behavior and flexibility (see Gilpin and Murphy, 2008), while people often have difficulties with departing from protocols. Lagadec (1997) explains that structured debriefing meetings and simulations contribute to reflection on events and to crisis preparation.

Stage in crisis management

Crisis management models distinguish different stages in crisis management in which different processes take place, approaching crisis management as a cyclical process (cf. Smith, 1990; Veil, 2011). In the crisis *response* stage, the operational response to the crisis is organized, while in the *revision* stage, it is looked back on what went wrong, how and what changes are to be made (Coombs, 2012). In these different stages of crisis management, an organization can have different aims of learning, either prevention or response (Deverell, 2009). Moynihan (2008) distinguishes between intercrisis learning, that is learning from one crisis in order to prevent or more effectively respond to a next one, and intracrisis learning, that is aimed at improving the crisis response activities during the actual crisis. Learning during a crisis is generally considered a much more challenging process than learning post hoc, because of the complexities of crisis dynamics such as time limitation, political pressure, chaos and media scrutiny.

Post-crisis evaluation reports

Many studies point to post-crisis evaluations as playing an important role in the crisis-induced learning process (e.g., Elliott, 2009; Turner, 1976). From a technical perspective on learning (commonly adopted, especially in early studies on learning), evaluation studies are essential to learning, as they are the means through which an organization acquires feedback on previous actions (Howlett *et al.*, 2009). The rationale is that public inquiries reveal the causes of a crisis and the flaws in the organization, which can then be addressed by implementing changes. However, many scholars are critical of the actual role of post-crisis evaluation reports in the learning process, often emphasizing political influences and context (e.g., Birkland, 2009; Elliott and McGuinness, 2002). Furthermore, post-crisis evaluation reports are found to vary widely in such respects as design, standards and evaluation organization.

Crisis leadership

Finally, leadership is related to crisis-induced learning through the prominent role public leaders have in crisis management, especially during a crisis (Boin and 't Hart, 2003; Boin *et al.*, 2005). In an organization, public managers decide what to focus on in the learning process, who is involved and what interventions are taken at what specific time (Crossan *et al.*, 2011: 452–453). Leaders committed to learning can have an encouraging role and provide the conditions for people to learn (Schein, 2010). They can provide vision and establish contacts between people from different parts of the organization. Instead of being focused on learning, during and after a crisis, public leaders can also get caught up in political aspects of the crisis such as the struggle over accountability and responsibility (Boin *et al.*, 2003, 2008).

We now provide some fundamental background information on the Dutch food safety services' crisis management organization, which in the Netherlands is nationally entrusted with crisis management tasks in relation to animal disease outbreaks, and which served as the case to explore the factors that drive organizational learning from crises.

2.4 THE NETHERLANDS FOOD AND CONSUMER PRODUCT SAFETY AUTHORITY AS A CRISIS MANAGEMENT ORGANIZATION

Intensive livestock breeding in the Netherlands covers a relatively large share of the national economy compared to other countries and is heavily entwined with other parts of the Dutch economy. Despite its small territory, the Netherlands is the largest exporter of live animals in Europe, and one of the largest in the world, with more than 40,000 livestock breeders in the country and more than 12 million pigs alone (CBS, 2016). The Netherlands Food and Consumer Product Safety Authority (NVWA) is a government agency operating for

the Ministry of Economic Affairs (EZ) and the Ministry of Public Health, Welfare and Sports. The NVWA is responsible for monitoring the safety of food and consumer products, safeguarding the health of animals and plants, animal welfare and nature legislation in the Netherlands. The main tasks of the NVWA are supervision, risk assessment and risk communication regarding these aspects (NVWA, 2014).

Every year, the NVWA has to deal with multiple incidents that threaten the safety of food and consumer products or the health of animals and plants, and typically have the potential to quickly arouse intense public attention and debate. Recent examples are the bluetongue outbreak in 2006–2008, the *E. coli* outbreak in 2011 and the horse meat affair in 2013, all classified as 'incidents' by the NVWA. The NVWA's Incident and Crisis Centre (NVIC) – part of the Veterinary and Import Division – is entrusted with incident and crisis management tasks related to notifiable animal diseases. The NVIC is tasked with the coordination of the first response to animal disease notifications and the prevention, preparation, risk assessment and handling of suspected outbreaks. In addition, the NVIC provides support regarding serious incidents in other areas under the NVWA umbrella (NVWA, 2014). The NVIC has a permanent staff of 16 experts and is led by the Chief Veterinary Inspector (CVI). It is a matrix organization that in times of crisis recruits the vast majority of its manpower from other sections of the NVWA. The NVIC can draw upon 60 specialized animal disease experts, which are all official veterinarians. When a suspected case of a notifiable animal disease is reported, a trained 'expert team' – consisting of an animal disease expert, a veterinarian of the GD Animal Health[7] and the private veterinarian – is sent to the location for investigation. Subsequently, if the notifiable disease is confirmed, the operational response in the first three days of an outbreak is handled by what are called the 'front teams'. Each of the 16 front teams available consists of six people from different divisions of the NVWA: one coordinating veterinarian, one veterinarian, one assistant to the veterinarian, one health and safety worker, one administrator and one enforcer. Before and during a veterinary crisis, the NVWA/NVIC works within a large network of public, semi-public and private actors at different administrative levels, such as mayors (local), the Public Health Services ('GGD') (regional), agricultural interest groups, such as 'LTO', and the National Institute for Public Health and Environmental Protection ('RIVM') (national), the SCoPAFF[8] and the European Food Safety Authority ('EFSA') (EU), and the World Organization for Animal Health ('OIE') (global) (FVO, 2013; NVIC, 2014).

7 Gezondheidsdienst voor Dieren (Dutch animal health services).

8 Standing Committee on Plants, Animals, Food and Feed, formerly known as SCoFCAH.

2.5 METHODS

In this study, we used a structured single case study design (Yin, 2014), taking a causal-process tracing approach (Blatter *et al.*, 2012) to qualitatively study the NVWA's learning regarding crisis management in response to veterinary crises. We conducted an explorative study into the factors that affect organizational learning from crises. Although we used the literature as a general basis for understanding related concepts and potential factors of influence, the empirical data were the leading element in our study (see Dubois and Gadde, 2002). We concluded the analysis by aligning the empirical results with theoretical insights, approaching it as an iterative process (Dubois *et al.*, 2002; Yin, 2014). An in-depth case study design was chosen to do justice to the complexity of the process of organizational learning in relation to crisis, with (potentially) multiple factors at play which are strongly embedded in the specific crisis contexts.

We selected NVWA's crisis management organization as our object of study on the basis of several criteria. First, we identified the NVWA as an exceptional or 'positive' case. Blatter and Haverland explain that 'in the ideal-typical form of the CPT [causal-process tracing approach], those cases that show a strong positive result with respect to the outcome of interest are selected' (2012, p. 25). This approach is intended to reveal what factors (X) made outcome (Y) occur. Contrary to the usual situation reflected in the recent studies discussed earlier, the NVWA seems to have learned extensively from crises in the past decades. On EU level, the FVO [Food and Veterinary Office][9] evaluated the NVWA crisis management organization in relation to animal health very positively: 'the competent authorities are well prepared for handling minor and major outbreaks of epizootic diseases' (2013, p. 16), and many aspects of the NVWA crisis management organization are used as 'best practice' among food safety services of other member states[10] (FVO, 2013, 2014). Second, the NVWA provides a unique opportunity to analyze organizational learning behavior in relation to different crises for one and the same organization. Rarely does an organization have to face as many large crises as the NVWA did. Third, the NVWA holds important authorities and autonomy specifically regarding the crisis management of outbreaks of animal diseases in the Netherlands. Part of the organization is continuously active in preventing, preparing for, responding to and evaluating incidents and crises. Finally, the NVWA as a case provides rich empirical insights into the dynamics of a crisis management organization in the food safety sector, a type of 'high-reliability organization' – facing dozens of incidents a year that potentially have devastating societal consequences – that is not studied often. Generally, primary data from this sort of organization are available on only a very limited

9 Currently the DG Health and Food Safety. As part of the Health and Consumers Directorate-General of the European Commission.

10 Based on the conclusions from FVO audits.

scale.[11] Within the NVWA, we focused on the crisis management organization including the 'NVWA Incident and Crisis Centre' (NVIC), responsible for crisis management tasks in the field of food and consumer safety and animal health on a daily basis. As cases for analysis, we selected those crises that (1) were officially announced by the government as 'crisis', that is with a large-scale societal impact in the Netherlands, (2) concerned animal disease outbreaks and (3) took place after 1995. The four crises that meet these criteria are the outbreaks of classical swine fever in 1997– 1998, foot-and-mouth disease in 2001, avian influenza in 2003 and Q fever from 2007 to 2010.

The primary data for this study were derived from 17 in-depth semi-structured interviews with 'key experts' in the NVWA crisis management organization: senior (veterinary) inspectors working at the NVIC or in the front teams. We selected employees for interviews on the basis of their organizational function, level and involvement in the crisis response for at least two of the four crises analyzed. We interviewed seven front-line workers, six operational managers[12] and four managers (see Table 2.1). Each interview was conducted by two researchers, lasted between an hour and an hour and a half, and was recorded and transcribed. At the start of the research project, a working protocol was established, including agreements with the NVWA regarding confidentiality, of which we informed the interviewee at the beginning of each interview. Two senior officials of the NVWA checked a draft version of this article for factual inaccuracies.

Our knowledge base for the in-depth interviews was secondary data from internal and external documents: crisis handbooks, emergency action plans, crisis protocols, internal memos, crisis evaluation reports and general reports (see Table 2.1). We questioned each respondent on the crisis lessons learned by the NVWA and the factors that he or she thought induced these lessons. As a point of departure, we used the broad categories distilled from the literature, as discussed in the theory section, treating the main concepts as 'sensitizing concepts' (Van den Hoonaard, 1997), but let the empirical data define them. We used latent content analysis and coded the interview transcriptions per sentence on (1) interviewee, (2) topic of crisis lesson, (3) crisis context and (4) factor categories: 'politicization', 'shared sense-making','organizational culture', 'organizational structure', 'crisis management stage', 'post-crisis evaluation reports', 'leadership' and 'other'. In a second round of coding, we recoded the data in new categories that better fit the empirical data: 'political–economic context', 'social–emotional understanding' and 'organizational forgetting' emerged. The coding was done by one researcher, and coding was discussed within the research team in cases of doubt. Note that we did not aim to 'measure' any 'effects', but to provide a first insight into the factors that drive organizational learning from crises.

11 Because the researchers were part of a long-term research project (2011–2016) at the NVWA, they had a unique access to internal data.

12 Within the organization called 'operational crisis consultants'.

Table 2.1 Data collection

Method	No.	Source (document/expert)
Expert interviews	17	
Front-line workers	7	Senior (veterinary) inspectors; senior inspector who is front team coordinator; (veterinary) inspectors who are front team members
Operational management	6	Crisis coordinator NVWA; senior policy advisor; senior staff members NVIC; senior veterinary officer
Management	4	Chief veterinary inspector; deputy chief inspector NVWA; head of NVIC; head of department of veterinary teams
Document analysis	27	
Crisis handbooks	3	NVWA handbook for incident and crisis management (2014); Departmental handbook for crisis decision-making (2014); National handbook for crisis decision-making (2013)
Emergency action plans	4	Policy emergency action plan CSF and ASF (2013); Policy emergency action plan FMD (2013); Policy emergency action plan AI, NVWA (2013); Policy emergency action plan AI, Ministry of Economic Affairs (2014)
Crisis protocols	3	Emergency action plan handling suspicions of animal diseases and zoonoses, NVIC (2014); Emergency action plan AI (2007); NVIC emergency action plan animal disease control AI, CSF/AVP and FMD (2014)
Internal memos	2	Report on evaluation meeting QF (2010); Internal evaluation report QF (2010)
Main crisis evaluation reports	4	CSF evaluation (SEV and D&T, 1998); FMD evaluation (Abbas *et al.*, 2002); AI evaluation (Den Boer *et al.*, 2004); QF evaluation (Van Dijk *et al.*, 2010)
General reports	11	CSF reports (LNV, 1997; Alterra, 2007); FMD reports (LEI, 2002); AI reports (Impact, 2004; RIVM, 2004); QF reports (National Ombudsman, 2012; RIVM 2011; PWC, 2012); Reports on zoonoses (RIVM, 2010); Reports on NVWA (FVO, 2013, 2014)

Note: CSF: classical swine fever; FMD: foot-and-mouth disease; AI: avian influenza; QF: Q fever.

2.6 FOUR VETERINARY CRISES IN A ROW

We studied four crises with a high societal impact: outbreaks of the classical swine fever in 1997–1998, the foot-and-mouth disease in 2001, the avian influenza in 2003 and the Q fever in 2007–2010.

2.6.1 Classical swine fever crisis, 1997–1998

The outbreak of the highly infectious classical swine fever (CSF) in the Netherlands between February 1997 and May 1998 (end of the epidemic) had a dramatic social and economic

impact in the Netherlands. Thousands of farms were affected by export and transport bans, buy-out and take-over measures and culling measures. Four hundred and twenty-nine livestock holdings saw their animals culled because these holdings proved to be infected and another 1,286 livestock holdings have been culled pre-emptively; in total, more than 10 million pigs were killed. The crisis took hundreds of thousands of man-hours and cost society billions of Dutch guilders (SEV and D&T, 1998).

2.6.2 Foot-and-mouth disease crisis, 2001

The foot-and-mouth disease outbreak in the Netherlands between 21 March and 25 June 2001 had far- reaching social, economic and political consequences. At the end of the foot-and-mouth disease outbreak, the first time under the European 'nonvaccination policy', a total of 26 infected holdings had been confirmed. A total of 2,974 holdings were culled pre-emptively. Measures taken by the government included a transport ban, an export ban, suppressive vaccinations and culling of livestock holdings. Around 270,000 (cloven-hoofed) animals were culled on infected farms or pre-emptively, of which almost 200,000 had been vaccinated. Another 119,000 animals were culled for welfare reasons. The total economic damage of the foot-and-mouth disease outbreak was estimated at 900 million euros. The large-scale culling of healthy animals met with enormous resistance in society, especially among farmer communities. In the farmer village of Kootwijkerbroek, emotions became so tense that three officials were held as hostages by farmers and the riot police was needed to restore order (Abbas *et al.*, 2002).

2.6.3 (Highly pathogenic) Avian influenza crisis, 2003

Avian influenza – also known as bird flu – had broken out in the Netherlands for the last time in 1926. In subsequent decades, it occurred in Europe in the United Kingdom, Germany and Italy. In February 2003, an outbreak of the highly pathogenic avian influenza variant hit the Netherlands, and lasted until August of that year. This avian influenza crisis had a large-scale social and economic impact in the Netherlands. A total of around thirty million animals – 30% of all poultry in the Netherlands at that moment – were culled on infected holdings, pre-emptively or for welfare reasons. This involved more than 1,400 livestock holdings and fifteen thousand small backyard flocks. At 241 locations, the presence of the avian influenza virus was confirmed. Measures taken by the government were a transport ban, an export ban, mandatory indoor housing of poultry and a ban on gatherings of poultry. On 17 April 2003, a veterinarian active during the crisis died as a consequence of the virus. The costs of the crisis were estimated at 270 million euros, with the economic damage at another several hundred million (Den Boer *et al.*, 2004).

2.6.4 Q fever crisis, 2007–2010

The outbreak of Q fever in the Netherlands in the period of 2007 until the summer of 2010 – the greatest Q fever epidemic in the world until today – had a dramatic impact on Dutch society, both socially and politically. The Q fever is a zoonotic disease which means that it is contagious from animals to humans. The government decided to cull 62,500 pregnant goats and sheep at 88 holdings in an attempt to contain the disease. Other measures taken included the vaccination of goats, a transport ban for infected holdings and hygiene regulations for the whole goat sector (Van Dijk *et al.*, 2010). Over the period 2007 until 2010, around 4,000 infections of humans were reported, and a registered 19 people died as a result of the disease (RIVM, 2016).

2.7 ANALYSIS: FACTORS DRIVING LEARNING

We found that the NVWA has learned many lessons in the field of crisis management since the outbreak of classical swine fever in 1997. These relate to external communication (with farmers, the livestock sector, the public), work safety (protective equipment, psychological care, vaccination, working hours), organizational structure (centralization, establishing an incident and crisis centre, front teams), cooperation with other parties (public/private experts), organizational routines (crisis protocols, culling and rendering methods, education and training programs), public safety (hygiene measures, intake of used materials) and animal welfare (culling methods, inspections in the sector). We identified *six key factors* that drove the learning of these lessons, shown in Table 2.2. Below, we discuss each of these factors in more detail.

2.7.1 Political–economic context

The NVWA's learning from crises is strongly affected by its political–economic context, more specifically political pressure and budget cuts. The experts explain that *political pressure* works in two directions. On the one hand, politics, as the higher authority, puts pressure on the NVWA to actually draw crisis lessons. As an expert explains, 'if you do not learn lessons, you will quickly receive a hundred parliamentary questions'.[13] Political attention is needed if decisions for change are to be taken and to obtain the means and capacity for implementation. On the other hand, political pressure can prevent lessons from being incorporated or lead to changes that do not reflect learning. An expert explains that in the Q fever crisis, because of its controversial nature, politics opted quickly for large-scale destruction of animals, despite the recommendation of the NVWA to adopt a vaccination policy partly on the basis of experiences from previous crises. They also mention political interests of the large farming economical sector in cases inhibiting learning.

13 All interview quotes were translated from Dutch.

The experts identify the drastic *budget cut* by the EU after the swine fever crisis (1997–1998) as a major breakthrough for learning by the NVWA, functioning as a basis for most lessons learned afterwards. The European Commission decided to cut the Dutch government's compensation budget for the crisis by about 100 million euros, largely for not having adequately archived their actions and for working with inadequate and outdated crisis protocols. This received heightened political attention and criticism at national level. The immediate result was that the Dutch food safety authority learned extensively. It completely renewed its crisis protocols and set up an adequate archiving system. As a result of these improvements, the European Commission was much milder on the NVWA's response in the foot-and-mouth disease crisis in 2001, hardly cutting the budget for the Netherlands. Finally, in relation to budget issues, the experts also note that austerity cabinets make it financially hard to implement changes in the organization.

Table 2.2 Key factors found to drive organizational learning from crisis and their aspects

External	**Political–economic context**	**Social–emotional understanding**
	1. Political pressure Political attention, decision-making authority, political–economic interests *2. Budget cuts* Budget cuts (e.g., the drastic cut from the EU after the classical swine fever crisis), austerity cabinets	*1. Social–emotional events* Specific social–emotional events (e.g., riots in Kootwijkerbroek in the foot-and-mouth disease crisis; the death of a veterinarian in the avian influenza crisis) *2. Media attention* Strengthening social–emotional understanding
Internal	**Organizational culture**	**Organizational structure**
	1. Intercollegial relations Open atmosphere, mutual trust, personal contacts, discussion, consensus on crisis lessons *2. Motivation* Intrinsic motivation, pride in working for the team, challenge, professionalism	*1. Structure of organization* Capacity, crisis management division (creation of NVIC and structure of front teams), limited team size, reorganizations *2. Structuring processes* Crisis protocols, training and education programs, post-crisis evaluations
Process-related	**Stage in crisis management**	**Organizational forgetting**
	1. Crisis cycle Crisis response stage vs. post-crisis revision stage *2. Sequence of events* Recurrence, incrementality, fine-tuning (e.g., working hours, destruction methods, improvements of crisis protocols)	*1. Outflow of expertise* Retirement, reorganizations, forgetting *2. Retaining of knowledge* Crisis experience, knowledge dissemination, protocols, training, simulations

2.7.2 Social–emotional understanding

A number of *events* had a *large social–emotional impact* on the public and on employees in the NVWA, which led to the adoption of large-scale improvements. All the experts point to the dramatic events that took place in the farming village of Kootwijkerbroek in 2001 during the foot-and-mouth disease crisis. Angry farmers, not agreeing with NVWA measures, used violence against veterinary inspectors, taking some of them hostage and hanging dead animals, with the names of crisis managers on them, from trees. The anti-riot police were called in to restore order. For NVWA inspectors, the events were a social–emotional drama; they experienced it 'no longer as a crisis, but war'. Even though the riots happened a long time ago, the events are still fresh in the minds of team members. 'Kootwijkerbroek', as the experts refer to the events, directly led to drastic improvements in the NVWA's external communication to the public in general and specifically to farmers. Farmers were kept informed, during a crisis but also already in noncrisis time, employees were trained in communication with farmers, and spokespersons for the media were installed. In addition, the NVWA showed it had directly learned from 'Kootwijkerbroek' by introducing psychological support for its workers. Another social– emotional event that led to learning on the part of the NVWA was the death of a veterinarian during the avian influenza crisis as a direct result of the virus. This event led to improvements in the field of personal safety. The organization developed the use of personal protective equipment such as protection suits and masks and, already during the crisis, the NVWA started providing antiviral drugs and carrying out vaccinations of team members in the field.

Media attention increases the impact of social–emotional events by magnifying emotions and involving the wider public. During the Q fever crisis, not only the preventive culling of large numbers of healthy pregnant animals but especially the many human victims received extensive media coverage. An expert explains that the extensive media attention for the issue of public health contributed to the NVWA closing an agreement of cooperation with the Public Health Services ('GGD') and including them in their crisis management plans, in order to effectively involve their expertise and cooperate with them in times of crisis.

2.7.3 Organizational culture

Intercollegial relations function as a condition for sharing information and knowledge within the organization. The experts explain that an open atmosphere within the team facilitates internal communication through exchange of information and openness about mistakes made. Good personal contacts, where 'almost everybody in the team of around 100–120 people [in the front teams] knows everybody else personally' and the team 'is functioning like a real family', create a climate of mutual trust and a feeling of companionship which are felt to be essential for organizational learning. In an environment of trust, crisis events can be discussed openly, also across different levels of the organization. In this respect,

the respondents emphasize the importance of meetings, both formal (e.g., training) and informal.

The experts also point out that the high *motivation* of employees in the crisis organization means that much effort is put into learning processes to improve the organization's performance. The experts explain that members of the crisis management team have an intrinsic drive towards increasing their knowledge and doing things better, and relate this to the fact that only highly motivated and competent people are selected from other parts of the organization, which creates professionalism. People sign up for the front teams on their own initiative and work on a voluntarily basis, getting paid only for their extra hours during crises. They are therefore proud to work in the crisis management team, which holds a high status within the NVWA. To stimulate motivation and challenge employees to learn, trainings and simulations provided by the NVWA are considered important.

2.7.4 Organizational structure

As regards the *structure of the organization*, the presence of a crisis management division and the human and financial capacity make it possible that time and effort are spent on evaluation and drawing lessons. With the establishment of the NVIC in 2003, a team was created that deals with crisis management tasks full-on. An expert explains that this allowed the implementation of larger changes and hence more extensive learning. Expertise was built to enable people to actually draw lessons and retain these within the organization. At the same time, experts point to the downside of a large team size: it makes the dissemination of knowledge through the team more challenging, especially because personal contacts are weakened. Also, reorganizations are felt to be disastrous for learning, because replacing people makes them preoccupied with getting used to their new tasks and role in the team and disrupts the learning culture.

We found *structuring processes* in the organization to shape behavior in such a way that learning processes can actually take place. Employees in the crisis management organization need to follow crisis protocols that were established and adjusted in the course of the different crises. Since the avian influenza crisis, the NVWA has installed general crisis protocols besides disease-specific ones. The protocols affect learning, for example because they include a debriefing–briefing principle: during a crisis, at the end of every day, team members meet and share their experiences with other team members and team leaders (*debriefing*). This principle ensures that lessons are drawn and communicated to the management level, which can then carry through changes in the crisis response for the following day (*briefing*). At the same time, however, experts explain that crisis protocols can also inhibit learning, because people are less inclined to alter their behavior if the situation requires it. Crises typically demand a quick adaptation to unexpected circumstances that can hardly be included in protocols. Since the avian influenza crisis, the learning process

has been stimulated by another structuring process: the training and education program provided by the crisis centre.[14] Team members learn the theory on specific animal diseases through lectures from external experts, making them better prepared for an outbreak. On training days, team members work on solving a practical problem in a simulation setting, learning by experience and feedback, so that crisis response actions are improved.

2.7.5 Stage in crisis management

In the response stage of the *crisis cycle, when the crisis response activities take place,* there is a great urgency for the organization to optimize its actions, because during this period, the consequences of the crisis can still be contained. This urgency has stimulated the NVWA to quickly adapt its response to the crisis events in order to restore normality as quickly as possible. An expert explains: 'We start learning from the first day of the crisis onward'. Lessons learned during a crisis are focused on improvements of actions during that crisis. Because of the urgency, lessons are generally not institutionalized within the organization during a crisis. In the post-crisis revision stage, when normality has been restored, there is time for reflection and more structural changes can be implemented, such as changes in protocols. For example, the NVIC needed a quiet period to sign contracts[15] with around 15 external specialist parties for their support in crisis time. In this way, external expertise and capacity – ranging from a catering company and a disinfection service, to assistance in catching the fowl for culling – can be deployed quickly at the crisis location, which improves the crisis response and reduces the costs. In the revision stage, learning is focused not only on the response but also on the prevention of future crises. The 'scarce times of calm between crises', that is what the team members often call 'peacetime', are essential to reflect on events and incorporate lessons for the longer term. At the same time, paradoxically, if lessons are to be learned, the crisis events should not be too long ago and still fresh in the minds; as an expert explains, 'learning from crisis is striking while the iron is [still] hot'.

Most extensive lessons learned by the NVWA have required a specific *sequence of events* and recurrence of urgency to be fully adopted. Crisis lessons are often learned incrementally over time, through a process of adapting, fine-tuning and ripening over different crises. In the classical swine fever, crisis members of the crisis team made long working hours, from early morning till late at night for several weeks. Exhaustion regularly led to safety incidents. In the foot-and-mouth disease crisis, the working hours were improved; they were further refined in the avian influenza crisis when a rotation system for both team members and team leaders was introduced; and even further improved in the Q fever crisis, when stricter rules were set and the substitution of complete teams was introduced. Another example regards the animal culling methods. In the swine fever crisis, the culling and disposal process was

14 Three days a year for the animal disease experts; one day a year for front team members.

15 Convenants.

perceived as suboptimal, because initially there was no clarity about the culling method and there were not enough vehicles to transport the carcasses. One expert explains about the initial situation: 'We had to cull around two hundred thousand animals, but we had no exact idea how to do that yet'. In the avian influenza crisis, culling methods were gradually improved, but the disposal of carcasses was not considered efficient yet. In the Q fever crisis, although having to handle different numbers of animals[16] and the major improvements were made by now, the NVWA further adjusted lessons regarding the culling and disposal process.

2.7.6 Organizational forgetting

Finally, the experts point to organizational forgetting, that is the *outflow of crisis expertise* and experience, as an important factor affecting organizational learning. Retaining and disseminating knowledge and experience within the organization are considered crucial if the NVWA is to learn over a longer period of time. If knowledge acquired in some parts of the organization is lost, it means that organizational changes will not be implemented either. People with expertise, knowledge and skills acquired from previous crises are needed to be capable of drawing lessons in the first place. Experienced team members leaving the organization (often through retirement), as well as reorganizations, induce organizational forgetting. It is particularly the older team members who have been involved in multiple crises, often in different roles. The experts explain that most crisis lessons are stored in the brains of specific people. An expert explains 'there is just so much experience; it is terrifying, because these people are also getting older'. Retirement creates the main knowledge drain from the organization. Also, when people are placed in other divisions, group learning structures are affected. When responding to the outbreak of classical swine fever in 1997–1998, for example, the crisis management team lacked the knowledge of experts who had experienced the earlier swine fever outbreak. After the earlier swine fever crisis, the team members went quickly back to their regular work and did not come together anymore to share their knowledge. Also, meanwhile experts had left the organization. An expert explains that, as a consequence, some important knowledge needed during the foot-and-mouth disease crisis was not available and 'the wheel needed to be reinvented again'.

Crisis lessons can be *retained* within the organization only partially by including them in emergency plans and protocols and regularly updating them. The NVWA attempts to forestall the process of organizational forgetting by actively sharing knowledge through training, exercises and crisis simulations for personnel. Every year, five to 10 young veterinarians are newly recruited and receive training so that the lessons are transferred to them. Younger, inexperienced personnel is linked to and accompanied by older, experienced team members.

16 Note that the logistics needed for the culling and disposal process largely differs between the crises due to the large differences in number and kind of animals.

The experts state, however, that crisis lessons can be acquired through training and exercises outside crisis time to only a limited extent. For extensive learning, people need to actually experience real crisis situations. Paradoxically, for an organization to learn to prevent crises and not to forget the lessons learned, crises do need to take place every now and then, or, 'knowledge is only built if it is actually used'. An expert explains that if the avian influenza broke out now, 'everything will start working automatically', due to recent experiences with it. In contrast, if classical swine fever or foot-and-mouth-disease broke out now, he/she suspects that 'it would be much more of a hassle to organize the response activities', as the last crises happened much longer ago.

2.7.7 Leadership, post-crisis evaluation reports and a shared sense-making

Remarkably, some concepts from the literature that we discussed as related to the crisis-induced learning process were not found to play a central role in the case of the NVWA. Experts do not explicitly emphasize the role of leadership in the learning process of the organization. An expert explains that he/she is not fully aware of the managers' role in the learning processes, because these take place at a different organizational level. A case that the experts identified in which the manager directly facilitated learning – by defending changes proposed by the NVIC at a higher organizational level – was considered more of a political–economic aspect. A plausible explanation for this finding might be related to the kind of organization studied, which we will discuss in the Section 7.

The role of public evaluation reports, published after every crisis and carried out by an external team of researchers, in the learning process is brought forward as ambiguous and limited. The experts explain that the external post-crisis evaluations to a large extent serve political purposes, which especially at the operational level is generally considered as opposed to learning. One expert explains that when an evaluation report is published, most learning in the organization has taken place already, and refers to the reports as 'too little, too late'. At the same time, higher managers and policy advisors used the evaluation reports as a 'checklist' to see whether important lessons have actually been picked up by the organization and to draw attention to issues at a higher – political – level, which can be necessary for achieving and legitimizing the larger changes. We saw that attempts had been made to learn from reports on different types of crises in other sectors, but this was experienced as rather difficult.

Finally, remarkably a shared sense-making of lessons to learn is not explicitly recognized by the experts as important in the learning process. At the same time, employees of the crisis management organization generally do have similar views on what lessons should be learned. The large shared understanding might be related to the strong external pressures on the organization from both the public, politics and the sector, the required technical expertise for the job and the largely executive tasks of the crisis management team. Within

the crisis organization, shared narratives of events and of lessons learned play some role in processes of communication and organizational memory. However, the large shared understanding in the crisis management organization could also be understood as creating a threat of group think.

2.8 CONCLUSION AND DISCUSSION

The concept of organizational learning is widely theorized and applied in academic research. In view of the increased attention for crisis management, it is remarkable that studies focusing on the conditions for learning in relation to crises have so far remained rather scarce. Previous research has shown that public sector organizations experience major difficulties with learning from crises (c.f. Smith *et al*., 2007; Stern, 1997; Deverell, 2009; Roux-Dufort, 2000; Elliott, 2009). In our study, we *explored* which factors drive organizational learning from crises. We applied a structured case study analysis to the Dutch food safety services' response to four veterinary crises, based on empirical data from in-depth interviews with key experts within the organization and of crisis management documents.

The NVWA has learned extensively from crises over the past two decades. Major lessons were learned in the areas of external communication, cooperation with other parties, work safety, organizational structure and routines, public safety and animal welfare. The study showed that organizational learning from crises is a highly complex process, in which many factors are at play that are often interrelated and of a very different nature. From the empirical data, we identified six key factors that drive organizational learning from crises: (1) political–economic context, (2) social–emotional understanding, (3) organizational culture, (4) organizational structure, (5) crisis management stage and (6) organizational forgetting. Remarkably, in this study, we did not find public post-crisis evaluation reports, leadership and a shared sense-making of lessons to learn to play a central role.

2.8.1 Discussion of factors

The first two factors political–economic context and social–emotional understanding lead in a direct way to the learning of tangible crisis lessons, although – in line with earlier findings (Broekema, 2016; Stern, 1997) – we found that in some instances, political pressure also blocked the implementation of lessons. This is important as political pressure is typical for public sector organizations. The factor social–emotional understanding fits in with crisis management literature on the role of psychological aspect such as stories, emotions and symbols (e.g., see 't Hart, 1993). While the first two factors are external initiators of learning, the next two factors identified are characteristics of the organization itself. Organizational culture and organizational structure function as fundamental conditions for facilitating learning within the organization, through enabling direct and positive relations in the

team, providing the necessary (professional) capacity and guiding learning behavior. The last two factors we identified are process-related. Being aware of the possible importance of the crisis management stage (Deverell, 2009; Moynihan, 2009), the data showed that it plays an ambiguous role. On the one hand, in the crisis response stage, there is the urge and pressure to (quickly) advance to adopting lessons. On the other hand, the organization needs the 'calm' periods in the revision stage to be able to thoroughly reflect on crisis events and implement larger organizational changes. Optimal for learning seems a balance between urgency and calm, and, paradoxically, a recurrence of similar crisis issues. Our findings support more a view of learning from crisis as a continuous process, rather than the idea that 'organizations responding to disasters learn in leaps – disaster by disaster – rather than smoothly over time' (Carley *et al.*, 1997, p. 107). Finally, we found that a process of organizational forgetting, observed by all experts interviewed without exception, plays a fundamental role in organizational learning in the longer term. The organization is in a constant struggle to prevent the outflow of expertise and to transfer knowledge to the right place within the organization. Surprisingly, the process of organizational forgetting is discussed only rarely in the literature (important exceptions are De Holan and Phillips, 2004; Argote, 2013) and studies that address it in a crisis management context seem to be absent. Organizational forgetting is closely related to processes of organizational memory and knowledge distribution (see Huber, 1991; Levitt *et al.*, 1988). Ironically, to improve its crisis management capabilities over the longer term, an organization seems to need crises happening.

Remarkably, three other factors that are prominent concepts in crisis management literature were not found to play a central role in the process of learning from crises in this study. The role of post-crisis evaluation reports in the organizational learning process was generally perceived as limited. In some cases, managers used the reports as a checklist for lessons learned and to legitimize changes at a political level. Our findings support the idea that public post-crisis evaluations largely serve political purposes (see Birkland, 2009; Elliott *et al.*, 2002). Furthermore, we saw that it is indeed challenging for organizations to adopt lessons from a different sector (Crichton *et al.*, 2009). A shared sense-making of what lessons to learn, although strongly present in the crisis management organization, was not explicitly brought forward as an important factor in the learning process. Shared narratives play some role in communicating and storing crisis lessons. One could argue that a large shared understanding creates a threat of group think, which limits a critical discussion of deviating information and viewpoints. Remarkably, contrary to what other studies suggest (e.g., Crossan *et al.*, 2011; Schein, 2010), in this study leadership was not explicitly brought forward as playing a central role in the learning process. This finding might be explained by the fact that the experts interviewed are part of a large executive agency, often working in

the field during a crisis, meaning that they often have limited insight into the managers' role in learning processes.

2.8.2 Challenges

This study faced two main challenges with regard to its validity. The dependent variable organizational learning remains difficult to grasp due to the many interpretations that circulate in the literature and the great complexity of the process. Defining learning in a different way, for example as mere acquirement of knowledge or as mere organizational changes, instead of a combination of the both, could generate completely different results. In addition, the concept of learning is inherently susceptible to normative and measurement problems (Birkland, 2006, p. 22; Carley and Harrald, 1997; Fiol *et al.*, 1985), due to the fact that its definition assumes increased 'effectiveness'.

This is problematic as goals in the public sector are often complex, diverse and ambiguous (Rainey, 2014). This applies even more to the context of a crisis, given the inherent political dynamics of the phenomenon (Boin *et al.*, 2005). We aimed to solve this challenge by to a large extent letting experts in the field indicate learning and so decrease a potential researcher bias. We are nonetheless aware – also because of a potential hindsight bias – that we did not 'measure' learning in a hard and irrefutable way.

A second challenge is the interrelatedness between factors that influence learning and their often ambivalent and indirect roles in the learning process, which creates a risk of oversimplification. The outcome of learning can be a factor that in turn influences further learning. The budget cut by the EU in 1998, for example, contributed to the founding of the NVIC and the creation of front teams. The NVIC and the front teams in turn provided learning routines and a capacity to actually be able to learn. The major reorganization in 2006 *indirectly* affected learning, as it was perceived by the experts as affecting the learning culture by reducing personal ties between people, which in turn influenced the distribution of expertise through the organization. Interestingly, organizational culture and structure can be factors that facilitate learning, but adjustments in culture and structure can also be outcomes of learning (see also Fiol *et al.*, 1985, pp. 804–805). Ambivalent factors, for example, are political pressure and crisis protocols, which were found to both facilitate and inhibit learning through different mechanisms.

2.8.3 Final remarks

Effective learning from crises is becoming increasingly relevant, given the rising trend in number and scope of crises globally. This study provides a framework to serve as a basis for further research on the subject. However, more empirical substantiation over more types of crises and organizations is needed to further build theory on organizational learning from crises. The generalizability of this study might be limited, as we studied one type of

organization facing one type of crisis only, which covered a relatively long time span. It would be interesting to, for example, study the role of leadership, post-crisis evaluations and shared sense-making of lessons to learn in other types of crises with different contexts. Furthermore, taking into account the complexity of the issue at hand, such studies should clearly distinguish in learning as a cognitive process, as an action process or as a combination of the two. Finally, we specifically recommend further study on the process of 'organizational forgetting' because, while receiving little attention in the literature, it plays a fundamental role in long-term organizational learning processes.

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CHAPTER 3

Crisis-induced learning and issue politicization in the EU: the Braer, Sea Empress, Erika, and Prestige oil spill disasters

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3.1 ABSTRACT

This article explores the relation between issue politicization and crisis-induced learning by the EU. We performed a political claims analysis on the political response to the four major oil spill disasters that have occurred in European waters since 1993. Political claims that we observed in three arenas (mass media, national parliaments, and the European Parliament) were compared with recommendations in post-crisis evaluation reports and the EU's legislative responses. For all three political arenas our findings indicate that politicization of issues either promotes or impedes crisis-induced EU learning, which points to the existence of determining intervening factors. EU legislation that is adopted in response to oil spill disasters appears to a large extent grounded in crisis evaluation reports. Characteristics of crisis evaluation reports, especially the degree of international focus, seem to offer a more plausible explanation for variance in crisis-induced learning outcomes than politicization.

3.2 INTRODUCTION

On 15 January 1996, the Liberian-registered oil tanker *Sea Empress* ran aground on the rocks at the entrance to Milford Haven, releasing 72,000 tonnes of oil into the sea in the following days. Only three years later, on 12 December 1999, a very similar accident occurred in the European Atlantic when the Maltese-registered tanker *Erika* sank due to rough weather conditions off the Brittany coast, causing an oil spill of 20,000 tonnes. Both accidents had a dramatic long-term environmental, social, and economical transboundary impact (EMSA, 2004; Wene, 2005). In the aftermath of the *Erika* disaster the EU achieved major policy reforms by adopting the legislative packages Erika I and II (EC, 2003; Wene, 2005). These seem to indicate that the European Union has learned substantially from the *Erika* disaster as regards preventing similar events in the future. In contrast, in response to the *Sea Empress* accident only three years earlier, the EU seems not to have drawn major lessons: no legislative package was adopted (Krämer, 2007). This difference in learning outcomes is quite remarkable given the great similarity of location, events, and consequences of both cases (CEDRE, 2014; ITOPF, 2014).

The literature confirms the observation that learning from crises on the part of public organizations varies substantially from case to case (Birkland, 2006; Deverell, 2010). However, so far the theory has not come up with a satisfying explanation for this variation in lesson drawing. The process of learning from crises is not well understood in the literature, as hardly any theory on the subject seems to have been developed (cf. Smith and Elliot, 2007; Deverell, 2009). At the same time, there is a lack of empirical studies on the subject. In particular, the factors that determine whether learning takes place are as yet unknown: what drives organizations' learning after a crisis? Politicization is often put forward as an important factor in the learning process (e.g. Stern, 1997; Dekker and Hansén, 2004; Birkland, 2006). However, the exact role that politicization plays remains unclear because scholars simultaneously claim a promoting and an impeding effect for it. As politicization remains outside the main scope of these studies (except for Dekker and Hansén, 2004), clarification of the underlying processes and empirical substantiation of the theoretical suppositions are still lacking.

The aim of our study was to explore and clarify the relation between politicization and learning from crises through an analysis of European oil spill disasters. Our research question was: *To what extent does issue politicization affect crisis-induced learning by the EU?* We adopted a political conflict perspective on politicization, as reflected in our use of political claims analysis. In the study we focused on 'policy learning', here defined as the enhancement of policies based on increased knowledge, and indicated by evaluation investigations and new EU directives and regulations. Taking an innovative approach, we mainly studied politicization and learning at the issue level, in terms of responses to

the *Braer* (1993), the *Sea Empress* (1996), the *Erika* (1999), and the *Prestige* (2002) oil spill accidents. We examined to what extent the contents of political claims in mass media, national parliaments, and the European Parliament (EP) resembled the recommendations made in crisis evaluation reports and new EU legislation. In combination with an in-depth case study analysis we used the technique of pattern-matching (Trochim, 1989; Yin, 2009) to systematically analyze a large set of empirical data (1,449 claims) while taking into account the specific disaster contexts.

In the next section the main theoretical concepts and the key mechanisms that connect politicization and learning are discussed, followed by an explanation of the current relevance of studying oil spill disasters. After an outline of the methodology, an in-depth case description is presented of the patterns found per disaster case, concluded by a discussion of our findings.

3.3 THE EFFECT OF POLITICIZATION ON CRISIS-INDUCED LEARNING

Citizens expect governments to protect them against disaster. If disaster nonetheless strikes, government organizations are expected to respond adequately and subsequently ensure that similar terrible events do not occur again. In theory, organizational learning is conceived to be the process through which an organization can enhance its performance (Fiol and Lyles, 1985; Huber, 1991). In contrast to the idea prevalent in society and often implicitly assumed in the literature (Smith and Elliot 2007), learning is not a natural reaction of organizations to crises. There is increasing evidence that government organizations experience difficulties with learning from crises (Stern, 1997; Smith and Elliot, 2007). As noted above, very little theory has been developed so far on the relation between crisis and learning. The number of studies on the subject has been rather limited (notable exceptions are Carley and Harrald, 1997; Stern 1997; Dekker and Hansén, 2004; Birkland, 2006; Smith and Elliot, 2007; Deverell, 2010).

In current work it is especially the question of what factors help to explain the presence or absence of learning that remains unanswered. Although sometimes individual characteristics (e.g. crisis experience), organizational characteristics (e.g. organizational culture), or crisis characteristics (e.g. type of crisis) are proposed as influential factors, an explanation of the processes and systematic empirical studies clarifying the supposed effects are generally still lacking (e.g. Smith and Elliot 2007). In the literature, politicization is systematically put forward as a key factor in the learning process. However, it is striking that the exact role politicization plays remains unclear and ambiguous. In some instances, scholars argue that politicization has a promoting effect, whereas on other occasions they argue that it has an impeding effect (cf. May, 1992; Stern, 1997; Dekker and Hansén, 2004; Birkland, 2006; Boin

et al. 2008; 2009; Moynihan, 2009). The implicit roots of these conflicting suppositions on the effects of politicization are different theoretical mechanisms that are assumed to connect politicization and learning. Before going into these mechanisms, we will first discuss the main concepts of study.

3.3.1 Learning from crises

Although the concept of organizational learning is often discussed in the literature, there is no generally accepted definition as yet; Levy (1994, p. 279) speaks of a 'conceptual minefield'. Because it is understood, measured, and applied in many different ways (Fiol and Lyles, 1985; Bennett and Howlett, 1992; Crosson *et al.*, 1999) the construct remains rather elusive. We do not aim to become involved in the ongoing theoretical discussions, but instead use the various approaches as a useful framework for studying the concept and to make clear what we did and did not study.

In the literature, organizational learning is viewed from both a cognitive perspective (acquiring knowledge; cf. Argyris and Schön, 1978) and a mere behavioral perspective (transferring new insights into improved actions; cf. Levitt and March 1988). We have combined the two perspectives (Fiol and Lyles, 1985) by defining learning as the enhancement of organizational performance (behavior) based on newly acquired knowledge (cognition). Although the theory on organizational learning and policy learning developed as two separate streams, we have here taken a more integrated approach (cf. Common, 2004). The core processes of the learning concept in both streams fit our definition of learning. We approach policy learning as one form of how an organization can learn: besides adapting, for example, organizational culture, norms, skills, or routines, an organization can also improve its policies.

The essence of policy learning as part of the policy cycle and in reaction to external changes is quite straightforward: evaluation exposes the flaws in an organization's policy, in response to which the organization improves its policy (Howlett *et al.*, 2009). Or, as Birkland points out, 'learning can be said to have occurred when the proximate causes of the policy failure revealed by the event are subsequently addressed by changes in policy' (Birkland 2006, p. 166). This ties in with what May (1992) calls 'instrumental policy learning', defined as 'new understanding about the viability of policy interventions or implementation designs' (p. 335). He explains that policy failure provides major opportunities for policy learning. Instrumental learning has occurred if new policies are adopted that stem from increased understanding about the policy design. May explains that improved understanding about a policy design can be derived from either direct or indirect experience (through formal evaluations) with a given policy.

Scholars of organizational learning theory distinguish not only between who learns and what is learned, but also between when it is learned, and for what purpose (cf. Bennett and

Howlett, 1992; May, 1992; Deverell, 2009). Moynihan (2009) clarifies the last two aspects by distinguishing between 'intercrisis' learning and 'intracrisis' learning. Intercrisis learning concerns the process of learning in the post-crisis period, and is aimed at the prevention of and response to future crises. When the period of chaos is over and normality has been restored, organizations can start to look back and address the things that went wrong.

Crises typically create major opportunities for the adoption of policy changes (Baumgartner and Jones, 1993; Kingdon, 2011). Policy changes as such, however, do not have to reflect policy learning, as they might not address the actual policy failures revealed by a crisis. Policy changes can be induced by a variety of political reasons that are unrelated to improved understanding. It is especially post-crisis policies that are vulnerable to political self-interests, as the interests at stake are high. When new policies are not based on increased knowledge, we speak of 'quasi-learning', because learning is pretended but did not actually take place. These or similar processes of mere adaptation instead of learning are recognized by several scholars in the field (cf. Fiol and Lyles, 1985, p. 811; May, 1992, p. 336; Carley and Harrald, 1997, p. 122). Distinguishing 'real' learning from quasi-learning requires tracing back the line to the origins of new policies. 'Real' learning is demonstrated by evidence of new legislation or regulation, together with evidence that this was based on thorough (formal) investigation (Birkland, 2006).

3.3.2 Politicization

In the wake of a crisis, political conflict can arise very quickly. However, the intensity of politicization in response to critical incidents varies widely (Brändström and Kuipers, 2003), depending on multiple factors such as policy domain, actor mobilization, issue salience, and actors' framing capacities. Normality can suddenly change into crisis politics in which major interests are at stake (Boin *et al.*, 2005). Politicization stems from disagreement on interpretations of, in particular, (1) the course of events, (2) the underlying causes and effects, (3) questions of responsibility and accountability, and (4) what lessons should be drawn (adapted from Olson, 2000; Boin *et al.*, 2008). Political conflict often results in a blame game between the actors involved, in which the positions of public leaders are put into question (Boin *et al.*, 2005).

In theory, the concept of politicization is defined in many different ways and is used in a wide range of studies. Often, politicization is defined as increased political attention. This definition, however, ignores the 'disagreement' component often central to definitions of politics. An upsurge of attention does not necessarily correspond to people's dissatisfaction with a situation. In our study we take a 'political conflict' perspective (De Wilde, 2011). We consider an issue 'politicized' when it has become subject to increased political conflict. This definition implies that politicization is not restricted to *politics* in a narrow sense, but can also occur outside the formal political institutions. Crisis issues are contested by means

of political claims made by multiple actors in different political arenas at different levels (Koopmans, 2007; De Wilde, 2011), including both formal democratic institutions, such as parliaments, and more informal ones, such as mass media. Therefore, although politicization is usually studied at the level of formal political institutions, studying politicization at the level of the public could provide additional useful insights. As the 'barrier' model (Bachrach and Baratz, 1970) explains, issues become political when they are formulated as 'demands' on governments.

3.3.3 Proposed effects of politicization

Describing the mechanisms between variables creates a better understanding of the underlying processes (Pawson and Tilley, 1997; De Vaus, 2001, pp. 34–36). Theory helps us to distil two general mechanisms that connect politicization and learning but exert contrary effects. Both these mechanisms can be viewed as consisting of the same main processes (concern, informing, understanding, pressuring), but working towards different outcomes. These processes should not be viewed as steps following each other in an orderly fashion, but rather as working towards a specific outcome, with each process partially responsible for that outcome.

The first mechanism exerts a *promoting* effect. Politicization draws attention to certain issues. Because awareness and concern grow, different actors in public and government become involved. This leads to increased public assessment and scrutiny of government responses (Dekker and Hansén, 2004) (*concern*). The concern of actors in society triggers exploration of these topics, creating an increase in information in the form of evaluative investigations, academic studies, hearings, parliamentary questionings, investigative journalism, and judicial reports (Van Duin, 1992; Birkland, 2004) (*informing*). By comparing the ample information available, decision makers are able to acquire reliable information (Smith and Elliot 2007). In this way decision makers gain insight into the causes of the crisis and policy failures are exposed (Birkland 2006). The new knowledge acquired makes it possible to distil clear lessons (Argyris and Schön, 1978) (*understanding*). Political demands, increased scrutiny and concern, a sense of urgency, and the presence of possible solutions then pressure and motivate decision makers into changing policies (*pressuring*). New policies are adopted based on increased knowledge and insights: learning has taken place. As Deverell (2009, p. 186) proposes, 'if there is external critique toward the organization and credibility loss, then implementation of crisis-induced lessons will be carried out at a greater rate'. This mechanism leads to the following hypothesis:

Hypothesis 1: Political conflict *promotes* policy learning, as conflict over an issue facilitates the adoption of policy change based on increased understanding about that issue.

In contrast, the second mechanism exerts an *impeding* effect. Politicization creates awareness and concern on the part of actors in society. Multiple actors with different interests become involved (*concern*). Actors' concern stimulates exploration into these topics, creating a mass of information from all kinds of sources. The actors involved try to frame the situation in their own interests or beliefs (Stone, 2002; Brändström and Kuipers, 2003). Information is subjective and conflicting (Carley and Harrald, 1997) (*informing*). Actors encounter difficulties processing and making sense of the information, especially given the limitations of human cognitive abilities. The overload of interpretations makes it impossible for decision makers to make sense of causes and distil straightforward lessons (Boin *et al.* 2008). Because of this chaos and stress there is no fruitful context for lesson drawing (*understanding*). As a result of crisis politics and the lack of agreement on causes and solutions, decision makers are forced to occupy themselves with avoiding blame and securing their own position (Boin *et al.* 2005). Actors demand of public leaders that they make quick decisions. Seizing political opportunity, different actors try to press different interests (Kingdon, 2011). At the same time, public concern and scrutiny generate public pressure 'to do something' (Birkland, 2006) (*pressuring*). Increased scrutiny and concern, political pressure for change, and the lack of clear solutions create an incentive for decision makers to adopt policies that are not based on increased knowledge: quasi-learning has taken place. This mechanism leads to the following hypothesis:

Hypothesis 2: Political conflict *impedes* policy learning, as conflict over an issue facilitates the adoption of policy change that is not based on increased understanding about that issue.

In our study we explored which of these two hypotheses is the more plausible. After a short background sketch we will explain our methods of data analysis.

3.4 EU MARITIME SAFETY

The European economy is largely based upon maritime transport, which comprises around 40 per cent of trade within and 90 per cent outside of its territory (EC 2006, p. 2). Daily, hundreds of oil tankers pass through European waters that are characterized by a combination of tough shipping conditions and a high density of ecologically and economically vulnerable areas (Frank 2005). For quite a long time, the decline in oil spill accidents in Europe was only moderate, compared to other parts of the world. It could be considered the 'oil spill hotspot worldwide' (Vieites *et al.*, 2004, p. 535). In recent decades, disasters have induced the EU to develop a substantive common maritime safety policy, starting with the communication 'A common policy on safe seas' in 1993 (cf. Krämer, 2007; Liu and Maes, 2009). Although safety seems to have increased substantially in recent years there is a continuous risk of tanker

accidents, as serious oil spills keep occurring in European waters (cf. CEDRE, 2014; ITOPF, 2014). The threat of oil spills was again demonstrated by the *TK Bremen* oil spill accident of 16 December 2011, despite its limited scope, and the potentially devastating consequences of recent events in other parts of the world, such as the Deepwater Horizon catastrophe of April 2010.

3.5 RESEARCH DESIGN

We explored the relation between politicization and EU learning mainly at the issue level, that is, through the responses to four European oil spill disasters, while taking into account the different disaster contexts. The analysis was structured in three steps. First, a content analysis was conducted on claims in newspaper articles, debates in national parliaments and the EP, and recommendations in crisis evaluation reports and new EU legislation. Second, the results of the content analysis were matched with pre-established patterns, derived from the theory, resembling different effects (Trochim, 1989; Yin, 2009) (see Table 3.2). Finally, the patterns found were compared with each other within the context of the specific disasters.

For the empirical analysis four oil spill disaster cases were selected that (1) occurred as a result of tanker accidents, (2) were considered a 'disaster' by EU expert organizations (EC 2006; EMSA 2004), (3) saw at least 15,000 tonnes of oil spilled (EMSA, 2004, p. 34); the volume of an oil spill is an indicator of its impact (Vieites *et al.*, 2004), and (4) took place since 1993, the year the Maastricht Treaty came into force. These are the accidents with the *MV Braer* in 1993, the *MV Sea Empress* in 1996, the *MV Erika* in 1999, and the *Prestige* in 2002. The cases turn out to be remarkably similar in terms of both the actual turn of events and their consequences, or 'history repeats', as Vieites *et al.*, (2004, p. 536) aptly put it.

3.5.1 Operationalization of variables

As indicators for the dependent variable 'policy learning' we used evaluation reports and legislative responses from the EU. Evidence of learning can be obtained by examining new legislation and tracing back the line to the origins of the legislation (Birkland, 2006, p. 16). We assumed that the recommendations in evaluation reports are an indicator for cognitive learning, as they demonstrate the new knowledge acquired, and that new legislation is an indicator for behavioral learning, as it demonstrates the actions taken (Fiol and Lyles, 1985). Scholars agree that evaluation reports play an important role in the crisis-induced learning process (Moynihan 2009). We adopted the current generally accepted view of policy evaluation as 'an inherently political activity … with a technical component' (Howlett *et al.*, 2009, p. 179). We took evaluation reports of oil spill disasters as an indicator of learning for several reasons. First, the evaluation reports are rather technical in nature and were published in the post-crisis phase, when major political upheaval had ended. Second, the investigations

evaluating the oil spill disasters were comprehensive, combining many and varied kinds of information sources and interpretations of the crisis, for example via hearings of actors with divergent interests. Third, the evaluation reports hold a certain status and legitimacy, since the investigations were carried out by independent teams of renowned experts, weighing different interpretations.

Table 3.1 Main data sources for measurement of politicization

Global Factiva archive	http://global.factiva.com
House of Commons archive	http://hansard.millbanksystems.com
Congreso de los Diputados archive	http://www.congreso.es
Assemblée Nationale archive	http://archives.assemblee-nationale.fr
European Parliament archive	http://www.europarl.europa.eu

To obtain an indication of policy learning, we first conducted a content analysis of legal documents, that is, EU directives and regulations of legislative packages adopted by the EU in response to the selected disasters (derived from Eur-Lex). Every main topic of a new directive or regulation was considered a separate group. These were binary coded: '0' meaning no legislation, and '1' meaning legislation. Second, for every topic of new legislation we examined to what extent it was also discussed in the recommendations in crisis evaluation reports. This was also binary coded: '0' meaning not discussed or only cursorily, and '1' meaning discussed substantially.

To obtain an indication of the independent variable 'politicization', we used political claims analysis (cf. Koopmans and Statham, 1999; Koopmans, 2007; De Wilde, 2011). We defined a 'claim' as a political demand for government action made by an individual or organization. Examples of typical verbs indicating a claim are 'demanded', 'should', 'must', and 'criticized' (cf. Koopmans, 2002). An example of a claim is 'Next should come the establishment of oil tanker exclusion zones to protect coasts and vulnerable areas' (*The Guardian*, 1 August 1993). The benefit of using political 'claims' to indicate crisis politicization is that the unit of analysis is small, which makes the study more concrete and precise.

Political conflict over issues was measured in three different political arenas at three different levels: mass media, national parliaments, and the EP. To measure political conflict in mass media we analyzed newspaper articles from *The Guardian* and *The Times* for the *Braer* and *Sea Empress* cases, from *Le Monde* and *Le Figaro* for the *Erika* case, and from *El Mundo* and *El País* for the *Prestige* case. These are generally considered quality (daily) newspapers, and with this selection both the left and right wings of the political spectrum were represented. Articles were selected and retrieved from *Global Factiva* by searching on [disaster name] and the terms [oil] and [disaster] in the body of the text, and by restricting the search to those articles published within one year of the specific accident. For the same period, records of parliamentary debates were selected by searching on [disaster name] in the title of the

debate in the national parliament and EP online archives (see Table 3.1). Based on in-depth case knowledge, we included a small number of debates that were directly linked to the specific disasters. Minutes of EP debates on the *Braer* and *Sea Empress* disasters were obtained from the EP on request.

The selected articles and debate minutes were examined for political claims. A total of 1,449 claims were found and analyzed. For each political arena claims were listed, analyzed, and subsequently categorized by topic, resulting in 57 groups or 'issues'. As a starting point for the categorization of claims, we used the topics of new legislation as separate categories. Second, we clustered the claims that did not fit these first categories but did explicitly mention a specific topic. Third, we divided the remaining claims into the existing categories. For every 'issue' the degree of political conflict was binary coded on the basis of the number of claims made: '0' meaning not politicized (≤5 claims), '1' politicized (6≥ claims). We assumed an issue to be politicized in general if it became politicized in at least two of the three political arenas. All analysis and coding work in this study was carried out by the same researcher.

Table 3.2 Pre-established patterns between politicization, evaluation reports, and EU legislation

Pattern	Politicization	Learning		Interpretation of pattern [in terms of effect of politicization on learning]	Supported hypothesis
	Claims (in mass media, NP, and EP)	Recommendations in evaluation reports	EU directives and regulations		
1	1	1	1	Strong promoting effect (behavioral learning)	H1
2	1	1	0	Moderate promoting effect (cognitive learning)	H1
3	0	1	1	-	-
4	0	0	1	-	-
5	0	0	0	-	-
6	0	1	0	-	-
7	1	0	0	Moderate impeding effect, or no effect	H2
8	1	0	1	Strong impeding effect (quasi-learning)	H2

0: absent, 1: present.

3.5.2 Pattern matching

To systematically analyze the large set of empirical data while taking into account the specific disaster contexts we used the technique of pattern matching (Trochim, 1989; Yin, 2009), described by Yin (2009, p. 136) as 'one of the most desirable techniques [for case study analysis]'. The logic of pattern matching consists in examining whether the empirical patterns found correspond to pre-established patterns derived from theory or experience (Almutairi *et al.*, 2014). On the basis of the theory described above, we established eight different patterns between politicization of issues, discussion in evaluation reports, and adoption in EU legislation, representing different effects (see Table 3.2). Subsequently we matched the results of the content analyses with these patterns.

Patterns 1, 2, 7, and 8 are especially relevant, as they support one of the hypotheses to different degrees. If an issue became politicized and corresponded to both recommendations in evaluation reports and new EU legislation, we inferred that politicization *strongly promoted* EU learning (see pattern 1). This inference was based on the assumption that the politicization of an issue led to the adoption of that issue in expert recommendations, and to the adoption of that same issue in new legislation (see mechanism 1). The result was behavioral learning, since a new policy was adopted that was based on increased knowledge (Fiol and Lyles, 1985). If an issue became politicized and resembled recommendations of evaluation reports, but not new EU legislation, we inferred that politicization *moderately promoted* EU learning (see pattern 2). This was based on the assumption that politicization of an issue led to the adoption of that issue in expert recommendations. The result was only cognitive learning: new knowledge was acquired, but not adopted as a new policy.

If an issue became politicized and corresponded neither to recommendations in evaluation reports nor new EU legislation, we inferred that politicization either *moderately impeded* EU learning or had no effect (see pattern 7). This was based on the assumption that the politicization of an issue did not lead to adoption of that issue in either expert recommendations or new legislation. If an issue became politicized and corresponded to new EU legislation, but not to expert recommendations, we inferred that politicization *strongly impeded* EU learning (see pattern 8). This was based on the assumption that politicization of an issue led to the adoption of new legislation that was not based on increased knowledge (see mechanism 2). The result was quasi-learning (cf. Fiol and Lyles, 1985; May, 1992; Carley and Harrald, 1997): a change of policy that was not based on increased knowledge. None of the other combinations (patterns 3–6) points to an effect of politicization on EU learning. Note again here that we did not aim to 'measure' an effect in this study but merely aimed at exploring a relationship.

Subsequently, the patterns found were compared with each other within their specific disaster context. In an in-depth case description of the patterns found we included 'technical feasibility of claims' and 'characteristics of evaluation reports' as possible intervening factors. If the technical feasibility of claims to be adopted in legislation was restricted, that is, these were primarily aimed at the specific crisis response or at intervention in the private realm, learning was restricted as well. Likewise, varying characteristics of the evaluation reports might also have affected the learning outcome.

3.6 FINDINGS

3.6.1 The *Braer* disaster

On 5 January 1993, the 17-year-old Liberian-registered oil tanker *MV Braer* got into trouble on its way from Mongstad in Norway to Quebec City in Canada due to water in its bunkers, in heavy seas ten miles off the Shetland coast. The loss of its entire cargo of 85,000 tonnes during the ensuing days severely affected the local sheep, salmon, and tourist industries, and had a devastating impact on wildlife (CEDRE 2014; ITOPF 2014). In response to the *Braer* accident, political conflict arose in the British mass media, the House of Commons, and the EP. An evaluation report by the Marine Accident Investigation Branch (MAIB 1993) into the *Braer* disaster was followed by an investigation report from Lord Donaldson (1994), set up by the UK Department of Transport. In response to the *Braer* disaster, the EU issued the communication 'A common policy on safe seas' (COM/93/66 final), initiating major new EU policies on oil tanker accident prevention (Plant, 1995; Krämer, 2007).

In the *Braer* case, our findings support both hypothesis 1, 'politicization promotes EU learning' and hypothesis 2, 'politicization impedes EU learning' (see tables 3 and 4). Here, we found substantially more support for a promoting effect. The legislation adopted by the EU on *vessel requirements* (Directive 93/75/EEC), *ship inspections* (Directive 94/57/EC), *training of seafarers* (Directive 94/58/EC), *segregated ballast tanks* (Regulation EC 2978/94), and *port state control* (Directive 95/21/EC) was strongly grounded in the evaluation reports. This indicates extensive EU learning from the *Braer* disaster. In response to the *Braer* accident intense political conflict arose, especially on *tanker exclusion zones* (32 claims found), an issue that became politicized in three different political arenas. However, with the exception of *vessel requirements*, none of the issues that became politicized were adopted in new EU legislation. The issue of *vessel requirements* became politicized, was discussed in Lord Donaldson's recommendations, *and* was adopted in new legislation, indicating a strong promoting effect on learning (pattern 1).

We found no evidence of quasi-learning (pattern 8), as the topics of all policy changes were also discussed in the evaluation reports. The majority of issues politically contested in the mass media and parliaments were also adopted in evaluation reports, indicating a moderate promoting effect on learning (pattern 2). Examples are the issues of *salvage tugs*, *flag state requirements*, and *victim compensation* that both became politicized and were extensively discussed in Lord Donaldson's inquiry. We found some evidence for a moderate impeding effect of politicization on learning. The issues *health risks* and *accountability oil industry* became politicized, but were not substantially discussed in evaluation recommendations (pattern 7). The technical feasibility of claims seems to have played a small intervening role: claims regarding the *accountability of the oil industry* were primarily aimed at the specific crisis response rather than at future disasters. The extensiveness of the evaluation reports after the *Braer* disaster is striking: Lord Donaldson's report alone delivered as many as 103 recommendations. The majority of these recommendations were directed at the UK government, but a substantial part was also internationally focused.

3.6.2 The *Sea Empress* disaster

On 15 January 1996, the single-hull Liberian-registered oil tanker *Sea Empress* ran aground before it reached the port of Milford Haven, Wales. Despite the efforts of tugboats it repeatedly hit the rocks, resulting in the spill of 72,000 tonnes of heavy fuel oil in the following days. The accident (taking place in the Pembrokeshire National Park) had a devastating impact on the environment as well as on the regional economy (a fishing ban was implemented) and the tourist industry, which suffered a considerable loss of income (Wene, 2005; CEDRE, 2014). In response to the *Sea Empress* disaster, political conflict arose in the British mass media, the House of Commons, and the EP. In 1997 an evaluation report was published by the MAIB (1997). No legislative package was adopted by the EU in response to the *Sea Empress* disaster.

In the *Sea Empress* case our findings support both hypothesis 1, 'politicization promotes EU learning', and hypothesis 2, 'politicization impedes EU learning' (see tables 3 and 4). Here, we found similar support for a promoting effect and an impeding effect of politicization. The fact that no major new legislation was adopted in response to the *Sea Empress* accident indicates that learning was restricted and explains why we did not find evidence for either a

strong promoting effect (pattern 1) or a strong impeding effect (pattern 8). In response to the *Sea Empress* accident, intense political conflict arose, especially on the issues *salvage operation* (34 claims found), *liability oil industry* (27 claims found), and *pilotage performance* (23 claims found), all politicized in three different political arenas. The politicization of issues shows no clear relation with cognitive learning.

The issues *double hull tankers*, *government response*, *pilotage performance*, and *salvage operation* became politicized in the political arenas and were adopted in evaluation recommendations, indicating a moderate promoting effect (pattern 2). At the same time the issues *adoption Donaldson's recommendations*, *competence shipping crew*, *form public inquiry*, *liability oil industry*, *compensation to industry*, and *transport toxic fuels* were not substantially discussed in the MAIB report, despite intense political conflict, which indicates a moderate impeding effect (pattern 7). The technical feasibility of claims seems to have played a moderate intervening role: claims regarding the *public inquiry* and the *liability oil industry* were aimed primarily at the specific crisis response and the private realm, respectively. It is notable that the recommendations in the MAIB report in response to the *Sea Empress* disaster had only a limited international focus, as they were mainly directed at the national and subnational level.

Table 3.3 Politicization, adoption in evaluation reports, and in EU legislation per issue

Disaster case	Issue	Politicization in mass media (#claims)	Politicization in NP (#claims)	Politicization in EP (#claims)	Recommendations in evaluation reports	EU directives and regulations
Braer	Accountability oil industry	0 (4)	1 (5)	1 (5)	0	0
	Flag state requirements	0 (4)	1 (10)	1 (5)	1	0
	Health risks	1 (12)	1 (6)	0 (0)	0	0
	Port state control	0 (1)	1 (6)	0 (3)	1	1
	Public inquiry	1 (5)	1 (18)	0 (0)	1	0
	Salvage tugs	1 (5)	1 (6)	0 (0)	1	0
	Segregated ballast tanks	0 (0)	0 (0)	0 (0)	1	1
	Ship inspections	1 (5)	0 (4)	0 (0)	1	1
	Tanker exclusion zones	1 (12)	1 (13)	1 (7)	1	0
	Traffic surveillance	0 (0)	1 (9)	0 (4)	1	0
	Training of seafarers	1 (9)	0 (3)	0 (3)	1	1
	Vessel requirements	1 (9)	1 (7)	0 (4)	1	1
	Victim compensation	1 (5)	1 (5)	0 (2)	1	0
Sea Empress	Adoption Donaldson's recommendations	1 (15)	1 (34)	0 (1)	0	0
	Compensation to industry	0 (4)	1 (7)	1 (12)	0	0
	Competence shipping crew	1 (5)	1 (5)	0 (3)	0	0
	Double hull tankers	1 (5)	1 (8)	0 (3)	1	0
	Form public inquiry	1 (5)	1 (24)	0 (2)	0	0
	Government response	1 (15)	1 (8)	0 (0)	1	0
	Liability oil industry	1 (13)	1 (5)	1 (9)	0	0
	Pilotage performance	1 (14)	1 (8)	1 (6)	1	0

	Port authority response	1 (14)	0 (2)	0 (3)	1	0
	Port state control	0 (4)	0 (2)	0 (2)	0	0
	Protection environmental sensitive areas	0 (4)	0 (4)	1 (6)	0	0
	Salvage operation	1 (14)	1 (19)	1 (6)	1	0
	Ship safety standards	0 (4)	1 (8)	0 (4)	0	0
	Transport toxic fuels	1 (5)	0 (0)	1 (7)	0	0
Erika	Classification societies	0 (1)	0 (3)	1 (8)	1	1
	Competence of the crew	1 (11)	0 (4)	0 (2)	0	0
	Double hull tankers	0 (1)	0 (1)	1 (6)	1	1
	European coastguard	0 (0)	0 (0)	1 (5)	0	0
	European Maritime Safety Agency	0 (1)	0 (2)	0 (2)	0	1
	Flags of convenience	0 (4)	0 (2)	1 (13)	1	0
	Hazardous cargo	1 (5)	0 (2)	0 (3)	0	0
	Knowledge development	1 (5)	1 (5)	1 (7)	0	0
	Liability oil industry	1 (16)	1 (5)	1 (10)	1	0
	Political response	1 (8)	0 (4)	0 (2)	0	0
	Port state control	1 (5)	0 (4)	1 (9)	0	1
	Response operations	1 (15)	1 (13)	0 (1)	0	0
	Vessel traffic monitoring	0 (0)	0 (2)	1 (7)	1	1
	Victim compensation	0 (2)	0 (3)	1 (17)	0	0
Prestige	Accident investigation	1 (10)	1 (24)	1 (17)	1	1
	Classification societies	0 (4)	1 (7)	1 (18)	1	1
	Double hull tankers	0 (4)	0 (4)	1 (23)	0	0

Disaster case	Issue	Politicization in mass media (#claims)	Politicization in NP (#claims)	Politicization in EP (#claims)	Recommendations in evaluation reports	EU directives and regulations
	Environmental area protection	0 (3)	0 (2)	1 (10)	1	0
	European coastguard	0 (0)	0 (0)	1 (5)	1	0
	Implementation legislation	1 (8)	1 (8)	1 (15)	1	0
	Knowledge development	1 (17)	1 (30)	0 (4)	1	0
	Liability oil companies	1 (6)	0 (3)	1 (8)	0	0
	Political response	1 (19)	1 (22)	1 (13)	0	0
	Port state control	1 (8)	1 (5)	1 (14)	1	1
	Ports of refuge	1 (9)	1 (11)	1 (15)	1	0
	Quality of flags	0 (3)	0 (2)	1 (17)	0	1
	Response operations	1 (24)	1 (27)	1 (22)	1	0
	Ship owner insurance	0 (0)	0 (1)	0 (1)	1	1
	Vessel traffic monitoring	0 (1)	0 (3)	0 (1)	1	1
	Victim compensation	0 (2)	1 (42)	1 (26)	1	0

0: absent, 1: present.

Table 3.4 Patterns identified per issue and disaster case

Pattern	Effect	Issue				Frequency	Supported hypothesis
		Braer case	*Erika case*	*Prestige case*	*Sea Empress case*		
1	Strong promoting effect	Vessel requirements	-	Accident investigation Classification societies Port state control	-	4	H1
2	Moderate promoting effect	Flag state requirements Tanker exclusion zones Public inquiry Salvage tugs Victim compensation	Liability oil industry	Implementation legislation Ports of refuge Response operations Victim compensation Knowledge development	Double hull tankers Government response Pilotage performance Salvage operation	15	H1
3	-	Port state control Segregated ballast tanks Ship inspections Training of seafarers	Double hull tankers Classification societies Vessel traffic monitoring	Ship owner insurance Vessel traffic monitoring	-	9	-
4	-	-	European Maritime Safety Agency	Quality of flags	-	2	-
5	-	-	Competence of the crew European coastguard Hazardous cargo Political response Victim compensation	Double hull tankers	Ship safety standards Port state control Protection environmental sensitive areas	9	-

Pattern	Effect	Issue				Frequency	Supported hypothesis
		Braer case	*Erika case*	*Prestige case*	*Sea Empress case*		
6	-	Traffic surveillance	Flags of convenience	European coastguard Environmental area protection	Port authority response	5	-
7	Moderate impeding effect	Accountability oil industry Health risks	Knowledge development Response operations	Liability oil companies Political response	Adoption Donaldson's recommendations Competence shipping crew Form public inquiry Liability oil industry Compensation of industry Transport toxic fuels	12	H2
8	Strong impeding effect	-	Port state control	-	-	1	H2

3.6.3 The *Erika* disaster

On 11 December 1999 the Malta-registered oil tanker *MV Erika* encountered bad weather and faced severe structural problems en route from Dunkirk in France to Livorno in Italy, carrying 31,000 tonnes of oil. The following day the oil tanker broke near the Brittany coast, spilling an estimated 20,000 tonnes of oil in the sea, which contaminated 400 kilometres of French coastline. The accident severely affected the fisheries sector, the tourist industry, and the regional ecological structure (EMSA 2004; CEDRE 2014). In response to the *Erika* accident, political conflict arose in the French mass media, the Assemblée Nationale, and the EP. Evaluation reports on the *Erika* disaster were published by the vessel flag state's Maltese Maritime Authority (MMA, 2000) and the Permanent Commission of Enquiry into Accidents at Sea (CPEM, 2000). In response to the *Erika* disaster, the EU adopted major new legislation on the prevention of future oil spill disasters in 2002, in the form of the Erika Package I and Erika Package II (EC, 2003; Wene, 2005).

For the *Erika* case our findings moderately support both hypothesis 1, 'politicization promotes EU learning', and hypothesis 2, 'politicization impedes EU learning' (see tables 3 and 4). Here, we found substantially more support for an impeding effect than for a promoting effect of politicization. Most of the EU legislation adopted in response to the *Erika* disaster, on *classification societies* (Directive 2001/105/EC), *double hull tankers* (Regulation (EC) No 417/2002), and *vessel traffic monitoring* (Directive 2002/59/EC), was strongly grounded in the evaluation reports. This indicates that extensive learning took place. In response to the *Erika* accident intense political conflict arose, especially on *liability oil industry* (31 claims found) and *knowledge development* (17 claims found), issues that became politicized in three different political arenas. In the *Erika* case we found no evidence for a strong promoting effect (pattern 1). *Liability oil industry* is the only issue that points to a moderate promoting effect of politicization (pattern 2), as it became politicized and was discussed in the CPEM recommendations. The issues *knowledge development* and *response operations* did become politicized, but were not adopted in evaluation recommendations, indicating a moderate impeding effect (pattern 7).

As exceptional cases we found that the issues of new EU legislation on the *European Maritime Safety Agency* (Regulation (EC) No 1406/2002) and on *port state control* (Directive 2001/106/EC) were not substantially explicitly included in the evaluation recommendations. Because the latter issue did become politicized, it provides the only support we found for quasi-learning in all four disaster cases (pattern 8). However, as the issue of *port state control* was partly included in recommendations on classification society inspections, one can question whether quasi-learning is really represented here. The technical feasibility of claims seems to have played only a small intervening role: only claims on the *response operation* were primarily aimed at the specific crisis response. The recommendations of the CPEM and MMA evaluation reports were clearly internationally focused.

3.6.4 The *Prestige* disaster

Bahamas-registered single-hull oil tanker *Prestige* encountered a heavy storm on its way from Latvia to Singapore, suffered severe structural failure, and began to leak oil. After six days, with some changes in course, the *Prestige* broke in two on 19 November 2002 and sank 130 miles off the Galician coast, spilling an estimated 63,000 tons of heavy fuel oil. The accident had dramatic consequences for the local fisheries sector, the tourist industry, and the sensitive ecosystem of the area (EMSA, 2004; ITOPF, 2014). In the wake of the *Prestige* accident, political conflict arose in the Spanish mass media, the Congreso de los Diputados, and the EP. In 2004 investigation reports on the *Prestige* disaster were published by the Bahamas Maritime Authority (BMA 2004) and by the Temporary Committee on Improving Safety at Sea (2004) (also known as 'MARE-committee'). In 2005, in response to the *Prestige* disaster, the Third Maritime Safety Package (COM(2005)585 final) was created, containing major new legislation aimed at the prevention of oil spill disasters (Ringbom, 2008).

In the *Prestige* case the findings support both hypothesis 1, 'politicization promotes EU learning', and hypothesis 2, 'politicization impedes EU learning' (see tables 3 and 4). Here, we found substantially more support for a promoting effect of politicization. Most of the EU legislation adopted in response to the *Prestige* disaster, on *vessel traffic monitoring* (Directive 2009/17/EC), *classifications societies* (Regulation (EC) No 391/2009 and Directive 2009/15/EC), *ship owner insurance* (Directive 2009/20/EC), *accident investigation* (Directive 2009/18/EC), and *port state control* (Directive 2009/16/EC) was strongly grounded in the evaluation reports. This indicates that extensive learning took place. The only legislation we did not find substantially discussed in the MARE and BMA reports was that on *quality of flags* (Directive 2009/21/EC). In response to the *Prestige* accident, intense political conflict arose, especially on *response operations* (73 claims found), *political response* (54 claims found), and *accident investigation* (51 claims found), issues that became politicized in three different political arenas. The issues *accident investigation*, *classification societies*, and *port state control* became politicized and were also discussed in evaluation recommendations and adopted in new legislation, which indicates a strong promoting effect (pattern 1).

The politicization of issues shows no clear relation with cognitive learning. The issues *implementation legislation*, *ports of refuge*, *response operations*, *victim compensation*, and *knowledge development* became politicized and were discussed in evaluation recommendations, which indicates a moderate promoting effect (pattern 2). At the same time the issues *liability oil companies* and *political response* became politicized but were not substantially discussed in evaluation recommendations, indicating a moderate impeding effect (pattern 7). The technical feasibility of claims seems to have played only a modest role in explaining the absence of EU legislation: the claims on the *political response* and the *liability oil companies* were primarily aimed at the direct crisis response and the private

realm, respectively. The MARE report, created by a committee set up by the EP, stands out from the other reports by its largely EU-oriented recommendations.

3.7 CONCLUSION AND DISCUSSION

Within the literature scholars have identified politicization as an important factor in the crisis-induced learning process (Stern, 1997; Dekker and Hansén, 2004; Birkland, 2006; Smith and Elliot, 2007; Boin *et al.*, 2008; 2009). However, exactly what role is played by politicization remains unclear, as this aspect is claimed simultaneously to have a promoting and an impeding effect. In an attempt to clarify this relation, we explored to what extent issue politicization affects EU learning by analyzing the four major oil spill disasters that have occurred in Europe since 1993. The study was conducted by comparing patterns between the contents of political claims made in the mass media, national parliaments and the EP, evaluation reports, and new EU legislation within the contexts of the different disasters.

The results of our study indicate that the politicization of issues either promotes or impedes crisis-induced learning by the EU. For every disaster case we found support for both hypotheses, which points to the existence of determining intervening factors explaining the variance in EU learning. Although contrary relations were indicated, we found substantially more support for a promoting role of politicization, contributing to both cognitive and behavioral learning. We found oil spill disasters creating strong political conflicts between actors on the question of what the government should learn from them. However, we found practically no evidence for politicization facilitating policy changes not based on increased knowledge, that is, quasi-learning. New EU legislation adopted in response to oil spill disasters appeared to be strongly grounded in evaluation reports.

Characteristics of the crisis evaluation reports, especially the degree of international focus, seem to offer a plausible alternative explanation for the variance in crisis-induced EU learning. As an example, the MARE report after the *Prestige* disaster was substantially more aimed at changes at the EU level than the MAIB report after the *Sea Empress* disaster. The 'technical feasibility of claims' seems to have played only a small intervening role; some claims were primarily aimed at the specific crisis response instead of learning for future disasters. Interestingly, we did not find a significant differentiation in the role of politicization in affecting learning between mass media, national parliaments, and the EP. This is notable, as one might rather have expected politicization at the formal political level (i.e. EP) playing a more prominent role in affecting learning than politicization at the level of the public (i.e. mass media), as the former is closer to the decision-making authority (e.g. Bachrach and Baratz, 1970). A possible explanation might be related to other aspects of the politicization process, as discussed in the next section.

The main limitations of our study stem from difficulties in measuring the dependent and independent variables. Because in the literature a consensus on the definition of learning is lacking (Fiol and Lyles, 1985; Bennett and Howlett, 1992; Crosson *et al.*, 1999), and the concept is inherently subject to ontological, methodological, and normative problems (cf. Fiol and Lyles, 1985; Carley and Harrald, 1997; Stern, 1997; Dekker and Hansén, 2004), there are by definition threats to internal validity. We are well aware of this pitfall, and realize that we might not actually, or indisputably, have indicated learning here. As Birkland rightly notes: 'the operationalization of learning cedes a great deal of judgment to the researcher' (Birkland, 2006, p. 22). However, by some simplification, that is, by using evaluation reports as an indicator, we were able to systematically analyze a large amount of empirical data. We recognize that in reality learning is a very complex process instead of a 'quick fix' of often deep-rooted problems (Common, 2004, p. 1).

The other main limitation stems from the measurement of politicization, on which there is no consensus on the definition in the literature. Given the unconventional approach of this study and the large amount of data used (1,449 claims), we had to narrow down our research focus. We started with the basic research question that needed to be answered. At the same time, we are aware that this excluded actor-related aspects in the politicization process, such as type of actor making the claim, decision-making power, and their position relative to each other, and claim-related aspects, such as the weights and specificity of the claims.

Notwithstanding these shortcomings, our findings may have multiple implications. First, the results provide insight into the relation between politicization and learning by public organizations from crises, which so far has remained empirically under explored. Second, they demonstrate the necessity of differentiation when the concept of politicization is studied. Research outcomes can be determined by the choice of a narrow or conflict perspective, and formal political arena or public. As we have seen in this study, issues can simultaneously become politicized in the mass media but not in parliament, or vice versa. Third, our study introduces an innovative approach to measuring both crisis politics and learning in the field of crisis management. Analysis on an issue level adds considerable value to the abundance of case descriptions on crises in this field. Finally, the results point to the seemingly important role of evaluation reports in the process of learning from crises. It argues for further empirical research on the characteristics of crisis evaluation reports – such as explicitness/specificity, international focus, and appointment/type of evaluator – and their effects. Future research on the relation between politicization and crisis-induced learning can also expand our knowledge by looking at the role of actor-related and claim-related aspects.

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CHAPTER 4

The role of external experts in crisis situations: a research synthesis of 114 post-crisis evaluation reports in the Netherlands

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4.1 ABSTRACT

This explorative study examines the role of external experts in crisis situations and the conditions under which their involvement contributes to adequate crisis management. Existing crisis management research tends to focus on stakeholder analysis, and the valuable input of experts during crisis *preparation*. Consequently, the role of external experts during the crisis response phase has been largely overlooked. This is somewhat surprising given the crucial role that is often attributed to external experts. To fill this gap, we have investigated the role of external experts by conducting a research synthesis of 114 post-crisis evaluation reports relating to 60 crises in the Netherlands between 2000 and 2013. The analysis shows that external experts are frequently involved and often play prominent roles in the crisis response. These external experts are often not actively recruited by the (strategic) crisis management response structure. In addition, the contributions and activities of external experts tend to be scarcely coordinated by the (strategic) crisis management response structure. Based on an in-depth analysis of the evaluation reports, we identify six opportunities and threats related to expert involvement in crisis situations, and ten conditions under which expert involvement contributes to adequate crisis management.

4.2 INTRODUCTION

On August 20th, 2002, a leak was discovered in a tank wagon, containing the hazardous and toxic acrylonitrile, that was part of a goods train temporarily halted at the busy central railway station in the city of Amersfoort in the Netherlands. Due to the risk of a possible explosion and potential health problems, the event quickly turned into a crisis situation with extensive media coverage. In line with the crisis-response plan the local crisis management response structure was activated, involving public officials and emergency services, which closed nearby roads and railways. There was great uncertainty as a result of a lack of knowledge of the cause of the leak, the chemical substances involved, and the potential consequences. In order to be able to adequately assess the situation and determine appropriate courses of action, the crisis management organization involved three external experts to provide advice: the chemical company DSM, and two railway companies NedTrain and Railion. Based on their expertise, the situation was classified as safe and the train shunted to a safe area, thereby putting an immediate end to the crisis. The official crisis evaluation report concluded that the external expertise brought in had strongly contributed to effective crisis management. The report recommended that the involvement of external experts was essential in preventing incidents with hazardous materials in rail transport (Geveke *et al.*, 2002).

In last decade, in crisis management research there has been a growing interest in the more immediate crisis response phase (Pan *et al.*, 2012; Coombs, 2006). Research shows that modern crisis management has a strong networking component: a large number and variety of actors collaborate to accomplish highly complex tasks while under time pressure (Pramanik *et al.*, 2015; Stephens *et al.*, 2005). Yet, although many studies analyze network collaboration among actors during a crisis (e.g. Comfort and Kapucu, 2006; Kapucu, 2006; Moynihan, 2008; Waugh and Streib, 2006; Drabek and McIntire, 2002), little attention is paid to the role of *external* experts in bringing and transferring expertise to these networks. To our knowledge, there is no systematic empirical study on external experts in crisis response situations (Van Eijk *et al.*, 2013).

The use of expertise is seen as crucial for organizing an adequate crisis response (Rosenthal and 't Hart, 1991; Grönvall, 2001; Baekkeskov and Rubin, 2014; Baekkeskov, 2016). The complexity of a crisis, which results from time constraints, a lack of reliable information, large uncertainty, and political pressures, together with the potentially dramatic consequences of inadequate decisions (Boin *et al.*, 2005), creates an immediate demand for expertise (Weick and Sutcliffe, 2015; Grönvall, 2001; Rosenthal and 't Hart, 1991). If sufficient expertise is not available in the (strategic) crisis management response structure, it should be drawn from elsewhere: from external experts. What, then, are the roles that external experts fill in real-life crisis situations? They could provide specialized knowledge to inform crisis

decision-making. They might bring in specialized skills needed to execute highly complex tasks. Their reputation may legitimize decisions and, hence, avoid potential blame games in the aftermath. At the same time, the involvement of external experts might result in a decrease in the unity of control and decisiveness. External experts might also bring in private interests, thereby jeopardizing the legitimacy of the crisis management.

In this explorative study, we provide initial systematic insights into these questions. Our central research question is: *What role do external experts play in crisis situations and under what conditions does their involvement contribute to adequate crisis management as reported in evaluation reports?* We explore the nature of external experts; how, and how often, they are involved; their roles in the crisis response; and the consequences of their involvement. We predominantly address the research question empirically, and produce a research synthesis of 114 evaluation reports that were published concerning 60 crises that took place in the Netherlands between 2000 and 2013. Drawing on all these reports enables us to systematically analyze a large amount of empirical data from a large number of crises while, at the same time, taking account of the specific crisis contexts. This is an innovative approach that adds value to the field of crisis management, which has been dominated by conceptual studies and single case studies (Veil, 2011; Smith and Elliott, 2007). Each of the evaluation reports included has been published by a recognized evaluation organization and based upon an in-depth investigation of a single crisis. Our study consisted of two parts. In the first, we coded the reports in terms of the experts involved and their characteristics, thereby providing an overview of the involvement of external experts in crisis situations. In the second part, we coded the statements in the reports that address the relationship between expert involvement and reported adequacy of crisis management. Based on this, we were able to identify six main threats and opportunities linked to expert involvement, and ten conditions under which expert involvement contributes to adequate crisis management.

4.3 THEORETICAL BACKGROUND

A crisis is seen as a situation in which the vital interests of a society are abruptly threatened with potentially dramatic physical, economic, and/or social consequences (Rosenthal *et al.*, 2001). When a crisis occurs, decision-makers in charge of the crisis management organization must make decisions under very complicated circumstances, and ones with potentially far-reaching consequences for society (Boin and 't Hart, 2003; Boin *et al.*, 2005; Sayegh *et al.*, 2004). Typically, a crisis situation involves uncertainty about what happened, its causes, and what might happen next (Rosenthal *et al.*, 2001). Since crisis situations are rare, and often hit unexpectedly, they are difficult to prepare for. Decision-makers often face a crisis while lacking previous relevant experience, and typically lack reliable information. The information available is often blurred by streams of biased and subjective input (Dekker

and Hansén, 2004). Despite all this, decision-makers are expected to provide meaning and sense to the event. Add in the potential for politicization (Broekema, 2016) and blame games (Boin *et al.*, 2005), and it soon becomes clear that a thorough assessment of alternative decisions and their consequences is limited (Gilpin and Murphy, 2008 Weisæth *et al.*, 2002).

Often, when a crisis occurs, a (strategic) crisis management response structure is activated, which typically consists of a cluster of 'regular' crisis management response organizations (see the section on the research design for a more detailed description of this structure in the Netherlands) and can be complemented with external actors relevant in the specific crisis context. The exact level of decision-making is likely to vary depending on the specific crisis and supposed impact. The 'internal' members of the (strategic) crisis management response structure may decide to involve 'external' experts to support decision-making and improve the adequacy of crisis management. In this study, we broadly define an *expert* as a person or organization that: (1) has specialized knowledge and/or skills in a particular field or area; (2) is considered to be an expert by the professional community or the broad public; and (3) has distinguished authority derived from their expertise (Mengis, 2007; Hoffman, 1998; Jasanoff, 1990; Ericsson *et al.*, 2006). The *external* element refers to whether or not actors are an integral part of the crisis management response structure; what actors are regularly (and sometimes formally) involved is often specified in crisis emergency plans and varies with the specific crisis.

The extensive experience in a certain domain external experts have, typically makes their judgements both highly accurate and reliable, and enable to deal effectively with unusual and 'tough' cases (Hoffman, 1998). Literature on emergency responses acknowledges the valuable input external experts potentially have (Perry and Lindell 2003); not only when it comes to providing solutions to solve the acute crisis but also to define the actual problem (Massey and Wallace 1996). This valuable input is even more prominent when *preparing* for a disaster or crisis: effective response strategies are key to control harmful effects of unforeseen disasters, and the effectiveness of these strategies partly depends on the quality of expert knowledge on which the response strategies are based (Mendonça *et al.*, 2008). Yet, studies in this brand of literature also show that strategic crisis response groups considerable vary in the aspects of and approaches to preparedness they actually emphasize, and that preparedness activities are fragmented across different organizations and sectors (Tierney *et al.*, 2001: 47-48).

Although incorporating expert knowledge might be valuable, it might also be challenging. The frontline response teams know how to perform domain-specific tasks (like firefighting and rescue) and are trained to coordinate these tasks (Chen *et al.*, 2008). When experts become involved, new coordination mechanisms might be required. In times of crisis, with increased time pressures and urgency, a fit between task requirements and personnel expertise, as well as a smooth functioning of task flows are even more crucial; making the

coordination issue even more prominent (Chen *et al.*, 2008). Eliciting expert knowledge is further complicated when experts (and the actors of the crisis management response structure) are geographically separated, and when expert knowledge is difficult to cohere (Mendonça *et al.*, 2008). In particular when multiple alternative perspectives are added to the crisis decision-making process, this can hinder an effective decision-making process (Massey and Wallace, 1996).

However, although valuable, these studies provide limited insight in what actors actually are involved as experts, and what role they have during the crisis. Moreover, as this body of literature is mainly (though not exclusively) concerned with how to prepare for a crisis, the main focus is on those actors that are involved in a more structural manner. Consequently, actors that are involved as expert in a more ad hoc manner during a particular crisis, are beyond the main scope of interest. Yet, we can assume that a (strategic) crisis management response structure in the 'heat of the moment' can also rely on experts on a more incidental basis. Rosenthal and 't Hart (1991) advise adopting an open stance regarding what are experts that become involved in crisis situations because these can cover a wide range of actors: "*Experts may be part of the bureaucracy or they may be outsiders asked for ad hoc advice. They may or may not be obliged to give detailed feedback to their constituency. They may have experience in giving advice in a crisis context or may be doing so for the first time*" (p. 352).

Crisis management literature furthermore report various roles taken on by experts in crisis management. Studies mention supporting decision-making (Baekkeskov, 2016; Rosenthal and 't Hart, 1991), reducing uncertainty (Grönvall, 2001; Rosenthal and 't Hart, 1991), and providing legitimacy (Grönvall, 2001; Baekkeskov and Rubin, 2014). The expertise input can be viewed as a process of learning during a crisis (Broekema *et al.*, 2017). Herek *et al.* (1987, p. 204) stress the important 'pieces of information' that experts can provide during a crisis. Some studies refer to particular policy fields that require inputs from external experts in crisis situations (Grönvall, 2001; Baekkeskov and Rubin, 2014).

However, many questions remain. Little is known about the background of external experts (public, non-profit/voluntary, semi-government, private, or academic). Moreover, it is not evident from the literature how external experts become involved in crisis management (Majchrzak *et al.*, 2007). Crisis management often has an informal, ad hoc networking character (Scholtens, 2008; Schraagen *et al.*, 2010). Little is known about the types of crisis and the typical crisis dynamics in which external experts become involved. Neither is it evident that expert involvement is always of useful value or without challenges (Chen *et al.*, 2008; Grönvall, 2001; Rosenthal and 't Hart, 1991). Experts may also have different views, which may threaten the adequacy and legitimacy of crisis management. Despite all this, the link between expert involvement and adequacy of crisis management has not been studied systematically and empirically.

Professional practice similarly provides little evidence. In the Netherlands, crisis handbooks and crisis-response plans generally provide very little guidance about collaborating with external experts (Scholtens, 2008). Some crisis-response plans, organized along functional chains, type of crisis, and policy domain, do mention a few potential external partners that the crisis organization might involve (e.g., Ten Dam, 2015). However, there is little or no reference to how to organize a collaborative process involving external parties and experts. As such, an explorative but comprehensive study is appropriate, and needed, to shed more light on the questions discussed above.

4.4 RESEARCH DESIGN

The empirical context for the present study is the Dutch crisis management system which is based upon consensus and cooperation between different layers of government. Local governments (provinces and municipalities) have delegated authority and independence, while central government can impose certain tasks upon them. The Dutch crisis management response system consists of a 'regular' temporary crisis management response structure, including national crisis management bodies, inter-municipal 'safety regions', and municipalities, possibly complemented by (a variety of) external actors, depending on the specific crisis context (NCTV, 2013; Torenvlied *et al.*, 2015). When a crisis occurs in a municipality, often the local executive (the board of mayor and aldermen) has prime responsibility for organizing the response. For dealing with transboundary and complex incidents, twenty-five safety regions have been defined. Their executives are responsible for coordinating collaboration between municipalities, fire departments, the police, and medical assistance at the regional level (Safety Regions Law, 2010). For the crisis response by organizations at the national level, the tasks, responsibilities, and guidelines are included in a national crisis decision-making handbook (NCTV, 2013).

We study the role of external experts in crisis situations through a 'research synthesis' using 114 post-crisis evaluation reports related to 60 crises that occurred in the Netherlands between 2000 and 2013. A research synthesis systematically reveals, from secondary sources, general patterns in infrequent events that are complex in nature (Cooper *et al.*, 2009). Syntheses of evaluations provide better generalizable insights compared to single case studies (Mayne and Rist, 2006). Post-crisis evaluation reports are a rich source of information on crisis management since these reports are based on in-depth investigations by a team of professional and formally independent experts[17] and aimed at learning lessons

17 We do acknowledge that also evaluation reports might be (politically) 'colored', or might become part of a political debate. Yet, given the independent position of the research teams/institutes and the authority of many of these research teams/institutes, we can assume that these reports in itself are relatively non-politicized and are a reliable source of information.

after a crisis (Moynihan, 2009; Elliott, 2009). By taking context into account, lessons from one report can usefully inform later crisis responses (Crichton *et al.*, 2009).

4.4.1 Inclusion criteria

Given that there is no comprehensive list of crises in the Netherlands, we aimed to create this list of crises by integrating databases from several crisis management authorities and institutes: the Dutch National Crisis Centre ('NCC'), the Dutch Association of Mayors ('NGB'), the Dutch Safety Board, the Inspectorate of Security and Justice, COT Institute for Safety and Crisis Management, Safety Region Authorities, and the Dutch Safety Council ('Veiligheidsberaad').

In this, we applied several inclusion criteria. We selected the year 2000 as a starting year. This year was chosen because it saw the introduction of major reorganizations to the Dutch crisis management system that define the current practice and procedure for how crises are evaluated. We selected 2012 as the last year for inclusion because that was the year in which we started data collection. We excluded purely political or financial-economic crises because of their distinct nature. On the further condition that evaluation reports were available, a list of 58 crises was derived. Subsequently, we discussed this list extensively with a panel of ten Dutch crisis management experts (researchers and practitioners). This resulted in the inclusion of eight further crises and the exclusion of six of the original based on the criterion of having a substantial impact on vital societal interests. Table 4.1 lists the resulting 60 crises (most recent first).

For each of the 60 crises, we retrieved all the relevant evaluation reports published by recognized, authoritative evaluation organizations. In this process, we identified a total of 114 post-crisis evaluation reports and identified 131 times an evaluation organization was involved in these 114 evaluations. Note that some crises were evaluated by more than one organization and that some reports were published by more than one organization. Evaluations were carried out by the Dutch Safety Board ('OvV') ($n = 14$), ad hoc commissions ($n = 13$), the Inspectorate of Security and Justice or its predecessor ('IVenJ'/'IOOV') ($n = 13$), other functional government inspection agencies ($n = 20$), such as the Health Care Inspectorate ('IGZ'), COT Institute for Safety and Crisis Management ($n = 17$), other consultancy firms ($n = 16$), municipalities ($n = 7$), safety regions ($n = 5$), and others ($n = 26$), which consist of expert institutes in a specific area, such as the Institute for Safety ('IFV') or the Dutch National Institute for Public Health and the Environment ('RIVM'), and 'traditional' crisis management organizations, such as water boards ['waterschappen'], the police, or fire departments.

Table 4.1 Research population of crises that took place in the Netherlands between 2000 and 2013

Year	Date*	Crisis
2000	00/05/13	Explosion fireworks warehouse, Enschede
	00/12/16	Den Bosch riots
2001	01/01/01	Café fire 't Hemeltje, Volendam
	01/03/21	Foot-and-mouth disease outbreak
	01/05/07	Fire entertainment center De Bonte Wever
2002	02/05/06	Assassination Pim Fortuyn
	02/07/12	House fire, Roermond
	02/08/20	Fuel wagon leak Amersfoort train station
2003	03/02/28	Avian Influenza outbreak
	03/03/23	Fire King's Church, Haarlem
	03/08/26	Dike inundation, Wilnis
	03/09/28	Scaffolding collapse Amercentrale power station
2004	04/11/02	Assassination Theo van Gogh
	04/11/13	Mosque fire, Helden
2005	05/09/20	Grounding Fowairet container ship, Westerschelde
	05/09/28	High mortality Radboud hospital
	05/10/27	Fire detention center Schiphol
	05/11/25	Power outage, Haaksbergen
2006	06/05/06	Oranjefeesten riots, Pijnacker
	06/09/28	Fire operating room Twenteborg hospital
	06/11/21	Emergency landing helicopter, North Sea
2007	07/01/30	Ship fire, Velsen
	07/04/04	Release and spread of white substance, Spijkenisse
	07/06/13	Q fever disease outbreak
	07/09/17	Drinking water supply failure, Noord-Holland
	07/10/22	Fire Armando Museum, Amersfoort
	07/11/05	Acute health problems pet store, Hoogeveen
	07/11/12	Senseless violence, Lottum
	07/12/12	Power outage, Apache helicopter crash, Bommeler- en Tielerwaard
2008	08/01/13	Asbestos fire, Vroomshoop

Year	Date*	Crisis
	08/02/14	Crash emergency vessel, Ooij
	08/05/09	Fire shipyard, De Punt
	08/05/13	Fire Delft University of Technology
	08/07/07	Explosion bunker, Bilthoven
	08/12/24	Stabbing incidents Jack de Prikker
2009	09/02/09	Death threats schools, Weesp
	09/02/25	Plane crash Turkish Airlines
	09/04/15	Stomach surgery Scheper hospital
	09/04/24	Mexican flu pandemic
	09/04/30	Assault Queen's day, Apeldoorn
	09/06/08	Den Bosch sex crimes case swim teacher
	09/08/22	Hoek van Holland beach riots
2010	10/03/08	Fire fighter casualty, Veendam
	10/07/02	Wildfire Strabrecht's Heath
	10/12/07	Day-care sex crimes case, Amsterdam
2011	11/01/05	Fire chemical firm Chemie-Pack Moerdijk
	11/03/12	Fire GGZ healthcare facility Rivierduinen
	11/04/09	Shooting Alphen aan den Rijn shopping mall
	11/05/31	Klebsiella outbreak Maasstad hospital
	11/07/07	Roof collapse Grolsch Veste stadium
	11/07/27	Breakdown KPN network Waalhaven
	11/09/02	Diginotar cyber security hack
	11/09/17	Riots Maasgebouw
	11/11/07	Natrium fire, Farmsum
	11/12/02	Sinking of 't Loon shopping mall, Heerlen
2012	12/01/02	High water Groningen
	12/01/04	High water Friesland
	12/04/21	Westerpark train accident
	12/07/22	Asbestos discovery Kanaleneiland
	12/09/21	Project-X Facebook riots Haren

* Date refers to the incident(s) that initiated the crisis.

4.4.2 Operationalization and coding

The research synthesis consists of an in-depth analysis of each of these 114 reports. This study addresses the crisis response stage only (Coombs, 2014; Veil, 2011), a period which we found was usually discussed in a distinct section of a report. In nine reports, this was not the case, and here we determined the crisis response stage on the basis of the time period that the temporary crisis management structure was activated. We found that crisis evaluation reports are generally organized in a similar way. We read the summary and introduction of every report, and the sections that addressed the crisis response stage, the analysis, conclusions, and recommendations, and also scanned the parts on preparation and the aftermath to gain a fuller impression of the context of the crisis. In checking and supplementing the coding, we systematically searched for thirteen terms to identify the involvement of external experts such as: 'expert', 'knowledge', and 'external'.

We assumed an expert was external if it was not part of the 'regular' (strategic) crisis management response structure (in Dutch: *reguliere crisisbeheersingsorganisatie*). The 'regular' (strategic) crisis management response structure in the Netherlands is described in the National Crisis Decision-Making Handbook and consists of a cluster of organizations (NCTV, 2013; Torenvlied *et al.*, 2015). This structure includes temporary crisis management bodies, such as a Ministerial Crisis Management Committee ('MCCb'), an Interdepartmental Crisis Management Committee ('ICCb'), and a National Communication Team ('NKC'), and (activated parts of) permanent crisis management bodies, such as the National Crisis Centre ('NCC'), responsible ministries, safety regions, and local governments.

To answer our research question, we explored the role and impact of external experts in the adequacy of crisis management in two ways. In part I, we used a standardized coding scheme to develop an overall picture of the involvement of external experts. In part II, we integrated the specific crisis contexts through an in-depth analysis of the evaluation reports, as we recognized that the context can have a strong explanatory value in itself (Johns, 2006; Pierce and Aguinis, 2013). We coded individual statements in the reports that explicitly link the specific role of experts involved in a crisis to the reported adequacy of management of that crisis.

Part I

We used a standardized coding scheme to code characteristics in the reports on two levels of analysis: (a) the level of external experts and (b) the level of crises (see Table 4.2). The coding scheme classifications were developed based on preliminary research: a pre-study of ten crises and ten in-depth interviews with crisis management experts. In coding the 114 evaluation reports, we identified 302 external experts who were involved on 436 occasions

in the 60 crises. Some of these experts were thus involved in multiple crises. As such, $n = 302$ for variables measuring external expert characteristics, $n = 60$ for variables measuring crisis characteristics, and $n = 436$ for variables measuring crisis-expert relational characteristics. The coding process was carried out by two researchers independently, and the average inter-coder reliability was 85 percent. After discussing differences, the two researchers agreed final codes.

After identifying the external experts, we coded them based on the five characteristics that we were interested in. First, for the *background* of the expert, we used five categories: public, non-profit / voluntary, semi-government, private, and academic. For the *initiative for involvement*, we established three categories: crisis organization, other expert, and own initiative. For the *moment of connection* characteristic, we had two categories that were intended to tap the ad hoc versus pre-crisis established nature of the relationship with the external expert. The *reason for involvement* characteristic aimed to capture the primary relevance of the external expert for the crisis response. Here, we differ between four categories, including independent expertise and proximity to the crisis location. Finally, the *term of involvement* characteristic aimed to capture the duration of the expert's involvement with the crisis management organization, which can be either on (an) occasional moment(s), for a longer period of time; or during the largest part of the crisis.

Table 4.2 Coding scheme for characteristics of expert involvement and crisis

Level	Characteristic	Categories
Expert	Background of expert	Public sector; non-profit / voluntary; semi-government; private sector; academic
	Initiative for involvement	Involved by crisis management organization; involved by other expert; on own initiative
	Moment of connection	Expert already present in network; became involved during crisis
	Reason for involvement	Material threat to existence; threat to task performance; proximity to crisis location; specific knowledge
	Term of involvement	Occasional; longer period(s); structural
Crisis	Number of external experts	[number]
	Type of crisis	Natural; traffic and transport; infrastructural; public services; public health; veterinary crises; technological crises; public order; terrorism; foreign
	Crisis dynamic	Fast-burning; average; slow-burning

When it came to coding the crises, we included the *number* of external experts as a simple count variable by totaling the number involved in each crisis. Two characteristics, *type of crisis* and *crisis dynamic*, were determined using existing categories as a basis (Muller *et al.*, 2009; Rosenthal *et al.*, 2001).

Part II

In order to obtain a better understanding of the relationship between expert involvement and adequacy of crisis management, in part II we qualitatively checked the evaluation reports on reported aspects of adequacy of crisis management. We coded statements in the reports that explicitly refer to a relationship between the involvement of an expert and adequate crisis management processes. Given that an aim of the evaluation reports was to assess the crisis management process, such qualitative judgements and interpretations were generally clear and explicit. For example, the report after the *2007 petstore crisis in Hoogeveen* concluded: *"If a liasion of the RIVM were included in the Regionaal Operationeel Team [crisis management response structure] at the time the RIVM was at the incident location, the information provision [...] would have been more effective"* (Bos *et al.*, 2008b, p. 39). We uncritically accepted the conclusions in the evaluation reports rather than making our own judgements on what was 'adequately managed' or not.

After carefully analyzing all the statements, the two researchers separately grouped the statements to create recurring themes. After comparison and discussing their groupings, this resulted in 27 themes, such as 'involving experts to provide a second opinion' and 'the maintenance of an expert network in non-crisis times'. Some of the themes turned out to be closely related, or to have quite similar meanings, such as 'as a second opinion' and 'consulting crisis managers that have experienced similar crisis events in the past'. Given this situation, we further grouped these 27 themes to provide a final list of six main opportunities and threats linked to expert involvement, and ten conditions under which expert involvement contributes to reported adequate crisis management.

4.5 RESULTS

4.5.1 Part I – The role of external experts in Dutch crisis situations

Background of experts and frequency of involvement

Frequency of involvement. The data show that external experts are frequently involved in crisis response activities. In 56 of the 60 crises, we identified the presence of at least one external expert. There is little restraint on involving experts: on average almost seven experts were involved in each crisis. In 40 percent of the crises, fewer than five external experts were involved; in 10 percent of the crises 15 experts or more. There is also a striking variation

in their involvement between crisis types and crisis dynamics. For example, a total of one hundred external experts were involved in the three veterinary crises in our dataset. One possible explanation is that this is due to the slow-burn nature of these crises combined with the strong need for specialized technical knowledge and skills. Of all the external experts in our dataset, 90 percent were organizations rather than natural persons.

Background of expert. Table 4.3 provides the backgrounds of the experts and the types of crisis they were involved in. The specific context of a crisis determines which experts are 'internal' and which are 'external' to the (strategic) crisis management response structure (as explained in the research design). For example, in the *2010 Strabrecht's heath wildfire,* the affected municipality viewed the Ministry of Defense as an external actor, due to their irregular contact in normal times. Similarly, the German fire brigade involved in the crisis response to the *2000 fireworks factory explosion in the city of Enschede* was perceived as external. Clearly, external experts are a heterogeneous group of actors including people acting on their own (such as an individual explosives expert), private companies (Microsoft), non-profit healthcare organizations (Red Cross), academic institutions (Architecture Department at Delft University of Technology), semi-public organizations (Institute for Applied Science ('TNO'), and public organizations (Department of Waterways ('Rijkswaterstaat')).

Table 4.3 Public-private background of external experts per type of crisis

	Background of expert					
Type of crisis	**Public sector**	**Non-profit / voluntary**	**Government controlled company**	**Private company**	**Science**	**Total**
Natural	16	7	0	12	3	38
Traffic and transport	21	8	4	15	1	49
Infrastructure	20	24	2	25	3	74
Utility services	6	1	3	14	0	24
Public health	24	24	9	20	7	84
Veterinary	20	51	0	14	15	100
Technological	5	1	0	2	0	8
Public order	10	12	1	5	2	30
Terrorism	2	3	0	0	0	5
Total	124	131	19	107	31	412

Note: the backgrounds of 24 experts were not provided in the reports.

Predominantly, the external experts involved were either private companies (30 percent), non-profit / voluntary organizations (32 percent), or public sector organizations (26 percent). Examples are, respectively, Shell's fire brigade which became involved in the *2011 fire at the Chemie-Pack chemical industry at Moerdijk*; the Institute for Psychological Trauma (IVP) involved in the *2011 Alphen aan den Rijn shooting in a shopping mall*; and the Municipality of Amsterdam in the *2011 sinking of the 't Loon shopping mall*. Fewer than 8 percent of the experts were scientific organizations such as the Utrecht University Veterinary Science Department that was involved during the *2007 Q fever outbreak*. Table 4.3 shows how the background of the external experts varied by the type of crisis. Private sector experts were, for instance, relatively over-represented in infrastructure and utility services crises responses.

Why are external experts involved?

Initiative for involvement. In the majority of cases (60 percent), the crisis management response structure actively involved the external expert in its crisis response activities. Active recruiting of external experts might be in line with expectations. However, we found that in more than 25 percent of the cases, the experts took the initiative to become involved. For example, the energy consultancy company KEMA became involved, as it was already present on the *Amercentrale* energy plant site when *scaffolding collapsed within the power plant in 2003*. During the *2009 crash of Turkish Airlines flight 1951 at Schiphol Airport,* a traumatologist was by coincidence present and stepped in to help. A further 13 percent of the external expert involvement was as a result of being invited by another expert. For example, after the *2009 bunker explosion in Bilthoven,* the Dutch Labour Inspectorate engaged EOCKL and TNO who were specialists in the making safe of explosives.

Moment of connection. In 67 percent of the cases relations with the external experts were established ad hoc. This implies that most external experts were recruited by the crisis management response structure at a certain moment during the crisis response phase (for example as result of a search for specific knowledge needed in the crisis) or that an expert introduced itself. Only in a one-third minority of cases the experts were already present in the network of the crisis management structure and relations were established before the crisis occurred, for example as a result of preparations or as a result of collaboration during a previous crisis or crisis training.

Reason for involvement. On the basis of the mainstream crisis literature, one would expect the main motivation for involving external experts stems from their specialized 'technical' expertise and skills and, indeed, in many instances this was true. For example, when the *2003 Avian Influenza outbreak* was suspected, samples were sent to the Central Veterinary Institute ('CVI') in Lelystad for laboratory testing, which a day later confirmed that there was indeed an outbreak.

Although being a technical expert is a common reason for involvement, this only seemed to be the case in half of the crises we studied (see Table 4.4). Involvement of an expert can also be a consequence of proximity to the crisis location. For example, in the *2011 Chemie-Pack fire at Moerdijk,* Shell's private fire brigade provided direct assistance due to its proximity to the fire location. In 36 percent of the cases, experts are involved because of their tasks and responsibilities in such situations. For example, the Royal Netherlands Sea Rescue Institution ('KNRM') was logically involved in the search-and-rescue activities after the *2006 Emergency landing of a helicopter in the North Sea*. In 8 percent of the cases, involvement was the result of a direct material threat to the organization concerned. Organizations hit by a crisis seem often automatically to qualify as experts. For example, during the *2011 Natrium fire at a chemical plant in Farmsum*, the crisis management response structure quickly involved Dow Chemical, the plant owner, in its crisis team and at the press conference.

Table 4.4 Typology of external experts in crisis situations

Type of expert	Frequency	Primary reason for involvement
Technical expert	49%	Outstanding technical knowledge and/or skills
Proximity expert	7%	Proximity to crisis location; easy to connect to and quickly deployable
Task expert	36%	Responsibilities for accomplishing certain tasks
Threatened expert	8%	Expertise on processes in own organization threatened with material losses

Term of involvement. Finally, we saw that around half of the external experts were involved only occasionally during the crisis. For example, during the *2009 death threats at schools in the city of Weesp,* a specialized company was asked to provide camera images and make them appropriate for further investigation. Over a third of the external experts became involved over a longer period during the crisis response phase. For example, Foundation Juvans continued to provide mental healthcare after the immediate response to the *2009 exposure of long-term sexual abuse of children in a Den Bosch swimming pool*. Only 15 percent of the experts were involved on a structural basis, during the largest part of the crisis response, establishing a close cooperative relation with the (strategic) crisis management response structure. For example, the energy network operator Continuon became involved during the *2007 Power outage at Bommeler- en Tielerwaard* when an Apache helicopter crashed and hit several power lines.

4.5.2 Part II – Conditions under which expert involvement contributes to adequate crisis management

In order to integrate the specific crisis contexts, we carried out an in-depth analysis of the evaluation reports. This analysis resulted in the identification of six opportunities and threats and ten conditions under which expert involvement contributes to adequate crisis management.

Opportunities and threats in external expert involvement

The rich content and thick descriptions in the evaluation reports provide considerable information about factors that stimulate or impede the successful involvement of external experts in crisis responses. From the reports, we distilled three main opportunities and three main threats to adequate external expert involvement in responding to a crisis (Table 4.5).

Table 4.5 Main opportunities and threats of external expert involvement in crisis response

Opportunities	Threats
Knowledge acquisition	Loss of consensus and decisiveness
Use of operational skills	Loss of control
Increase of legitimacy	Interference of private interests

Opportunities: integrating knowledge, skills, and reputation

Knowledge acquisition. Typically, in times of crisis, reliable information is scarce. Expert knowledge can reduce uncertainty and chaos by providing sense and meaning to events. It enables a better assessment of the causes and consequences of an event, and may offer appropriate courses of action. Based on their previous experience and specialized knowledge, experts are able to recognize patterns quickly. Especially in technologically advanced domains, such as in ICT, chemistry, and transmittable diseases, the crisis management response structure needs to rely heavily on external experts. External experts not only provide general and highly specialized advice, but second opinions to evaluate the reliability of existing information. This role of the chemical company DSM and the NedTrain and Railion railway companies was demonstrated in the *2002 tank wagon leak at Amersfoort railway station* (Geveke *et al.*, 2002) discussed in the introduction.

Use of operational skills. Sometimes external experts' specialized operational skills enable them to carry out highly complex tasks where operational errors could have dramatic consequences. For example, in the *2001 foot-and-mouth outbreak* (in which around 270,000 cloven-hoofed animals were culled), the crisis management response structure collaborated with Rendac, a company specializing in animal disposal. Rendac carried out a variety of crisis response operations, such as retrieving animal carcasses from infected farms, destroying

the carcasses, and collecting manure and milk from the vaccinated areas. The report states that Rendac *"played a crucial role in the operational response"* (Abbas *et al.*, 2002, p. 179).

Increase of legitimacy. The crisis management response structure can use the reputation of external experts to build trust, integrating the expert's reputation into the organization's. Neutrality can be a crucial asset in the de-politicization of crises – especially when deployed in crisis communication. Engaging experts can bring broader societal values and interests into the crisis organization. For example, during the *2007 Q fever outbreak* (a highly contagious zoonotic disease found in goats), the crisis organization established an expert council which held periodic meetings with a broad range of experts (including, among others, animal health services 'GD Animal Health', the Public Health Services ('GGD'), the Dutch Federation of Agriculture and Horticulture ('LTO Nederland'), Utrecht University department of veterinary science, Centre for Infectious Disease Control ('CIb'), and the National Institute for Public Health and the Environment ('RIVM'). The function of this council was to provide the crisis organization with general advice, new strategies, and estimates of likely effects regarding their response to the Q fever outbreak. This consultation increased the legitimacy of the crisis response (Van Dijk *et al.*, 2010).

Threats: loss of consensus, control, and public values

Loss of consensus and decisiveness. Involving external experts often brings additional views and opinions to the table, which makes crisis management more complex. External experts may also make decision-making processes unclear because their role, and the formal status of their advice, is often undefined. Involving multiple experts also creates a risk of receiving contradictory expert advice. For example, in the *2005 grounding of the container ship Fowairet* (carrying hazardous substances) *in the Westerschelde estuary*, two external experts (RIVM, the National Institute for Public Health and the Environment, and DCMR, the joint environmental protection agency) were involved in calculating effect distances. Their conclusions, and also those of an internal study by the fire department, differed widely, and this complicated the decision-making process. The evaluation report concluded that there should always be either an unambiguous outcome of expert advice that is not susceptible to discussion, or a sound explanation for any differences (Hartman and Schweden, 2006).

Loss of control. By involving external experts, the crisis management response structure gives away a certain degree of autonomy and influence. An external expert may, for example, be provided with highly sensitive or classified information and yet, at the same time, use their own communicating channels to the media and involve their own network. Further, once consulted, it is often difficult for crisis managers to disregard an expert's advice. For example, in the *2011 Diginotar cyber security hack*, which posed a threat to the privacy of data of Dutch citizens and companies, the crisis organization closely collaborated with Microsoft. The crisis organization asked Microsoft not to implement a software update because this

would block the DigiNotar digital protection certificates. However, Microsoft implemented the update to emphasize its independent status. Microsoft also refused to collaborate with the (strategic) crisis management response structure on issuing a shared press report and released its own version of events (IVenJ, 2012).

Interference of private interests. The reports show that the private interests and private values of external experts are sometimes at odds with the interests of the (strategic) crisis management response structure. Private actors could themselves be viewed as stakeholders in the crisis and to some extent have their own agendas, which brings into question the democratic legitimacy and accountability of the crisis organization. For example, in the *2009 Mexican flu outbreak,* the crisis organization worked together with Professor Coutinho of the Centre for Infection Disease Prevention (CIb) and Professor (of virology) Osterhaus of Erasmus Medical Centre. These two 'super experts' played an important role in communications with the media, even acting as the 'public face' of the (strategic) crisis management response structure. The involvement of Professor Osterhaus became highly controversial and was criticized when his interests in the pharmaceutical industry were discovered by the media (Helsloot and Van Dorssen, 2011).

Conditions under which expert involvement contributes to adequate crisis management

The stimulating and impeding factors, described above, are sometimes two sides of the same coin. Sound crisis management needs to balance these factors. Based on the analyses above, and other statements in the evaluation reports, we were able to identify ten conditions which, if met, lead to expert involvement contributing to adequate crisis management.

Involve external experts only when actually needed. When a crisis breaks out, the crisis management organization should only involve external experts if the specialized knowledge and skills required are not sufficiently available within the organization itself. Working with experts that are part of the (strategic) crisis management response structure can reduce coordination problems. For example, in the *2011 mental healthcare facility fire at GGZ Rivierduinen,* the crisis organization decided to not involve any external experts on the grounds that it had *"sufficient housing capacity for calamities, both in terms of facilities and required expertise and treatment capacity. Rivierduinen itself plays a role in the psychosocial assistance during [regional] disasters"* (Zannoni *et al.*, 2011, p. 43).[18]

Maintain an expert network in non-crisis times. Maintaining a network of experts in non-crisis time facilitates effective collaboration when a crisis arises. Through pre-established personal contacts, joint training exercises, and simulations, the crisis organization gains a clearer view of the functional areas and crisis scenarios covered by the external expertise. For example, in reaction to the outbreak of the *2008 Vroomshoop asbestos fire*, collaboration

18 Since all evaluation reports are written in Dutch, all quotes are translated.

was initiated with two asbestos removal companies, Hein Heun and RPS. Both these experts were asked for advice on a possible evacuation. The evaluation report concludes that collaboration commenced late because *"the municipality and emergency services had an insufficient picture of the network of external partners that, in the event of an incident, could have a possible role"*, and that this resulted in late crisis response measures (Bos *et al*., 2008a, p. 3).

Be familiar with each other's roles and plans. If the crisis management response structure and the experts are familiar with each other's general and crisis-specific tasks and responsibilities, they will coordinate more effectively during a crisis. The availability of basic agreements and principles for the roles of external experts creates clarity and ensures that important expertise is not overlooked. At the same time, blueprints can leave insufficient room for flexibility, so an optimum needs to be found. In the *2006 emergency helicopter landing in the North Sea* the collaboration with the Royal Marines, the Coast Guard, and the Dutch Oil company was suboptimal because the actors were insufficiently aware of each other's roles and expectations, to an extent due to unclear plans. The report concludes that "*for good cooperation it is important that parties know each other, each other's interests, and each other's responsibilities, authorities, and tasks*" (Bos *et al*., 2007b, p. 57).

Employ clear and close communication lines. Communication lines between the crisis organization and external experts are often inadequate, resulting in suboptimal sharing of information. Communication lines should be short and direct, which could be achieved by appointing liaison officers in the (strategic) crisis management response structure and in the expert organizations. Often effective communication is achieved through face-to-face contact. For example, in the *2007 regional failure of the drinking water supply in Noord-Holland*, information exchange was fast because a liaison officer from the drinking water specialist PWN had been included in the crisis management team. Nevertheless, the report notes that the communication lines would have been still better if the roles of the liaison officer were clear (Bos *et al*., 2007a).

Define clear mutual expectations. From the reports, it is apparent that, for adequate crisis management, it is important that experts know what is expected of them in terms of their role and expertise. Several reports conclude that if expectations had been set more clearly at the start of the cooperation, crisis response activities would have been better performed. For example, in the *2007 pet store crisis in Hoogeveen* (people acquired acute health problems for unknown reasons), measurements were carried out by the environmental safety service 'MOD', the National Poisons Information Centre ('NVIC'), and Groningen University Medical Center ('UMCG'). The evaluation report concludes that collaboration with the external experts was inadequate, because of the unclear status of the advice from the various experts (how to 'weight/value' it) and therefore uncertainty over how this advice should be included in decision-making (Bos *et al*., 2008b).

Request specific information. Although there are cases where the crisis management response structure consults experts for general strategic advice, requesting specific technical information stimulates more effective collaboration. It reduces the probability of redundant, and sometimes contradictory, information and advice, and sets clear expectations. It emphasizes the autonomy of the crisis management response structure vis-à-vis the external expert. In addition, it enables better reflection on tasks in a later stage. For example, in the *2003 Wilnis dike inundation*, the crisis organization requested GEO Delft, a technical research institute, to test the silt for harmful substances. The next day, GEO Delft concluded that the silt was not contaminated, providing an adequate basis for appropriate decisions (Houben *et al*., 2004).

Consult crisis managers with experience; request second opinions. The reports show that seeking advice from crisis managers who had experienced a similar crisis proved very effective. For example, in the *2011 Alphen aan den Rijn shopping mall shooting* incident, the crisis management organization received advice on external communication with victims from officials involved in the response to the *2009 Queens Day assault* in Apeldoorn, which contributed to delivering adequate external communications (IOOV, 2011). The independent view of expert outsiders can further validate or question information and make decisions more reliable/credible. For example, in the *2011 sinking of the 't Loon shopping mall*, a professor of architecture pointed to specific weak construction parts. Another external expert was consulted to examine these parts, who confirmed their good condition (Engelbertink *et al*., 2012).

Anticipate conflicts of interest; build mutual trust in a dynamic process. (Strategic) crisis management response structures should anticipate differences in interest. However, the private interests of an external expert need not necessarily stand in the way of effective collaboration. The reports show that mutual trust is essential for effective collaboration. Nevertheless, if needed, the (strategic) crisis management response structure should always be willing to remove or exclude an expert from the crisis team. In the *2005 power outage in Haaksbergen,* initial collaboration with the energy network provider Essent went well. However, mutual trust was damaged when Essent announced that, contrary to expectations, the energy supply would not be restored that evening. The evaluation report concluded that the debate on the exact agreements made between the parties hindered adequate crisis management (Dorst *et al*., 2006).

The (strategic) crisis management response structure should remain in the lead. The position of external experts vis-à-vis the (strategic) crisis management response structure differs between crises: they can be included in the crisis team, carry out tasks under the supervision of the (strategic) crisis management response structure, or act largely independently. It may sound obvious, but the reports stress that the (strategic) crisis management response structure must, at all times, hold onto its coordinating role and make the final decisions.

The ship fire specialist company, Svitzer Wijsmuller offered its services several times during the *2007 ship fire in Velsen*, which is initially refused by the (strategic) crisis management response structure. At a later stage, when its expertise is needed, after internal discussions, the (strategic) crisis management response structure decided to involve the expert company. The evaluation report concludes that the way the company's expertise was involved contributed strongly to the adequate crisis management (Zannoni *et al.*, 2007).

Explicitly coordinate external communication. Many reports stress the importance of making clear arrangements with external experts regarding external communication. Experts may take part in external communications, either in a coordinated way or on their own initiative. Organizing specific moments, e.g. press conferences, to communicate pre-agreed messages creates clarity and consistency. Here, it is also important that specialized knowledge and jargon are 'translated' to create a clear and understandable message. In dealing with the *2003 scaffolding collapse in the Amercentrale* power station, the technical advice and skills of the energy company Essent and subcontractors Hertel and CMI were used. Due to a lack of pre-agreed arrangements, the subcontractors became involved in contacts with the media resulting in an inconsistent message being given to the public. The report concludes, "*it would have been better if the municipality had clarified the arrangements regarding the spokesperson directly with all parties involved*" (Helsloot *et al.*, 2004, p. 80).

4.6 CONCLUSIONS

While the importance of integrating expertise in responding to crises has often been put forward in the literature, studies that empirically focus on the role of experts in the response to crisis have remained scarce (for exceptions see: Rosenthal and 't Hart, 1991; Grönvall, 2001; Baekkeskov, 2014; 2016; Mendonça *et al.*, 2008). Strikingly, systematic knowledge on the consequences of consulting *external* experts during crises seems absent; both in the literature and in crisis management practice. In this study, we examined external experts in crisis situations: how frequent they are involved, what role they play, how their involvement affects the quality of crisis management, and what conditions facilitate adequate collaboration with the (strategic) crisis management response structure. We analyzed data from 114 post-crisis evaluation reports after 60 crises in the Netherlands. This research synthesis allowed us to provide systematic insights over a large number of cases based on a large amount of, well-grounded empirical data.

In our research synthesis, we observed that external experts are frequently, and sometimes in large numbers, involved in crisis responses. Their involvement in crisis responses not only stems from a demand for their technical expertise, but can also be a result of a threat to their organizations' existence and responsibilities. The involvement of external experts during the crisis response phase provides crisis managers with opportunities to integrate knowledge,

carry out complex tasks, and increase their legitimacy, albeit with the downside that it can threaten a loss in consensus, control, and public values. From an in-depth analysis of the evaluation reports reviewed, we qualitatively distilled ten conditions under which expert involvement contributes positively to adequate crisis management.

The systematic analysis of the empirical knowledge on the role of external experts in crisis situations points towards a number of interesting lessons for crisis managers and suggestions for further research. To start with, already in normal times (which in the Dutch context is labelled 'the cold stage'), (strategic) crisis management response structures should put effort into identifying and collaborating with experts. Without ongoing crises, (strategic) crisis management response structures operate under less political and time pressure, and are better able to more 'objectively' judge what expertise is present in the organization and what is lacking and may need to be brought in. Based on this 'risk analysis', they can identify what external experts it might be useful to build up a relationship with. This research finding is in line with Perry and Lindell's (2003) recommendation in the context of environmental threats. The authors state that, through vulnerable analysis, *"planners and public can more readily recognize the limits of their expertise"* (p. 341). In that way, the need for contacting experts who can bring in technical (e.g., geophysical or meteorological) knowledge becomes clear and is usually recognized. Further, since it will be easier to collaborate with someone you are familiar with, the cold stage can also be used to establish and maintain a network. In other words, effective expert involvement requires preparation and effort by the crisis management structure. We recommend future research in the areas of crisis preparation (e.g., building on Gilpin and Murphy, 2008; Scholtens, 2008) and on crisis networks and stakeholder collaboration (e.g., building on Comfort and Kapucu, 2006; Kapucu, 2006) to take this factor into account.

Another important lesson is that crisis managers should be aware of the consequences of involving experts. Although experts can help by filling important knowledge gaps, the study also points to potential negative consequences of expert involvement, an aspect which has, so far, not been extensively researched. In particular, involving *external* experts risks a loss in control and interference from conflicting interests. In that sense, expert involvement requires coordination to reduce these potential risks. The review shows that crisis managers sometimes have no choice other than to involve experts, and this strengthens the call to ensure that crisis managers have the guidance they need on how to manage the positive and negative consequences of expert involvement. Therefore, we recommend further studies that link the role of experts to the available theory on reputation and legitimization during crises (e.g., Christensen *et al.*, 2016; Coombs and Holladay, 2006); on crisis communication and knowledge transfer/dissemination (e.g., Coombs, 2014; Majchrzak *et al.*, 2007); sense and meaning making (Weick, 1988; Boin *et al.*, 2005); and crisis learning (e.g., Moynihan, 2009; Broekema *et al.*, 2017). A final suggestion for further research is to investigate the role of

experts in other, non-Dutch, institutional contexts to see if expert involvement might work differently under other governance systems with a different crisis management structure.

In the present study, we faced three main challenges. The first challenge relates to contingencies linked to the specific crisis situations (e.g, Rosenthal *et al.*, 2001). Since the development and outcome of a crisis is highly context-dependent (Johns, 2006; Pierce and Aguinis, 2013), drawing general conclusions is difficult. Nevertheless, by systematically studying statements in evaluation reports, we were able to distill systematic and insightful lessons. The second challenge concerns the selection of crises. Situations that could easily have developed into a crisis – so called 'latent crises' – but did not, maybe because of adequate management or expert interventions, have not been included in this study but could have provided valuable lessons. We decided to include all 'designated' crises, not only large-scale ones with extensive media coverage, to minimize selection bias. Finally, although based on extensive post-crisis investigations by experts, evaluation reports might not always provide balanced narratives for reviewing crisis management, for example because of political influences diluting negative findings (cf. Birkland, 2006; Elliott, 2009). The reports might also overlook/exclude data on informal consultations and the roles of legitimization and actors' private/individual interests. Overall, we found the reports to be rather similar in many respects, such as in their structures and methods of data collection. Hence, through our research synthesis, we have been able to report on an initial exploratory effort to collect and assess a relatively large amount of data on crisis management, which has enabled us to identify a number of key processes in expert involvement in crisis management, resulting in ten advisory points for crisis managers.

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CHAPTER 5

Public leaders' organizational learning orientations in the wake of a crisis and the role of public service motivation

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5.1 ABSTRACT

This study explores public leaders' organizational learning orientation in the wake of a crisis. More precisely, we study the association between public leaders' public service motivation and their learning orientation (instrumental versus political). This research addresses the lack of systematic empirical data on crisis-induced learning and provides a first systematic operationalization of this important concept. We analyze survey data collected from 209 Dutch mayors on their learning priorities in responding to a hypothetical crisis situation in their municipality. The mayors' response patterns reveal (1) "cognitive", (2) "behavioral", (3) "accountability", and (4) "external communication" dimensions of crisis-induced learning. We find that mayors with a stronger public service motivation put more effort into instrumental learning (dimensions 1 and 2), and surprisingly, also into political learning (dimensions 3 and 4). Mayoral experience in previous crises is positively associated with accountability-related learning after a crisis. However, mayoral tenure is negatively associated with crisis-induced behavioral learning.

5.2 INTRODUCTION

Public leadership plays a central role in crisis management. In the wake of a crisis, public leaders are confronted with highly complex and challenging tasks. They have to engage in a variety of pressing activities at the same time (Boin and 't Hart, 2003; Boin *et al.*, 2016). One of the core crisis management challenges facing leaders is to foster organizational learning (Boin *et al.*, 2008). Learning is a crucial process in achieving an adequate crisis response, a proper return to normality, and preventing future crises or, in other words, in creating a resilient organization. Thus, when under the strong political and media pressures brought about by a crisis, public leaders have to decide quickly which crisis-related learning activities to prioritize.

On the one hand, public leaders need to put effort into *instrumental learning*: to develop deeper knowledge and understanding of the causes of the crisis and, where appropriate, adapt organizational aspects such as culture accordingly (Fiol and Lyles, 1985; Huber, 1991; Turner, 1976). On the other hand, public leaders are also occupied with *political learning*: refining their political crisis management strategy, allocating blame, limiting reputational damage, and improving the organization's external communications (Boin *et al.*, 2008; Birkland, 2006; May, 1992). In this paper, we explore the structural patterns in the organizational learning orientations of public leaders in the wake of a crisis, and seek an initial explanation for the differences in these orientations.

There have been a considerable number of studies on public leadership in times of crisis (e.g., Boin and 't Hart, 2003; Boin *et al.*, 2016, Hadley *et al.*, 2011; Comfort and Okada, 2013; Hale *et al.*, 2006; Van Wart and Kapucu, 2011) but these tend to be somewhat empirically disconnected from the substantial number of studies on crisis-induced organizational learning (e.g., Birkland, 2006; Deverell, 2009; Carley and Harrald, 1997; Choularton, 2001; Toft and Reynolds, 1994). The extent that learning occurs differs from crisis to crisis and the literature has yet to clarify the factors that explain the extent of crisis-induced learning (Stern, 1997; Deverell, 2009; 2010). A recent study suggests a coherent pattern in public leaders' orientations in their crisis-response activities (De Vries, 2016), of which crisis-induced learning is a central one. Systematic empirical evidence on crisis leadership and crisis-induced learning needs to be established to address this knowledge gap (Smith and Elliot, 2007), including larger-*n* studies and more systematic operationalizations of crisis-induced learning (Dekker and Hansén 2004, p. 141). This is a challenge because learning from a crisis is, by definition, different from the well-studied process of learning in normal situations (Moynihan, 2008).

The present study aims to contribute to this field by providing a more refined operationalization of public leaders' crisis-induced organizational learning orientations. These learning orientations comprise cognitive learning, behavioral learning, accountability and external communication dimensions. We further argue that these leaders' public

service motivation (PSM) – their motivation to pursue the public good (see Perry, 1996) – explains the variation in these orientations. Accordingly, we pose the research question: *To what extent do public leaders' public service motivation affect their organizational learning orientation in the wake of a crisis?* We hypothesize that public leaders with relatively high levels of PSM will be more strongly oriented towards instrumental learning. Conversely, public leaders with relatively low levels of PSM are expected to have a stronger orientation towards political learning.

To explore the organizational learning orientations of public leaders and test our hypotheses, we sent a survey to the mayors of all 391 Dutch municipalities with questions about a hypothetical crisis in their municipality since mayors have a key leadership function in the Dutch crisis management system. We asked the respondents to indicate the importance they would attach to several aspects of learning. We received 209 valid responses (response rate = 53 percent). The items included in the survey on specific aspects of crisis-induced learning were derived from previous surveys in the field of organizational learning (Garvin *et al.*, 2008; Goh and Richards, 1997; Chiva *et al.*, 2007; Marsick and Watkins, 2003) and from the crisis management literature. We also included the public sector motivation measurement scale of Kim *et al.* (2013) plus a range of control variables tapping the characteristics of the mayor and the municipality.

Below, we first discuss the literature on crisis-induced organizational learning, as a key challenge for public leaders, and how this might be associated with public leaders' PSM. After a brief description of the context of mayors in the Dutch system of crisis management, we discuss our empirical design. After presenting the results of our descriptive and explanatory analyses, we conclude with a discussion on the relevance of our findings.

5.3 THEORETICAL FRAMEWORK

5.3.1 Leadership challenges in the wake of a crisis

Public leaders play a central role in the governance of crises, situations in which they are confronted with enormous challenges (Boin and 't Hart, 2003; Boin *et al.*, 2016; Comfort and Okada, 2013). Entrusted with extended responsibilities and competences – often far beyond the scope of their normal duties – public leaders are expected to guide their organizations through difficult times. In a crisis situation, public leaders represent government to the public and have to provide sense and meaning to events (Boin *et al.*, 2016). Directing the crisis management organization, public leaders have to take decisions with potentially far-reaching consequences under very complex circumstances (Boin *et al.*, 2016; Comfort and Okada, 2013). They have to do this in a situation of chaos and stress, under time pressures, and often with only incomplete or unreliable information and few opportunities to consult other

parties (De Vries, 2016). In a crisis situation, the environment is often heavily politicized since political actors, the media, and a variety of stakeholders can create immense political pressure (Brändström and Kuipers, 2003).

5.3.2 The challenge of organizational learning in times of crisis

In the immediate aftermath of a crisis, one of the key challenges facing a public leader is to initiate a process of organizational learning (Boin *et al.*, 2008; Schiffino *et al.*, 2016; Deverell, 2010). Learning is of central importance because of the devastating and long-lasting physical, economic, ecological, and social consequences that crises can have. Through crisis-induced learning, a public organization can improve its crisis-response activities and incorporate measures to prevent future crises (Moynihan, 2008). Crisis-induced learning differs from organizational learning in regular times in many ways (Moynihan, 2008). The public, the media, parliament, and other stakeholders typically demand of government to learn lessons from a crisis and can put strong pressures on public leaders to initiate learning (Broekema, 2016). In theory, a crisis can function as a catalyst for learning. A crisis can shake up a system, putting an end to long periods of institutional lock-in, and suddenly enable major organizational change. In the literature such situations are known as critical junctures, or windows of opportunity (Capoccia and Kelemen, 2007; Kingdon, 2003). Crises may reveal structural defects in a system that would otherwise have remained undetected, produce an upsurge in new information (Birkland, 2006), and establish the political consensus among stakeholders that is necessary to achieve change.

Despite the merits of crisis-induced learning, a vast body of research reveals that, in reality, public organizations face major difficulties in learning from a crisis (see Smith and Elliott, 2007). Note that organizational change after a crisis should not be equated with learning, because change does not necessarily imply an improved performance (Fiol and Lyles, 1985; May, 1992). The context of a crisis also creates barriers and introduces complexities to learning (Roux-Dufort, 2000; Stern, 1997). Uncertainty, time pressures, a lack of reliable information, and disagreements on the causes and consequences of crisis events make it difficult to reflect adequately on events (Broekema, 2016). Moreover, in a crisis, organizations generally adopt a defensive attitude, making it difficult to identify errors and discuss improvements. Consequently, a 'crisis learning paradox' emerges: the very crisis situation that makes learning imperative also impedes the accomplishment of learning (Dekker and Hansén, 2004, p. 211).

5.3.3 Crisis-induced learning partitions

On the basis of the organizational learning and crisis management literature, we can theoretically distinguish between two dimensions of crisis-induced learning: (1) instrumental learning; i.e. a 'technical' process of adopting organizational adjustments based on the new

knowledge and understanding acquired, and (2) political learning; a process of finessing the organization's political strategies and activities (drawing on May, 1992). We included the political learning dimension, because of the particular importance of political processes in the context of a crisis.

Instrumental learning

Instrumental learning is typically geared towards structural improvements in an organization. These embrace: (a) a cognitive process – the acquisition of new knowledge (cognitive dimension) and (b) a behavioral process – the transfer of this new knowledge into organizational adjustments (dimension learning) (Fiol and Lyles, 1985; Broekema *et al.*, 2017).

Cognitive dimension (knowledge acquisition). Acquiring new knowledge and understanding is a fundamental part of organizational learning (Argyris and Schön, 1978). New information can provide an organization with insights into the underlying factors that caused the crisis and weaknesses in its crisis response activities (Birkland, 2006). New knowledge can be obtained through reflecting on past events, among others by means of a public inquiry, evaluation studies, investigative journalism, and discussions in networks (Dekker and Hansén, 2004). Post-crisis evaluations are a common and accepted way of detecting organizational problems, despite some scholars questioning the actual contribution of evaluation reports to learning (Turner, 1976; Elliott, 2009). Organizational learning is not only about bringing new knowledge to the organization; it also concerns its proper dissemination within the organization (Huber, 1991). Processes of interpretation and sense-making are essential in making the knowledge appropriate for a transfer into organizational actions, and this is challenging from a crisis-learning perspective (Weick, 1995; Boin *et al.*, 2016).

Behavioral dimension (organizational adjustments). After an organization has acquired new knowledge, actions can be initiated through holding debates about new ideas in groups and teams within the organization. Subsequently, these ideas have to be translated into adjustments in the way the organization behaves (Fiol and Lyles, 1985; Downe *et al.*, 2004). This action part of learning can be considered as an implementation process that also has its related challenges (Pressman and Wildavsky, 1984; Torenvlied 2000). One way to accomplish changes in peoples' behaviors within an organization is through the top-down adoption of formal changes, such as creating or revising handbooks, protocols, procedures, or legislation (Birkland, 2006). However, top-down formal adjustments may not necessarily result in the desired behavioral changes (Birkland, 2006; Fiol and Lyles, 1985). Alternatively, changing the organizational culture can be a more profound way of learning, and this involves changing "*beliefs and precautionary norms […] to fit the newly gained understanding of the world*" (Turner, 1976, p. 381). However, this is recognized as a rather difficult process and "*full cultural readjustment [after a crisis] represents an ideal that is rarely achieved*" (Smith

and Elliot, 2007, p. 520). As a further complication, organizational adjustment often takes place within a network of organizations (Moynihan, 2008).

Political learning

Political learning is the process of improving an organization's political activities, and is typically geared towards the more short-term descaling and settlement of a crisis. Crises tend to politicize rapidly, with a range of actors competing intensively over various interests (Boin *et al.*, 2008; Broekema, 2016), which can evolve quickly and unexpectedly (Brändström and Kuipers, 2003). In the immediate aftermath of a crisis, it is crucial that organizations deal adequately with its political aspects. This means they have to constantly adapt their political activities to the emerging context. Political learning requires *"[…] a finely honed sense of the formal and informal rules of the political game and [to] know when such rules may best be invoked, stretched or ignored to best advantage"* (Stern, 1997, p. 71). In times of high public scrutiny, organizations need to start dealing with processes of blame allocation, framing interpretations, and refining their political strategies in order to minimize reputational damage (Boin *et al.*, 2009; Coombs, 2006). In the context of a crisis, a core part of the political process involves adequately organizing crisis communications to take account of stakeholder interests, map public support, and establish a dominant interpretation of the situation (Coombs, 2012).

5.3.4 Public service motivation and crisis-induced learning

The complex circumstances often turn crisis decision-making into a hurried situational judgement based on a leader's intuitions, established before the crisis, rather than a profound analytical assessment of alternative courses of action (Gilpin, 2008). Strong political pressure, time constraints, chaos, stress, and insufficient information during a crisis result in a public leader's personal characteristics playing a more important role in decision making than in more regular situations. That is, personal characteristics are an important factor in crisis decision making (Jong *et al.*, 2016; Van Wart and Kapucu, 2011; De Vries, 2016; Deverell, 2010). Jong *et al.*, in their study on mayoral leadership in times of crisis, concluded that '*decision making is positively related to the level of intrinsic motivation to lead and the ability to motivate others in a crisis*' (2016, p. 54). It has also been suggested that the large variation in the decisions that public leaders take in response to crises is related to personal characteristics of their leadership (De Vries, 2016).

In the present study, we argue that a public leader's public sector motivation (PSM) helps to explain the priorities they assign to organizational learning activities in the wake of a crisis. PSM has been studied extensively in the field of public administration in the past two decades (Perry and Hondeghem, 2008) and can be defined as *"the motivational force that induces individuals to perform meaningful public service (i.e., public, community, and*

social service)" (Brewer and Selden, 1998, p. 417). It is about holding *"motives and action in the public domain that are intended to do good for others and shape the well-being of society"* (Perry and Hondeghem, 2008, p. 3). The literature indicates a positive relationship between PSM and behavior that is seen by the individual as benefiting society (e.g., Andersen and Serritzlew, 2012). Nevertheless, individuals might be confronted with having to make a trade-off between the interests of the general public and those of themselves and individual clients. Jensen and Andersen (2015), for example, found that medical practitioners with a higher PSM, by prescribing fewer antibiotics (which is better for society due to problems of increasing resistance), focus more on serving the collective good. However, by doing so, they are being less responsive to the individual patient. Brewer and Selden (1998), when studying the link between PSM and whistleblowing, found that individuals with a higher PSM, motivated by their concern for the public interest, report wrongdoings more frequently, even if this may run counter to their self-interests (putting their job security at risk) or the interests of colleagues in the organization. In a contrasting finding, Schott *et al.* (2018) found that, when confronting public servants with dilemma scenarios in which their core work values were in conflict with each other, PSM had no effect on the respondents' decision-making.

Learning in the wake of a crisis also entails trade-offs for public leaders as, in a short time frame, they have to decide which learning activities to prioritize. Under complex circumstances, these public leaders have to organize a range of simultaneous activities, such as acquiring an understanding of the causes of the crisis, collaborating with a variety of stakeholders, adapting organizational procedures, publishing media reports, and organizing press meetings. Here, the combination of an overloaded agenda and serious time pressures compels public leaders to prioritize certain learning activities. There is a potential trade-off between putting effort into instrumental learning, i.e., acquiring an understanding of the crisis and implementing appropriate adaptations in the organization, and engaging in political learning, such as by adapting the organization's political strategies. Following a similar logic to Jensen and Andersen (2015) and Brewer and Selden (1998), and taking into account that a crisis situation poses a sudden threat to the vital interests of society (Rosenthal *et al.*, 2001), we expect that public leaders with a strong motivation to serve the public good to be most concerned with making structural improvements in the organization that increase the organization's ability to prepare for and prevent future crises. Thus, their actions are likely to be aimed at accomplishing both cognitive and behavioral forms of instrumental learning. However, public leaders also have to manage blame and control reputational damage to the organization, while they may also fear losing their own position (Coombs and Holladay, 2002). Taking into account the complexities of learning from a crisis (Stern, 1997), we expect public leaders with a relatively weak motivation to serve the public good to be more concerned with the short-term political implications of a crisis, and consequently

to be more oriented towards political learning processes. On the basis of these arguments, we therefore hypothesize that:

H1a. Public leaders' level of public service motivation is positively associated with their orientation towards the organization's cognitive instrumental learning in the immediate aftermath of a crisis.

H1b. Public leaders' level of public service motivation is positively associated with their orientation towards the organization's behavioral instrumental learning in the immediate aftermath of a crisis.

H2. Public leaders' level of public service motivation is negatively associated with their orientation towards the organization's political learning in the immediate aftermath of a crisis.

Before discussing the methods we used to measure crisis-induced learning and PSM, in the next section we will first explain the important role of Dutch mayors in crisis management.

5.4 DUTCH MAYORS AS COMMANDERS-IN-CHIEF IN TIMES OF CRISIS

Dutch mayors are our object of study. In the Netherlands, mayors hold specific competences and responsibilities in the field of public security within the territory of their municipality. Beyond a general responsibility for public security, mayors hold the leading responsibility for crisis and disaster management (Municipal Act, 1992). In times of crisis, the mayor is the commander-in-chief of the municipal crisis management team and charged with the coordination of the local crisis response activities. The mayor is responsible for an adequate coordination of the crisis response as well as strategic administrative decision-making (De Vries, 2016; NGB, 2013). The mayor has direct authority over the deployment of the fire services and medical services operations, and can issue an emergency decree (Municipal Act, 1992). Further, mayors are central players in the local crisis management network of the wider safety regions (Min. VenJ, 2013). In effect, mayors represent the municipality within a multidisciplinary network of actors, including regular emergency services, i.e., police, fire, and ambulance services, as well as public and private actors within the context of the crisis (Scholtens, 2008). During a crisis, the mayor is responsible for external crisis communication, for example by organizing press conferences (NGB, 2013; Min. VenJ, 2013). Thus, overall, in the Netherlands, mayors have key leadership responsibilities and tasks in the area of public security within their municipality, and these are particularly extensive in times of crisis, when the mayor in effect becomes the commander-in-chief.

5.5 METHODOLOGY

5.5.1 Data collection

Survey of Dutch mayors

In the present study, we collected data about the relationship between public leaders' PSM and their organizational learning priorities in the wake of a crisis, using a questionnaire sent out to all 391 Dutch mayors[19] in fall 2015. In order to ensure the survey's validity, we conducted a pre-test and further discussed the questionnaire with two municipal officials and two senior scholars. This led to some minor adjustments regarding formulations. The part of the broader survey that was relevant for this study consisted of three sections. First, there were a number of general questions to assess the background of the respondent. Second, the respondents were asked to express their level of agreement with a number of PSM-related items. Third, we confronted the respondents with a hypothetical crisis situation, described in 'general' terms. They were then asked to indicate the priority they would give to several aspects of learning in the wake of this hypothetical crisis.

In our initial approach, the mayors were contacted through the official e-mail addresses of the municipalities and asked to participate in an online survey. An identical hard-copy version of the survey was sent out by post one month later. Another month later, a friendly final reminder was sent by e-mail. In total, combining the responses collected with the online data collection software (Qualtrics) and the hard-copies returned, we had data from 209 mayors (a response rate of 53 percent).

Particularly since mayoral activities in the wake of a crisis are politically sensitive, our study could be influenced by social desirability (Nederhof, 1985). We tried to minimize this risk by referring to a non-specific hypothetical crisis situation and by also guaranteeing anonymity. There are several indicators that suggest our sample is representative of the total population of municipalities and mayors in the Netherlands. Here, we compared the distribution of the sample's municipality populations with official data published by Statistics Netherlands (CBS, 2017), as well as the respondents' political affiliations[20] and the political composition of the executive boards to data published by the Ministry of the Interior (Min. BZK). All three statistics suggest our sample is a good match to the wider population. The mayors participating in the survey had a wide range of ages (36 to 74) and the number of their crisis experiences also varied widely (0 to 8). No significant differences were found between the data in the online and hard-copy formats.

19 The Netherlands, excluding the Dutch Caribbean, was made up of 393 municipalities in 2015. Two mayoral positions (Neerijnen and Bloemendaal) were vacant at the time of the survey, with the official duties performed by a mayor of a neighboring municipality. Thus, our maximum sample at the time of the survey was 391 mayors.

20 Although, mayors in the Netherlands are not democratically elected but appointed, they are affiliated to a political party.

Measurement of crisis-induced learning priorities

The literature lacks an established scale for measuring crisis-induced learning. Therefore, in order to measure learning orientation in a crisis, we developed 21 items that each tap into an aspect of crisis-induced learning. These items were based on existing scales for organizational learning: the Learning Organization Survey (Garvin *et al.*, 2008), the Organizational Learning Survey (Goh and Richards, 1997), the Organizational Learning Capability (Chiva *et al.*, 2007), and the Dimensions of the Learning Organizations Questionnaire (DLOQ) (Marsick and Watkins, 2003). In addition, we drew on insights from the crisis management literature on crisis-induced learning related processes (see Table 5.1).

Most of the items in the existing organizational learning surveys were not directly transferable to a crisis context, largely because they are related to continuous long-term learning processes in an organization. An example being 'My organization measures the results of the time and resources spent on training' included in the DLOQ (Marsick and Watkins, 2003, p. 144). We therefore adopted the items we saw as relevant by adjusting them to a crisis context. Some items needed minor adjustments to match Dutch crisis management practice, which we carried out based on the Dutch crisis management handbook for mayors (NGB, 2013). The resulting 21 items on crisis-induced learning relate to the dimensions of *instrumental learning* or of *political learning*, with the former being further subdivided into knowledge acquisition and organizational adjustments (see Table 5.1). The questionnaire used a ten-point Likert scale to assess the importance each mayor gave to each aspect of crisis-induced learning (ranging from 1 – lowest priority, to 10 – highest priority).

Table 5.1 Item generation for crisis-induced learning

Dimension and processes/ aspects	**Item**		**Literature source**
Instrumental learning			
Cognitive dimension (knowledge acquisition)			
Information acquisition	IC1.	The systematic collection of information	Marsick and Watkins, 2003; Garvin *et al.*, 2008; Argyris and Schön, 1978; Turner, 1976; Elliott, 2009;
Time for reflection	IC2.	Despite the workload, create space and time for reflection	Marsick and Watkins, 2003; Garvin *et al.*, 2008; Toft and Reynolds, 1994
Sense- and meaning making	IC3.	Provide meaning to the events	Boin *et al.*, 2016; Weick, 1995; Boin and 't Hart, 2003; Huber, 1991

Dimension and processes/ aspects	Item		Literature source
Knowledge dissemination	IC4.	Internal dissemination of new information through the organization	Marsick and Watkins, 2003; Goh and Richards, 1997; Garvin *et al.*, 2008; Huber, 1991
Evaluation study	IC5.	Have an evaluation study conducted by an external organization	Turner, 1976; Elliott, 2009
Learning environment	IC6.	Create an atmosphere in which employees can readily say what they think	Marsick and Watkins, 2003; Garvin *et al.*, 2008; Chiva *et al.*, 2007 Carley and Harrald, 1997; Turner, 1976, 1978
Openness to new ideas	IC7.	Create openness to new ideas of employees	Garvin *et al.*, 2008; Goh and Richards, 1997; Chiva *et al.*, 2007
Behavioral dimension (organizational re-adjustments)			
Adaptation	IB1.	The *quick* implementation of improvements	May, 1992; Birkland 2006; Carley and Harrald, 1997
Procedural changes	IB2.	Reconsider organizational procedures and protocols	Birkland, 2006, Carley and Harrald, 1997; Toft and Reynolds, 1994
Cultural re-adjustments	IB3.	Determine whether a change in the organizational culture is needed	Garvin *et al.*, 2008; Turner, 1976; Senge, 1990
Learning culture	IB4.	Launch training and courses for employees	Garvin *et al.*, 2008; Weick and Suthcliffe, 2001; Senge, 1990
Network learning	IB5.	Improve affairs in conjunction with the network outside the organization	Chiva *et al.*, 2007; Moynihan, 2008; Kapucu, 2006; Downe *et al.*, 2004
Debating in groups	IB6.	Debate new ideas in group/ teams	Marsick and Watkins, 2003; Goh and Richards, 1997; Garvin *et al.*, 2008; Chiva *et al.*, 2007
Political learning (refinement of political activities)			
Political responsibility	P1.	Examine whether parties have acted according to their authorities and responsibilities	Boin *et al.*, 2008; 2016; Toft and Reynolds, 1994; Olson, 2000

Dimension and processes/ aspects	Item		Literature source
Political strategy	P2.	Refine the political strategy	May, 1992; Birkland, 2006; Coombs, 2006; Boin and 't Hart, 2003
External communication	P3.	Frequently communicate to the external media about developments	Coombs, 2012; Seeger *et al.*, 2003
Allocation of blame	P4.	Pay attention to the allocation of blame	Boin *et al.*, 2008; Broekema, 2016; Olson, 2000; Coombs, 2006
Monitoring of public opinion	P5.	Monitor public opinion, for example through social media	Chiva *et al.*, 2007; Seeger *et al.*, 2003; Toft and Reynolds, 1994
Attention to interests of stakeholders	P6.	Take into account the interests of external parties involved	Brändström and Kuipers, 2003; Boin *et al.*, 2008; Kapucu, 2006
Mapping public support	P7.	Map public support for decisions	Chiva *et al.*, 2007; Coombs, 2012
Reputational damage	P8.	Limit reputational damage to the organization	Christensen *et al.*, 2016; Coombs and Holladay, 2002; Coombs, 2006

Measurement of public service motivation

For measuring PSM, we used the 16-item measurement instrument developed by Kim *et al.* (2013). This well-established measurement instrument has been validated across 12 countries and builds upon the work of Perry (1996) and Kim and Vandenabeele (2010). The instrument distinguishes four dimensions of PSM: compassion (COM), self-sacrifice (SS), attraction to public service (APS), and commitment to public values (CPV).

Measurement of control variables

In the survey, we measured several individual characteristics of the mayors, i.e., their gender [female=0, male=1]; age [2017 – year of birth]; experience as mayor [years in function]; political affiliation [0,1 for each of the Christian democrats ('CDA'), liberal party ('VVD'), social democrats ('PvdA') parties, the three main parties to which mayors are affiliated, and 'other']; number of crises experienced while in office [number]. We also included one characteristic to reflect the size of the municipality, i.e., the number of inhabitants

[<15,000=0, 15,000–25,000=1, 25,000–50,000=2, 50,000–100,000=3, >100,000=4]. These data were obtained from official sources (CBS, 2017).

5.6 RESULTS AND ANALYSIS

In the analysis, we first present descriptive statistics for the crisis-induced learning items and explore the related dimensions. Subsequently, we discuss the composition of the PSM construct. Finally, we present the results of the analysis as to the effects of the various PSM dimensions on the range of crisis-induced learning dimensions.

5.6.1 Mayors' learning priorities in the wake of a crisis: four crisis-induced learning dimensions

The descriptive statistics of the crisis-induced learning items (see Table 5.2) show that mayors attach significant importance to all the organizational learning processes in the immediate aftermath of a crisis (means = 5.33–8.82 on a 0–10 scale with N=185–194). The average mean score of all items is 6.92. Further, there are substantial variations in the scores for all the items (s.d. = 1.20–2.15). The largest variations found were for the "authority and responsibility" (P1) (s.d. = 2.15), "change in organizational culture" (IB3) (s.d. = 2.12), and "reconsidering organizational procedures" (IB2) (s.d. = 2.08) items. The most consistent scoring was for the "meaning to the events" (IC3) (s.d. = 1.20) and "systematic collection of information" (IC1) (s.d. = 1.31) items.

An explorative principal component factor analysis with Varimax rotation (using Stata) of the 21 crisis-induced learning items was carried out, and this identified four underlying dimensions which we labelled as cognitive learning, behavioral learning, political accountability, and external communication (see Table 5.3).[21] The items were categorized on the basis of their highest factor loading; all of which were above 0.5.

The items within the 'cognitive learning' dimension (IC1, IC2, IC3, and IC6) address processes of knowledge acquisition and reflection on crisis events, and therefore correspond well with the theoretically derived concept. This is the weakest of the four dimensions (Eigenvalue = 1.15). The items grouped within the behavioral learning dimension (IB3, IB4, IB5, IB6, IC7) are also largely in line with our expectations in that they all relate to adjusting the organizational culture and disseminating knowledge within the organization. This was by far the strongest factor, with an Eigenvalue of 6.58.

21 We excluded item P8. 'Limiting reputational damage', because of its very low factor loadings (<.36) on all four factors. We also excluded item P2. 'Political strategy', despite its acceptable loading on the behavioral learning dimension because, in the context of an explorative study, it made offering a clear interpretation of the resulting factor difficult.

Table 5.2 Descriptive statistics of the 21 crisis-induced learning items before regrouping

Dimensions and items		N	Mean	S.d.	Min.	Max.
Instrumental learning						
Cognitive dimension						
IC1.	Systematic collection of information	185	7.50	1.31	3	10
IC2.	Rest and time for reflection	187	7.72	1.45	1	10
IC3.	Meaning to the events	185	8.45	1.20	5	10
IC4.	Dissemination of information	185	6.77	1.61	2	10
IC5.	Evaluation by external organization	190	6.62	2.03	1	10
IC6.	Open atmosphere	190	8.03	1.43	2	10
IC7.	Openness to new ideas	185	7.47	1.69	2	10
Behavioral dimension						
IB1.	Quick implementation of improvements	193	7.08	1.83	1	10
IB2.	Reconsider organizational procedures	191	5.85	2.08	1	10
IB3.	Change in organizational culture	190	5.81	2.12	1	10
IB4.	Trainings and courses	190	6.06	1.94	1	10
IB5.	Networking outside the organization	185	7.24	1.56	2	10
IB6.	Debate new ideas in teams	191	6.26	2.01	1	10
Political learning						
P1.	Authority and responsibility	194	6.27	2.15	2	10
P2.	Political strategy	187	6.45	1.83	2	10
P3.	External communication to the media	188	7.45	1.67	2	10
P4.	Allocation of blame	187	5.33	2.00	1	10
P5.	Monitoring public opinion	186	7.58	1.39	2	10
P6.	Interests of external parties	186	7.04	1.40	3	10
P7.	Public support for decisions	185	6.99	1.57	2	10
P8.	Limiting reputational damage	187	6.45	1.83	2	10

Table 5.3 Results of principal component analysis for the 19 crisis-induced learning items

Dimensions and items	Factor 1 Eigenvalue = 6.58	Factor 2 Eigenvalue = 2.30	Factor 3 Eigenvalue = 1.79	Factor 4 Eigenvalue = 1.15
Instrumental learning				
Cognitive learning				
IC1. Systematic collection of information	.03	.19	.33	**.68**
IC2. Rest and time for reflection	.25	.05	.06	**.80**
IC3. Meaning to the events	.08	-.04	.47	**.56**
IC6. Open atmosphere	.45	.11	.14	**.52**
Behavioral learning				
IB3. Change in organizational culture	**.69**	.51	.04	-.09
IB4. Trainings and courses	**.76**	.38	.05	.05
IB5. Networking outside the organization	**.74**	.05	.15	.22
IB6. Debating new ideas in organization	**.76**	.13	.03	.15
IC7. Openness to new ideas	**.77**	-.02	.03	.38
Political learning				
Accountability				
P1. Authority and responsibility	.14	**.83**	.20	.12
P4. Allocation of blame	.11	**.64**	.27	-.01
IC5. Evaluation by external organization	.02	**.62**	.09	.39
IB1. Quick implementing improvements	.42	**.53**	.12	.16
IB2. Reconsidering organizational procedures	.57	**.62**	.04	-.14
External communication				
P3. External communication to the media	.03	.27	**.73**	.07

Dimensions and items		Factor 1 Eigenvalue = 6.58	Factor 2 Eigenvalue = 2.30	Factor 3 Eigenvalue = 1.79	Factor 4 Eigenvalue = 1.15
P5.	Monitoring public opinion	-.09	.20	**.78**	.16
P6.	Interests of external parties	.19	.09	**.69**	.20
P7.	Public support for decisions	.55	.00	**.58**	.01
IC4.	Dissemination of information	.44	.05	**.51**	.27

Factor loadings after Varimax rotation

However, the political learning structure that emerged is quite different from what we had expected on the basis of theory. We found two distinct political dimensions: one related to dealing with accountability processes and one related to refining external communication. The 'accountability' dimension included the 'authority and responsibility' and 'allocation of blame' items (P1 and P4). In addition to these two items, the dimension included one item related to external evaluation (IC5) and two linked to quick and procedural changes (IB1 and IB2). The inclusion of an item on external evaluation appears reasonable since external evaluations are often considered as playing a central role in the post-crisis accountability process (Boin *et al.*, 2016; Resodihardjo, 2006). The relatively high loadings of the quick and procedural change items onto this accountability dimension is more of a surprise. The analysis suggests that engaging in political activities and 'reconsidering procedures' and 'quick implementation' themes tap into related prioritizing patterns. Reflecting on the crisis management literature on these two themes of crisis-induced learning, our result suggest that public leaders do not particularly view quick and procedural change as a structural way of learning, in contrast to other organizational forms of adjustments such as changing culture or training programs. The results suggest that public leaders implement quick and procedural changes as a political solution to external pressures (May, 1992; Broekema, 2016).

The factor analysis shows that the remaining political items (P3, P5, P6, and P7) load onto the second political learning dimension that captures processes related to refining external communication. One further item, the 'dissemination of information' (IC4), also loads onto this dimension but this can easily be understood as a communication process.

5.6.2 Two dimensions of public service motivation

The mayors, on average, gave the PSM items consistently high scores (mean = 6.83–8.51, N = 205–208). The overall mean score of all the items was 7.62. However, there were substantial variations among the mayors on all the items (s.d. = 0.85–1.60). The highest variations were for the "it is important for me to contribute to the common good" (CPI2) (s.d. = 1.60) and

"I believe in putting civic duty before self" (SS3) (s.d. = 1.39) items. The smallest variations were recorded for the "to act ethically is essential for public servants" (CPV7) (s.d. = 0.85) and "I admire people who initiate or are involved in activities to aid my community" (APS5) (s.d. = 0.95) items. The observation that mayors give the PSM construct high scores is not surprising given their large public responsibilities. Mayors in the Netherlands also serve as representatives of the public interest and the face of the community to the outside world (as 'head of the community'). Although PSM measurement scales have been frequently tested, they have been mostly applied to civil servants and, occasionally, to private-sector employees (e.g., Taylor, 2010; Liu *et al.*, 2012; Andersen and Kjeldsen, 2013), and especially to those providing public services (e.g., Andersen and Serritzlew, 2012; Jensen and Andersen, 2015). This study shows that this scale can be applied to public office holders as well.

We conducted a principal component factor analysis with Varimax rotation of the 16 PSM items to test whether the same dimensions identified by Kim *et al.* (2013, p. 92) are present in our dataset on mayors. From our data, we were able to identify two distinct factors in the PSM construct (see Table 5.4), each combining two of the four dimensions reported by Kim *et al.* (2013). All but one of the items that are in Kim *et al.*'s COM (compassion) and SS (self-sacrifice) dimensions load highly onto our first factor which we label 'compassion and self-sacrifice' (COM/SS). Also loading highly onto this factor is one item from Kim *et al.*'s 'attraction to the public service' dimension: finding it important to contribute to activities that tackle social problems (APS7). Our second factor includes all the other items from Kim *et al.*'s APS (attraction to the public service) and CPV (commitment to public values) dimensions, which we therefore labeled 'attachment to public service and values' (APS/CPV).

Table 5.4 Results of principal component analysis for the 16-item PSM measure

Dimensions and items			**Factor 1 Eigenvalue = 7.72**	**Factor 2 Eigenvalue = 1.52**
Compassion and Self-Sacrifice (COM/SS)				
Compassion (COM)	COM2.	I feel sympathetic to the plight of the underprivileged	**.76**	.33
	COM3.	I empathize with other people who face difficulties	**.65**	.43
	COM5.	I get very upset when I see other people being treated unfairly	.38	.42
	COM6.	Considering the welfare of others is very important	**.61**	.53

Dimensions and items			Factor 1 Eigenvalue = 7.72	Factor 2 Eigenvalue = 1.52
Self-Sacrifice (SS)	SS1.	I am prepared to make sacrifices for the good of society	**.72**	.24
	SS3.	I believe in putting civic duty before self	**.67**	.37
	SS4.	I am willing to risk personal loss to help society	**.75**	.19
	SS7.	I would agree to a good plan to make a better life for the poor, even if it costs me money	**.81**	-.05
Attraction to Public Service and Values (APS/CPV)				
Attraction to Public Service (APS)	APS5.	I admire people who initiate or are involved in activities to aid my community	.38	**.69**
	APS7.	It is important to contribute to activities that tackle social problems	**.66**	.49
	CPI1.	Meaningful public service is very important to me	.16	**.74**
	CPI2.	It is important for me to contribute to the common good	.33	**.67**
Commitment to Public Values (CPV)	CPV1.	I think equal opportunities for citizens is very important	.42	**.52**
	CPV2.	It is important that citizens can rely on the continuous provision of public services	.10	**.84**
	CPV6.	It is fundamental that the interests of future generations are taken into account when developing public policies	.27	**.63**
	CPV7.	To act ethically is essential for public servants	.26	**.66**

Factor loadings after Varimax rotation.

5.6.3 The effect of public service motivation on crisis-induced learning

To study the effect of PSM on the crisis-learning orientation dimensions, we conducted a series of OLS regression analyses using Stata. The two PSM dimensions were treated as independent variables and the four crisis-induced learning dimensions as distinct dependent variables. The mayor's 'gender', 'age', 'mayor tenure', 'political affiliation', and 'crisis experience', and the 'municipality population size' were included as control variables.

The results are presented in Table 5.5 and show a significant positive effect of PSM on the prioritization of both instrumental learning *and* political learning processes in the wake of a crisis. The R-squared values range from .09 to .19.

Table 5.5 OLS regression of PSM and crisis-induced learning dimensions

Independent variables	**Factor 1 Behavioral learning**	**Factor 2 Accountability**	**Factor 3 External communication**	**Factor 4 Cognitive learning**
	B (s.e.)	B (s.e.)	B (s.e.)	B (s.e.)
Public service motivation				
Compassion and self-sacrifice (COM/SS)	-.08 (.09)	.22 (.09)**	.21 (.09)**	.18 (.09)*
Attachment to public service and values (APS/CPV)	.22 (.10)**	-.11 (.10)	.20 (.10)**	-.01 (.10)
Control variables				
Gender = male	.04 (.25)	.19 (.26)	-.07 (.25)	-.36 (.27)
Age	-.00 (.01)	.02 (.01)*	-.01 (.01)	.02 (.01)
Mayoral tenure [1]				
1 – 2 years	-1.26 (.46)***	-.67 (.47)	-.47 (.46)	-.47 (.49)
2 – 5 years	- .61 (.35)	-.36 (.36)	.08 (.35)	-.15 (.37)
5 – 10 years	-1.06 (.39)***	-.60 (.40)	.23 (.39)	-.38 (.41)
> 10 years	-1.00 (.36)***	-.70 (.36)*	.43 (.36)	-.17 (.38)
Political affiliation [2]				
Christian democrat	.56 (.28)**	.15 (.28)	-.01 (.28)	-.07 (.29)
Liberal	.43 (.28)	.18 (.28)	.13 (.28)	-.01 (.29)
Social democrat	-.01 (.30)	.00 (.30)	.01 (.30)	.20 (.31)

Independent variables	Factor 1 Behavioral learning	Factor 2 Accountability	Factor 3 External communication	Factor 4 Cognitive learning
Crisis experience (number)	.02 (.06)	.17 (.06)**	.03 (.06)	.05 (.07)
Municipality population size [3]				
15,000 – 25,000	-.06 (.29)	-.17 (.30)	.26 (.29)	-.10 (.31)
25,000 – 50,000	.26 (.27)	-.24 (.28)	-.33 (.27)	-.26 (.29)
50,000 – 100,000	.12 (.38)	-.47 (.38)	.23 (.38)	-.25 (.40)
> 100,000 inhabitants	-.09 (.54)	-.18 (.55)	-.18 (.54)	-.10 (.58)
Constant	.33 (.77)	-1.08 (.78)	.49 (.77)	-.35 (.81)
R^2	.19	.15	.17	.09
N	135	135	135	135

[1] Reference category < 1 year experience; [2] Reference category = other affiliation; [3] Reference category = < 15,000.
Unstandardized Coefficients
* p<0.1, ** p<0.05, *** p<0.01

First, addressing cognitive learning, we find that the 'compassion and self-sacrifice' (COM/SS) component of PSM has a small but significant effect (B = 0.18, p = .06) on the cognitive learning dimension. This confirms hypothesis *H1a*: PSM is positively associated with public leaders' cognitive learning orientation. As regards cognitive learning, none of the other independent variables play a significant role. Second, the results show that 'attachment to public service and values' (APS/CPV) is significantly associated with behavioral learning (B = 0.22, p = .02). This confirms hypothesis *H1b*: PSM is positively associated with behavioral learning. The results also show that experience as a mayor plays a negative role (if 'mayoral tenure' 1–2 years, B= -1.26, p = .007; if 'mayoral tenure' 5–10 years, B = -1.06, p = .007; and if 'mayoral tenure' > 10 years, B = -1.00, p = .006) in that the longer a mayor has been in post the more reluctant they are to adjust the organization's culture. One explanation could be that, the longer a mayor has been working in a municipal administration, the more they become socialized to the organization's culture and identify with the organization's structure and procedures, making them less willing to change things.

Both of the political learning dimensions that came out of the principal component analysis were included in the regression analysis. First, the data indicate that the 'compassion and self-sacrifice' (COM/SS) dimension of PSM has a positive effect on accountability-related learning (B = 0.22, p = .02). We also see that 'crisis experience' has a significant positive relationship with political accountability (B = 0.17, p = .01), which indicates that the more crises a mayor has experienced in a municipality, the more highly they prioritize this type of political activities. It seems that, the more that mayors have dealt with crises in their municipality, the more they are aware of the importance of political processes such as blaming and framing, and the more conscious they are of the importance of the political accountability process. Second, the analysis showed that both the COM/SS and APS/CPV PSM dimensions were positively associated with learning in terms of improving external communication (B = 0.21, p = .04; B = 0.22, p = .02). To conclude, PSM is positively associated with an orientation towards both political learning dimensions, which means that, hypothesis *H2* has to be rejected. This finding seems to suggest that mayors *also* consider refining political processes in the immediate aftermath of a crisis as important for the public good (the organization and society) in the long run. Concentrating on purely political issues such as adapting the political strategy, allocating blame, dealing with external party interests, and limiting reputational damage, might be viewed as serving public values and the well-being of society similar to efforts into acquiring knowledge and changing the organization's culture (i.e., instrumental learning).

5.7 CONCLUSIONS AND DISCUSSION

This study has explored public leaders' organizational learning orientations in the wake of a crisis, and the relationship between this and their public service motivation (PSM). The aim was to establish systematic empirical evidence on crisis leadership in connection with crisis-induced learning and to refine the operationalization of the dimensions of crisis-induced learning (Smith and Elliot, 2007; Dekker and Hansén 2004). We investigated elements of crisis-induced learning that were derived from the crisis management literature and previous surveys in the field of organizational learning, and further applied the public sector motivation measurement scale of Kim *et al.* (2013), in a survey study among Dutch mayors.

Our study revealed "cognitive", "behavioral", "accountability" and "external communication" dimensions of public leaders' crisis-induced learning orientations and two dimensions of PSM: 'attachment to public service and values' and 'compassion and self-sacrifice', rather than the four identified by Kim *et al.* (2013). We found that mayors with a stronger PSM give higher priority to both *instrumental* (cognitive and behavioral) learning and *political* learning (accountability and external communication) than those with a weaker PSM in the wake of a crisis. This finding confirms our hypothesis that a

mayor's PSM is positively associated with their orientation towards instrumental learning, but rejects our hypothesis that a mayor's PSM is negatively associated with their orientation towards political learning. Further, we found that mayoral experience with previous crisis situations is positively associated with accountability-related political learning. Mayoral tenure is, however, negatively associated with behavioral learning following a crisis.

This study has several implications. First, the more refined operationalization of crisis-induced learning provides an important step towards the establishment of a systematic measurement instrument for crisis-induced learning. One of the challenges in this study was related to the validity of conceptualizations of organizational learning, which has been defined and measured in many different ways (Fiol and Lyles, 1985; Crossan *et al.*, 2009; Dekker and Hansen, 2004, p. 141). Moreover, despite crisis-induced learning being acknowledged as a focal issue in the managing of crises, crisis management research lacks a clear definition and operationalization of what learning in the wake of a crisis entails. Here, the four dimensions that we identified require further rigorous testing in new contexts – in terms of agents, organizations, and institutional settings – to build confidence in the measurement instrument.

This study further contributes to the literature by addressing and specifying the political dimension of crisis-induced organizational learning in addition to a common 'technical' approach to the process (e.g., Choularton, 2001; Vastveit *et al.*, 2015; Silva *et al.*, 2017). Crisis-induced learning inherently differs in several respects from organizational learning in more 'regular' times. Our findings indicate that crisis-induced lessons are characteristically rooted in specific events and involve adjustments in political activities related to accountability and communication, such as attributing responsibilities, monitoring public opinion, balancing parties' interests, and communicating to the media (see Boin *et al.*, 2016; Seeger *et al.*, 2003). In contrast, aspects of learning that entail continuous long-term organizational processes, or require calm periods, such as learning by trial-and-error and experimentation, are not, or only to a lesser extent, applicable to crisis-induced learning (see Marsick and Watkins, 2003; Goh and Richards, 1997; Chiva *et al.*, 2007; Garvin *et al.*, 2008). The finding that public leaders who are oriented towards political accountability also tend to promote quick and procedural changes in an organization was unexpected, and suggests that leaders consider implementing procedural, less-structural, changes in response to political pressures. We recommend further research on the role of specific political learning processes (May, 1992; Birkland, 2006).

Moreover, the present study connects crisis-induced learning to public leadership theory. The analysis shows that public leaders' approach to learning after a crisis can be explained by a systematic variation in PSM, rather than by idiosyncratic personality traits. If we consider PSM to be an orientation towards doing good for society, we see that public leaders with a high PSM are more oriented towards not only instrumental learning but,

perhaps surprisingly, also towards political learning. One interpretation is that such leaders not only consider instrumental learning but also political learning as being important for the organization and for the wider society in the long run. Political efforts such as adapting the political strategy, allocating blame, and limiting reputational damage might similarly benefit the public interest as efforts in acquiring knowledge and improving the organization's culture. This suggests that, in the context of a crisis, both kinds of organizational learning are experienced as important in building resilience. The results of this study further stress the significance of experience as a factor in crisis-induced learning (Deverell, 2010). Finally, this study shows that it is appropriate to apply the PSM concept (Perry and Hondeghem, 2008), and the measurement scale proposed by Kim *et al.* (2013) specifically, to public office holders and maybe even to political leaders.

The critical findings in the analysis may provide support for education, trainings, and designing of simulations specifically addressing the needs of mayors in the response to crises. This might enhance the crisis preparedness of municipalities. Despite the limitations of our research, which is based on cross-sectional data derived from a specific group of respondents, the study does suggest that linking crisis-induced learning to actors' motivations is a valid avenue for further research.

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CHAPTER 6

Conclusions and discussion

This chapter provides a discussion of the main research findings and a reflection upon them. We present a summary of the study conducted, a discussion of the main findings, and an overall conclusion including a conceptual theoretical model outlining the main factors that influence crisis-induced learning by public organizations. Subsequently, we discuss the study's contributions to theory and empirical understanding of crisis-induced learning, outline the limitations of the research, make suggestions for future research, and conclude with implications for practice.

6.1 THE STUDY OF CRISIS-INDUCED LEARNING BY PUBLIC ORGANIZATIONS

Modern-day societies are faced with a large number of crises, events that severely affect the day-to-day lives of their citizens. Crises have a vast impact on societies, in terms of security, social stability, economic prosperity, environmental health, and how their public institutions are shaped. In the present study, a 'crisis' is understood as an extreme situation in which the core interests of a society are threatened with potentially devastating consequences, accompanied by high levels of uncertainty, urgency, and surprise (Rosenthal, 2001; Boin and 't Hart, 2003). Consequently, 'crisis management' is viewed as all activities aimed at preventing, responding to, and recovering from such an event. In the literature, and in practice, organizational learning is considered one of the key processes in crisis management, because it is through this process that public organizations are able to improve their crisis management performance. Organizational learning gives them the capability to prevent future crises from occurring or, if a crisis does occur, to respond more adequately and thus mitigate the damage created.

People expect public organizations to learn from crises. Many actors in society, including the media, perceive learning from a crisis as a rather straightforward process. However, one observes that, in reality, public organizations tend to experience major difficulties with learning from crises. This observation has been confirmed by a substantial and growing number of academic studies (Smith and Elliott, 2007; Stern, 1997; Deverell, 2009; Roux-Dufort, 2000; Elliott, 2009; Moynihan, 2009; Birkland, 2009; Carley and Harrald, 1997). Nevertheless, crises show a large variation in the degree of organizational learning that results. We observed that while public organizations seem to often learn little from a crisis, suddenly they seem to learn extensively from another, similar, crisis. We identified this variation in crisis-induced organizational learning in many crisis contexts, across different policy fields, and with different types of crises, suggesting that there must be underlying mechanisms that explain this variation. However, the current body of public administration literature does not provide a clear reason for this variation. Organizational learning from crisis is not well-understood (Carley and Harrald, 1997; Deverell, 2009) and has gained relatively little attention (notable exceptions being Van Duin, 1992; Carley and Harrald, 1997; Stern, 1997; Dekker and Hansén, 2004; Deverell, 2010; Birkland, 2006; Smith and Elliott, 2007). In particular, questions remain as to what factors and mechanisms drive crisis-induced organizational learning insofar as a solid convincing theory has yet to be developed (Smith and Elliott, 2007; Deverell, 2009; Stern, 1997). The aim of the present study has been to explore what main factors and mechanisms influence crisis-induced organizational learning by public organizations. This led to the main research question: *How do public organizations learn from crises; and what factors and mechanisms explain this process of crisis-induced leaning?*

The opportunities for learning from crises are not straightforward (Carley and Harrald, 1997). On the one hand, crises are viewed as major opportunities for learning, because crises create a momentum for organizational change, and urgency and political pressure to implement lessons. In this line of reasoning, organizational learning is presented as a rather straightforward process: an evaluative investigation reveals the causes of a crisis, which are subsequently addressed by changes in the organization. On the other hand, crises are seen as complicating learning, because of the complexity of the circumstances surrounding a crisis. Typically, large inflows of biased information, strong interference from diverse political interests, and time pressure hinder a thorough and 'objective' reflection on past events.

Further, organizational learning is subject to considerable conceptual discussion in the literature. In the present study, we took an integrated approach to organizational learning, including both cognitive and behavioral perspectives (Fiol and Lyles, 1985). We defined organizational learning as: *the process of acquiring new knowledge and understanding* (cognitive) *and the transposing of this new knowledge and understanding into improved organizational actions* (behavioral). A general theoretical framework was built upon existing distinctions in the fields of organizational learning and crisis management, distinguishing between 'who learns', 'what is learnt', 'why it is learnt', and 'when it is learnt'.

The present study was designed as a systematic empirical analysis of data from multiple crises. The aim was to build an initial proposition in the form of a theoretical model of the underlying factors and mechanisms that would be applicable in various policy, crisis, and institutional contexts (Pawson and Tilly, 1997). In this, the empirical data would lead the research design, although the crisis management literature was used as a general framework (Dubois and Gadde, 2002). Rather than looking at learning from a crisis in general, we analyzed learning on the level of specific crisis lessons. The present study included both qualitative, quantitative, and mixed methods and considered a large number of crisis cases. The study was broken down into four sub-studies. In each sub-study, the cases and methods were selected on the basis of the study's objective and context. In sub-study 1, we explored the main factors and mechanisms. An in-depth case study analysis was conducted of the learning by the Dutch food safety services organization (NVWA) in response to four veterinary crises between 1997-2010 in the Netherlands. This study was based on 17 expert interviews with members of the crisis management division and reviews of 27 internal and external crisis management documents. In sub-study 2, we addressed the role of issue politicization in the learning process of the European Commission after four major oil-spill disasters in European waters. We used political claims analysis (Koopmans and Statham, 1999) to analyze 1,449 claims in national newspapers, national parliamentary debates, and European parliamentary debates, plus the pattern-matching technique (Trochim, 1989; Yin, 2009) to compare politicized issues, issues in evaluation reports, and new legislation adopted by the European Union. Sub-study 3 addressed the role of external experts in in-

crisis learning. A research synthesis was performed on 114 post-crisis evaluation reports published after 60 crises in the Netherlands between 2000 and 2013. In sub-study 4, we explored the organizational learning orientation of public leaders in the wake of a crisis, and its relation with their public service motivation. In this, quantitative survey data were collected from 209 mayors in the Netherlands, including items on organizational learning priorities in the wake of a hypothetical crisis in their municipality.

6.2 RESEARCH FINDINGS

In this section, we discuss the research findings from each of the four sub-studies, followed by a discussion of the general research findings that contribute towards the theoretical model. This provides an answer to the main research question.

6.2.3 Findings from sub-study 1: The factors and mechanisms that drive crisis-induced learning

In sub-study 1, an explorative study of the Dutch food safety services based on expert interviews, we distilled six factors that drive crisis-induced learning by public organizations. These factors were found to be of a divergent nature, often interrelated, and working through different mechanisms. The first two factors are external to the organization and lead in a direct way to tangible and large-scale lessons on crisis issues that correspond to specific events. (1) Political-economic context. Political pressure works in two directions. On the one hand, it puts pressure on an organization to actually draw lessons and generate the means and capacity needed to implement them. On the other hand, political pressure can forestall adequate reflection and the incorporation of lessons, and lead to adopting changes that do not reflect learning due the influence of various interests. Budget cuts can also create the political attention and scrutiny needed to adopt crisis lessons. (2) Social-emotional understanding. Specific events with large social-emotional impacts create awareness and pressure to change policies on the issues that allowed these events. Such dramatic events are referred to by employees using strong emotions, stories, and symbols, and form part of the common organizational memory. Media attention increases the impact of social-emotional events by magnifying attention and involving the wider public.

Two of the other factors found are internal characteristics of the organization and function as fundamental conditions for facilitating learning within organizations. (3) Organizational culture. Inter-collegial relationships and an open atmosphere of trust and individual face-to-face contacts facilitate an open discussion of failures and an adequate sharing of knowledge within the organization. Being motivated to acquire knowledge and improve the organization, plus professional attitude and status, facilitate learning. (4) Organizational structure. The structure of an organization, such as an established crisis management

division, can create the capacity and expertise required to be able to adequately evaluate events and implement changes in the organization. However, a large team and/or major reorganizations can disrupt communication channels as well as the learning culture. Crisis procedures/protocols and education and training/simulation programs sustain learning by structuring learning processes, such as through ensuring a debriefing-briefing session takes place. At the same time, structuring processes can inhibit people adapting their behavior to unexpected circumstances, which learning can require.

The last two factors are process-related. (5) Crisis management stage. During the crisis response stage, there is a great urgency to adapt organizational actions because these can still limit the impact of the crisis. However, this provides little opportunity to institutionalize lessons. In the post-crisis stage, time, calm, and available capacity enables a thorough reflection and the implementation of structural changes. However, during such more relaxed periods, crisis experiences can get lost and there is a lack of urgency to learn. The larger lessons are often learnt in an incremental way over a sequence of events. This happens through a process of fine-tuning and "maturing" over successive crises. (6) Organizational forgetting. In the longer run, the outflow of expertise and experience negatively affects learning. Lessons learnt are 'forgotten' as people leave the organization and reorganizations take place. Although lessons can be retained in an organization by the active sharing of knowledge, it seems that, paradoxically, for learning in the long-term, actual experience of crises is also necessary.

Based on the expert interviews, neither post-crisis evaluation reports, a shared sensemaking of what lessons to learn nor public leadership were found to play a central role in the crisis-induced learning process.

6.2.4 Findings from sub-study 2: The effect of issue politicization on crisis-induced learning is ambivalent

In this study, which looked into political claims, post-crisis evaluation reports, and new legislation in response to oil-spill disasters in the European Union, we found that the role of politicization in the crisis-induced learning process is complex and ambivalent. The study showed that politicization can either promote or impede crisis-induced learning through different mechanisms. In all four crises, the Braer, Sea Empress, Erika, and Prestige oil-spills, we found support for both roles of politicization, suggesting that other intervening variables are involved in explaining crisis-induced learning. On the one hand, politicization facilitates crisis-induced learning by creating increased attention, actor involvement, availability of information, understanding, public scrutiny, and motivation and pressure to learn. On the other hand, politicization impedes crisis-induced learning by creating an overload of unreliable information, interventions by actors and interests, conflicting interpretations,

and pressure for quasi-learning. Despite the contrary findings on the relationship between politicization and learning, we found most support for politicization having a promoting effect on both cognitive and behavioral learning.

We found that crises can be quickly and extensively politicized. Politicization can be understood as an increase in political conflict between actors in formal and informal political arenas on different levels (drawn on Wilde, 2011). Oil-spill disasters result in strong political conflicts between a large number and wide variety of actors involved on the question of what public organizations should learn from them. These issues are debated through the issuing of claims – political demands aimed at public organizations – in mass media, national parliaments, and the European Parliament. The technical feasibility of claims does not play an important role in the learning process. No evidence was found that politicization facilitates policy changes beyond those based on increased knowledge, that is, 'quasi-learning'. The new legislation adopted by the European Union in response to oil-spill disasters was strongly grounded in post-crisis evaluation reports. A plausible alternative explanation for the variation in crisis-induced learning by the European Union could be the characteristics of the post-crisis evaluation reports, and particularly the international focus of recommendations contained. No significant differences were found between mass media, national parliaments, and the European parliament in terms of politicization affecting learning. This is perhaps surprising since one might expect politicization on the formal political level to play a more prominent role than that on the public level, given the former is closer to decision making.

6.2.5 Findings from sub-study 3: The conditions that facilitate the successful involvement of external experts in crisis-induced learning

In this third study, on the role of external experts in crisis situations in the Netherlands and based on a research synthesis of post-crisis evaluation reports on crises between 2000-2013, we found that external experts play a prominent and often central role in 'in-crisis' learning. Public organizations learn during crises by integrating knowledge from external experts in their crisis decisions and by using the experts' operational skills to implement complex tasks. External experts are almost always, and often in large numbers, involved in the crisis response of the regular crisis management organization. The number of external experts involved seems to be largely determined by the duration of the crisis: the longer the crisis, the more experts involved. The backgrounds of external experts vary widely, from private companies, government-controlled companies, civil society organizations, scientific organizations, to public organizations. The main reason for involving external experts in resolving crises is to bring in their specialized knowledge and operational skills, which are often not available within the regular crisis management organization (i.e. 'technical experts'). However, we found that external involvement can also stem from proximity to

the crisis location ('proximity experts'), from their formal tasks and responsibilities ('task experts'), and from a direct threat on their own organization caused by the crisis ('threatened expert'). Surprisingly, we saw that external experts are frequently not actively involved at the behest of the regular crisis management organization, but that the collaboration stems from an expert's own initiative or is an automatic consequence of the crisis situation. Most external experts are involved during the crisis on an ad hoc basis – in only a third of the cases were they involved over a longer period on a structural basis. The coordination by the regular crisis management organization of the external experts' activities is often limited. Interestingly, we found that whether an expert is considered "external" to the regular crisis management organization depends on the specific crisis context.

We identified six mechanisms through which external expert involvement led to opportunities and threats. On the one hand, involving external experts in the crisis response enables public organizations to acquire knowledge, carry out complex tasks, and strengthen the legitimacy of their actions. On the other hand, involving external experts can result in a reduced consensus, a lack of control over actions, and a reduced focus on public values. We identified ten conditions under which involving external experts contributes to adequate crisis management: (1) pre-assessing the need for involving external experts, (2) maintaining an expert network in non-crisis times, (3) being familiar with actors' roles and plans in a crisis, (4) employing clear and close communication lines, (5) clearly defining mutual expectations, (6) requesting specific information, (7) consulting experienced crisis managers and requesting second opinions, (8) anticipating conflicts of interests and building mutual trust in a dynamic process, (9) remaining in the lead as the crisis management organization, and (10) explicitly coordinating external communication.

6.2.6 Findings from sub-study 4: Public leaders' public service motivation and experience stimulate crisis-induced learning

In this study on public leaders' crisis-induced learning orientations, based on a survey of Dutch mayors, we found that public leaders with a higher public service motivation are more oriented towards instrumental learning as well as towards political learning by a public organization in the wake of a crisis than their colleagues with less public service motivation. Contrary to our expectation, the findings showed that public leaders not only consider instrumental learning but also political learning as important for the long-term well-being and resilience of public organizations. Further, we found mayors that have dealt with more crises in a municipality being more oriented towards organizational activities related to political accountability. This suggests that the more experience that public leaders have with previous crisis situations the more they are aware of the importance of political processes such as blaming and framing. The more experience mayors have in office, the less they are oriented towards organizational activities aimed at post-crisis behavioral learning.

This suggests that public leaders who work in municipal administrations for a lengthy period have become socialized in the organization's culture, and identify with its structure and procedures, making them less willing to adjust the organization's culture.

The nature of crisis-induced learning differs from that of organizational learning in 'regular' contexts given its characteristic roots in specific events and the need for re-adjustments related to political accountability and external communication. Continuous learning processes that require calm periods of reflection, such as trial-and-error and experimentation, have little applicability when it comes to crisis-induced learning. A factor analysis identified four dimensions of public leaders' organizational learning priorities in the wake of a crisis: (1) cognitive, (2) behavioral, (3) accountability, and (4) external communication. The first two, cognitive and behavioral, are dimensions of instrumental learning, whereas accountability and external communication are dimensions of political learning. Cognitive learning consists of processes related to the acquisition of new knowledge and the reflection on crisis events. Behavioral learning involves processes related to adjusting the organization's culture and disseminating knowledge. Political learning emerged in a different way than we had anticipated. Surprisingly, public leaders' orientation towards improving processes related to accountability is positively associated with their orientation towards quick and procedural changes in an organization. This finding suggests that public leaders view quick and procedural change as an answer to political pressures. The other political learning dimension involved processes related to external communication, both to and from the public. The analysis identified two dimensions of public service motivation: 'attachment to public service and values' (APS/CPV) and 'compassion and self-sacrifice' (COM/SS). The study showed that post-crisis organizational learning can in part be explained by public leaders' orientation. Moreover, it provides a more refined operationalization of crisis-induced organizational learning as a first step towards the establishment of a systematic measurement instrument.

6.2.7 Towards a theoretical model of main factors affecting crisis-induced organizational learning

The research findings, discussed in the previous section, show that organizational learning from a crisis is a highly complex process, and one that is very challenging for public organizations to achieve. For public organizations, it is often a long-term process, in which they find themselves in a constant struggle to manage, continue, and follow-up the learning processes they have started. From the studies in this dissertation, we can conclude that the complexity of crisis-induced learning is related to three main issues. First, organizational learning by public organizations can take many different forms. It can manifest itself as adaptations of organizational procedures, routines, legislation, strategies, structure, and culture (action dimension), which are based on the increased knowledge gained from direct

experiences, reflections, evaluative investigations, group discussions, and/or other actors (cognitive dimension). Crisis lessons differ in the extent to which they are structural (protocol versus new organization), in scale (minor adaptation versus new legislation), when they are implemented (in-crisis versus post-crisis), and purpose (prevention versus response). Second, the present study shows that many factors influence crisis-induced learning and that these factors can have very different natures (internal, external, process-related). Organizational learning and the factors that explain it can be intertwined: the outcome of learning itself can be a factor that affects further learning (such as a change of culture or a new organizational division). Some factors, such as politicization or organizational structure (e.g., the form of crisis protocols), have ambivalent influences and can either facilitate or inhibit learning through different mechanisms. Factors can also indirectly affect learning, such as reorganizations (organizational structure) that negatively affect the learning culture, which in turn impedes learning. A third identified complexity stems from the fact that crises are, fortunately, uncommon low-probability high-impact situations. This makes it challenging to learn from one crisis in preparation for a future one because a crisis is difficult to foresee, and it is largely unknown what will happen, when, and with what impact.

Nevertheless, from the findings in the four sub-studies, we were able to distill seven main factors that affect crisis-induced organizational learning: *issue politicization*, *political-economic context* (both external), *expertise*, *organizational structure*, *organizational culture*, *public leader orientation* (all internal), and *organizational forgetting* (process). These factors are different in nature and affect organizational learning through different mechanisms, each following a specific logic. Based on the four sub-studies, we outline a conceptual model that incorporates the mechanisms that drive crisis-induced organizational learning (see Figure 6.1). On the left of the model as drawn is *issue politicization* as a major factor driving crisis-induced learning. However, the way in which politicization affects learning depends on its interplay with five of the other six factors identified in the various sub-studies. That is, the learning outcome that politicization generates depends on the external *political-economic context*, *expertise*, the internal *organizational structure*, and *organizational culture*, and *public leader orientation*. The model works as follows. If a crisis issue becomes politicized AND change is supported by the political-economic context AND the required expertise is available on this issue AND there is a learning culture AND there is structural capacity to implement the lessons AND the public leader is oriented towards learning on this issue, then a public organization will learn. Conversely, if a crisis issue becomes politicized AND it is not supported by the political-economic context AND expertise on this issue is unavailable AND there is no learning culture AND there is no capacity to implement the lessons AND the public leader is merely oriented towards blaming and framing, then a public organization will NOT learn. In addition, over the longer term, the organizational learning outcome is affected by organizational forgetting: the extent to which lessons are forgotten instead of

retained and stored by the organization. The model implies that, in general, politicization is necessary, but not sufficient, for crisis-induced learning by public organizations.

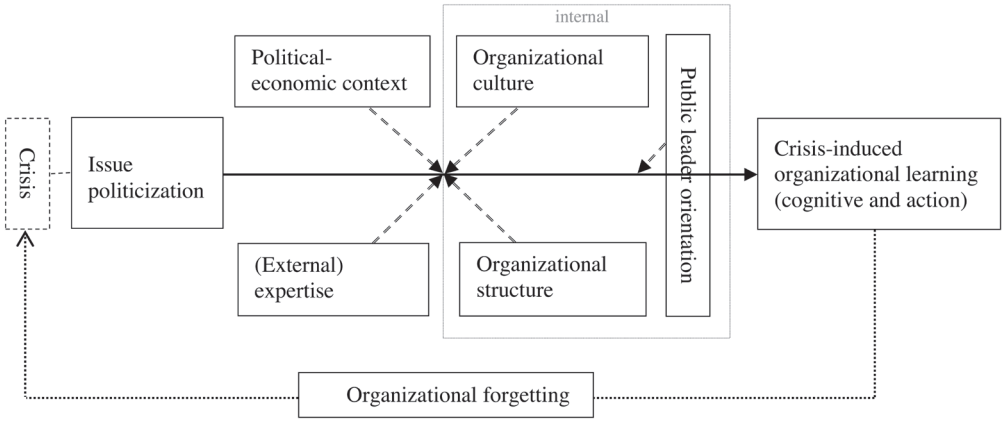

Figure 6.1 Conceptual theoretical model of main factors affecting crisis-induced organizational learning through various processes

We found that in-crisis learning – organizational learning during a crisis – usually entails drawing lessons based on direct experience, group discussions, or knowledge obtain from experts, which are implemented by changes in behavior during the crisis and aimed at improving the response to the present crisis. During a crisis, there is little time for a thorough investigation. Lessons learnt during a crisis are typically followed up by changing protocols and holding training sessions and simulations after the crisis. The research findings show that processes of structural change often have their origins in a crisis. However, structural changes are typically drawn up and implemented in the post-crisis period. In the post-crisis period, calm, time for reflection, and the capacity needed to carry out comprehensive investigations and to implement structural changes, become available. However, at the same time, during the post-crisis period, there is a lack of urgency and pressure to put effort into learning and keep it on the agenda. As a consequence, to enact very comprehensive changes requires a sequence of crisis events in which the issues can be re-politicized to ensure the full learning process is completed. For large structural changes, appropriate organizational structures and political-economic context are essential. Basic, stable financial and human capacities are required to enable learning in the first place. Capacity is a necessity in order to be able to draw lessons, implement lessons, and to store lessons in the organization. An appropriate organizational culture is essential for all kinds of learning. An open atmosphere of trust and close personal ties enables failures to be admitted and knowledge to be effectively distributed within an organization.

6.3 CONTRIBUTIONS TO THEORY AND THE EMPIRICAL UNDERSTANDING OF CRISIS-INDUCED LEARNING

The present study makes several important contributions to the general public administration literature and to the crisis management literature in particular. First, the research findings provide *systematic empirical* insights into the factors that drive the process of crisis-induced learning by public organizations. This contributes to a better understanding of the process, which to date has not been well understood (Deverell, 2009). The present study contributes a core of knowledge, based on extensive empirical data from a large number of cases, to a field of literature dominated by conceptual discussions and small-n case descriptions (Veil, 2011; An and Cheng, 2012). Furthermore, the literature on organizational learning and crisis management lacks an empirical grounding (Dekker and Hansén, 2014). In the field of crisis management, the present study's systematic empirical analysis, which includes relatively large datasets from many crises, is rather unique. For example, in sub-study 2, we analyzed 1,449 political claims for learning, in sub-study 3 we included data from 114 post-crisis evaluation reports on 60 crises, and in sub-study 4 we collected data from 209 mayors. This approach made a systematic identification of general patterns that would otherwise have remained undetected possible. The systematic analysis of relatively large-*n* empirical evidence creates a more comprehensive understanding of factors and underlying mechanisms affecting learning from crisis situations (Smith and Elliot, 2007; Cooke and Rohleder, 2006).

The second main contribution of the present study is that it provides a first *theoretical framework* that can be used to guide further studies in this field. It offers a first step in developing a solid theory on factors that explain crisis-induced learning. Studies on crisis-induced learning in the literature have been wide-ranging and, by taking an open and integrative approach to learning, we were able to create an overview of relevant distinctions in crisis-induced organizational learning. This framework can function as a basis for further in-depth research into specific aspects of crisis-induced learning, such as specific types of lessons, and the role of specific factors. Moreover, the conceptual theoretical model of the main factors that influence crisis-induced learning provides a first step towards a more solid theory on why some organizations learn from crises and others do not. The present study shows that, by focusing on the core cognitive and behavioral processes that many definitions in the literature have in common (Fiol and Lyles, 1985; Common, 2004), an innovative approach to organizational learning can be useful. To date, little systematic knowledge has been developed on the involvement of external experts in crisis situations (exceptions beings Rosenthal and 't Hart, 1991; Grönvall, 2001; Baekkeskov and Rubin, 2014). Here, sub-study 4 provided a framework on the types of external experts involved in a crisis response and the main roles that they play. We saw that organizational learning from a crisis differs from

organizational learning in regular situations in its very nature because crisis-based lessons are characteristically rooted in specific events whereas continuous learning processes require periods of calm.

The third main contribution of the present study is that it provides a more *refined operationalization* of crisis-induced organizational learning. In sub-study 4, a framework for a more-systematic operationalization was created, to an extent based on existing organizational learning scales (Garvin *et al.*, 2008; Goh and Richards, 1997; Chiva *et al.*, 2007; Marsick and Watkins, 2003). In this, we distinguished between specific processes within four dimensions: cognitive learning, behavioral learning, accountability processes, and communication processes. This operationalization framework facilitates a more comprehensive, systematic, and extensive empirical testing of crisis-induced learning. This contributes to bringing greater clarity to the ongoing theoretical debates surrounding a concept that has remained somewhat abstract in the literature. In other words, this study contributes to making the organizational learning concept more tangible and technically measurable. The operationalization of crisis-induced learning in the present study can be used as a first step in developing and validating a measurement instrument for crisis-induced learning. Innovatively, the present study introduced a systematical analysis of a large quantity of data on many crises. It showed that using quantitative as well as qualitative methods can be useful when studying crises and organizational learning. This can create a more comprehensive view across a large number of cases. The fields of both crisis management research and of organizational learning would benefit from using a greater variety of methods. In sub-study 3, a dataset was established of 144 post-crisis evaluation reports following 60 crises in the Netherlands between 2000-2013 (see Appendices A and B; Van Eijk, Broekema, Torenvlied, 2013). This is a new dataset and can benefit further research on crisis management. The prevalent method in organizational learning research looks at overall learning from a crisis. In the present study, by analyzing learning on the level of separate lessons and disentangling crisis lessons learnt (or not learnt), we adopted a rather novel approach to identifying organizational learning. This approach has several important advantages. It allows the systematic analysis of numerous lessons within a crisis and enables one to differentiate between characteristics of specific lessons and then link these characteristics to specific factors (thereby also allowing a better comparison with lessons learnt in other cases). In sub-study 2, we saw that, by analyzing on the level of separate lessons, one is better able to indicate and differentiate the origins of learning, which is valuable because different lessons can have different origins. This contributes to creating a deeper understanding of related sub-processes.

The fourth main contribution of the present study is that it provides clear insights into *distinctions* in crisis-induced organizational learning. The overview presented functions as a study framework and helps placing studies in relation to each other. First, the research

findings showed that organizational learning can manifest itself in a diversity of ways. It can manifest itself as changes in various organizational aspects (the behavioral dimension) such as in organizational procedures, organizational routines, legislation, organizational policies, organizational strategies, organizational structures, organizational culture, and behavior. This diversity of organizational learning outcomes has been noted by other scholars (Carley and Harrald, 1997; and Bennett *et al.*, 1992). These organizational changes can, in turn, be based on increased knowledge (the cognitive dimension) from various sources such as direct experiences, reflections, evaluation investigations, group discussions, or other actors. Both dimensions of organizational learning – acquiring knowledge (cognitive) and organizational action (behavioral) – can occur individually or in groups (of various sizes), and within or (partly) outside the organization. We also saw in this study that crisis lessons learnt vary in terms of how fundamental versus superficial they are. For example, the establishment of a full crisis management agency (such as the European Maritime Safety Agency in response to the Erika oil spill, sub-study 2) is very different to the alteration of protocols for a crisis response operation (such as the NVIC zoonosis action plan, sub-study 1). The relevance of how deep lessons go (fundamental versus superficial) has been also discussed by Argyris and Schön (1978), Smith and Elliot (2007), and Choularton (2001). Furthermore, crisis lessons differ in their scale, and can vary from minor adaptations to existing organizational aspects through to entirely new comprehensive legislation. Finally, we have demonstrated the relevance of distinguishing between learning during a crisis (in-crisis learning) and after a crisis (post-crisis learning) (Moynihan, 2009), and learning for the purpose of preventing future crises and learning to improve the response to future crises (Deverell, 2009). Further studies on crisis-induced learning could build on the distinctions found in this study.

Following up on the previous contribution, the present study showed the *interrelatedness of factors* that influence crisis-induced learning. We found that factors may be interrelated with each other and with crisis-induced learning, and can play ambivalent and indirect roles in the learning process. Organizational learning and the factors that explain it can be intertwined. The outcome of learning can itself be a factor that facilitates further learning. For example, organizational structure and organizational culture can enable learning to take place, but adjustments in structure and culture can also be outcomes of learning. As a real example, the budget cut by the European Commission in 1998 contributed to the establishment of a permanent NVWA crisis management organization (NVIC, sub-study 1), which is a lesson learnt, but the establishment of the NVIC also created the capacity, expertise, and routines that were needed to be able to draw additional lessons as well as establish the organizational memory required to store lessons in the organization. The observation that organizational learning outcomes can in turn influence learning, and vice versa, has also been made by Fiol *et al.* (1985, pp. 804–805). Factors can also indirectly affect learning. For example, the major reorganization in 2006 at the NVWA (organizational

structure, sub-study 1) affected the organization's culture by tearing down personal connections between people. This in turn influenced organizational learning by decreasing the effective distribution of knowledge within the organization. Furthermore, factors, such as politicization and crisis protocols, can exert ambivalent influences, that is they can both facilitate and inhibit learning through different mechanisms. Finally, we observed that large structural lessons are often accumulated incrementally, in sequences of events.

6.4 THREE ADDITIONAL NOTABLE FINDINGS

In addition to the five focused contributions linked to answering the research question discussed above, the present study also makes three notable contributions that stem directly from the empirical material. First, the present study underlines the importance of *distinguishing between organizational learning and organizational change*. Organizational change does not have to reflect learning, as change might not be based on increased knowledge (the cognitive dimension of learning) and thus on failures revealed by a crisis. Such organizational changes can be referred to as 'quasi-learning', because learning is professed but did not actually take place. Theoretical notions of similar processes of mere change, rather than learning, are recognized by several scholars in the field of organizational learning in terms such as 'adaptation' (Fiol and Lyles, 1985, p. 811), 'mimicking' (May, 1992, p. 336), 'superstitious learning' (Levitt and March, 1988, p. 325-326), and 'learning impression management' (Carley and Harrald, 1997, p. 122). We argue that the opposing arguments seen in the literature about the extent to which public organizations learn and *can* learn from crises are often a result of equating change and learning. Conclusions that public organizations learn automatically and extensively from crises are often a result of not including either the cognitive or the action component of learning (or a lack of empirical evidence). As Fiol and Lyles note, *"what is called "learning" in one is "adaptation" in another and "action" in yet a third"* (1985, p. 811). If organizational changes are not based on improved understanding, they may be, at least partly, based on political pressures. Particularly in a crisis context, where the stakes are high, change is vulnerable to the influence of political self-interests. Public organizations have a large interest in 'showing the public' that they have 'learnt' from a crisis. Although we have not demonstrated quasi-learning in a clear and incontestable way, some examples have pointed towards political interference in the learning process. For example, the influence of the oil industry in the evaluation process following the Erika oil-spill disaster (sub-study 2) has been questioned. The organization responsible for advising the French government, CEDRE, appeared to be partly funded by oil company TotalFinaElf that, at the same time, was blamed by many for causing the crisis. On January 5th 2000, Le Monde stated that *"having signed cooperation agreements with the Maltese government, the tanker's flag state, it was perfectly able to monopolize the dissemination of scientific*

information" (p. 1). Distinguishing quasi-learning from 'real' learning is a challenging and effortful process since it requires tracing organizational changes back to their origins and finding evidence that this was indeed based on thorough reflection (Birkland, 2006; May, 1992). Moreover, unbiased data on public leaders' motivations for having pursued specific changes in response to crises are rarely available.

The second striking finding is that the empirical data in the present study showed that the process of *organizational forgetting* plays a key role if an organization is to learn and improve its crisis management performance in the longer run. Organizational forgetting implies that previously learnt lessons flow out of the organization. This process is related to organizational processes of storing knowledge, creating organizational memory, and knowledge dissemination (Huber, 1991; Levitt *et al.*, 1988; Argote, 2013). In our study, we identified instances of organizational forgetting in a variety of crisis situations and by different public organizations. For example, some lessons learnt by the Dutch food safety services during the swine fever crisis in 1997-1998 were later lost because of a limited sharing of information within groups and experts leaving the organization. This became apparent in the foot-and-mouth crisis in 2001 (sub-study 1). The lesson learnt by oil companies that they should avoid maritime-sensitive areas around the Shetland Islands were 'forgotten' over time, and this contributed to the occurrence of the Braer oil-spill disaster in 1993 (sub-study 2). We argue that, in terms of the crisis management performance of public organizations, organizational forgetting is as important as organizational learning. Strikingly, however, organizational forgetting has gained very little attention in the literature (notable exceptions being De Holan and Phillips, 2004; Argote, 2013; Besanko *et al.*, 2010). Moreover, no studies appear to have addressed organizational forgetting in the context of crisis management. This is despite this aspect seeming particularly relevant in the context of crisis since crises have an extraordinary impact but their occurrence is extremely rare. The latter aspect makes retaining and storing lessons a challenging necessity. Most studies on organizational learning implicitly assume learning to be a cumulative process, which would imply that public organizations are constantly increasing their operational effectiveness. This study shows that, in reality, public organizations' performance in crisis management reflects a dynamic balance between learning and forgetting. Ironically, for an organization to learn over a long period of time, and thus not forget lessons learnt previously, it seems that crises are required on a not too infrequent regularity. We call this the 'crisis prevention paradox'.

Finally, the empirical data in the present study points to *public inquiries* playing an ambiguous role in the crisis-induced organizational learning process. On the one hand, we found that public inquiries play a fundamental role in organizational learning. In sub-study1, for example, we saw that the new legislation adopted by the European Union in response to oil-spill disasters was largely grounded in reports by the Marine Accident Investigation Branch (1993, 1997), Lord Donaldson (1994), Maltese Maritime Authority

(2000), the Permanent Commission of Enquiry into Accidents at Sea (2000), Bahamas Maritime Authority (2004), and the Temporary Committee on Improving Safety at Sea (2004). This at least partly corresponds with a technical view of learning: that evaluative investigations draw lessons from a crisis, which are subsequently implemented by a public organization (cf. Howlett, *et al.* 2009; Birkland, 2006). However, other data in the present study indicated a more subtle and political role of public inquiries (see Elliott, 2009). In sub-study 1, for example, key experts in the Netherlands Food Consumer Product Safety Authority explained that the organization had already learnt during the investigation and underlined the political function of the reports for raising political attention. Overall, we saw that public inquiries differ in many respects, such as in terms of the type of organization carrying out the evaluation, their comprehensiveness, the form of recommendations, whether pre- and post-crisis stages are included, whether the focus is on crisis prevention or crisis response, and the timing of the report publication. Despite several studies having discussed the role of crisis evaluation reports (Elliott, 2009; Turner, 1976; Birkland, 2009; Resodihardjo, 2009), few studies address the variations in reports and the role these have in organizational learning (one exception being Rena and Christensen, 2018).

6.5 LIMITATIONS OF THE PRESENT STUDY

The present study has some significant limitations. The first concerns the *measuring of the dependent variable*. When operationalizing organizational learning there are inevitably threats to internal validity since the concept is inherently subject to conceptual, methodological, and normative problems and debate (Fiol and Lyles, 1985; Freeman, 2007; Carley and Harrald, 1997; Stern, 1997; Dekker and Hansén, 2004). Nevertheless, organizational learning is as relevant and commonly used across disciplines, as it is complex. In the literature, organizational learning has been defined and operationalized in many different ways (Fiol and Lyles, 1985; Bennett and Howlett, 1992; Crosson *et al.*, 1999). As such, we recognize that, in the present study, we might not have fully and indisputably 'measured' learning. In this context, Birkland (2006) explains that *"the operationalization of learning cedes a great deal of judgment to the researcher"* (p. 22). We acknowledge that defining learning in a different way, for example as the mere drawing of cognitive lessons or as organizational change, rather than as a combination of the two, could have generated rather different outcomes. In a hypothetical ideal situation, if an organization learns perfectly, no further crises might occur. However, even if no crises were to take place, this is not irrefutable evidence that learning has taken place, since it might simply be a coincidence. Pearson and Clair (1998) add that *"even when the organization averts a crisis and learning leads to organizational improvement, there will be elements that could have been handled better"* (p.67).

Part of the complexity of conceptualizing learning results from the concept of "learning" having a positive connotation. Pressman and Wildavsky (1984) described learning as *"a golden concept, everybody is for it"* (p. 245). Normative problems stem from the component included in definitions of learning that implies that improved effectiveness is achieved. Further, when it comes to crisis management, defining what is effective action and what is not is complicated (Pearson and Claire, 1998; Muller, 2009). However, this effectiveness component is important in differentiating learning from change. We tried to respond to this challenge by seeking to demonstrate learning by not only looking for organizational change, but by also tracing back the cognitive basis of these changes. For example, in sub-study 1, we studied new legislation by the EU in response to crises, which we traced back to the recommendations made in public inquiries following these crises. This supports the view of Freeman (2007) that normative claims related to learning are often implicit. Linking the term 'learning' to an organization is normatively charged because it suggests that the organization is, or is not, functioning well. Given that learning is always considered a constructive process, organizations are eager to be linked to the term as this contributes to a positive image. Given this positive interpretation, we avoided asking experts explicitly about learning in their organization.

A second significant limitation of the present study is the *danger of oversimplifying the context*. Recognizing that the context can have a strong explanatory value in research on organizational learning and crisis management (Johns, 2006; Pierce and Aguinis, 2013), we stress that we tried to avoid making any strong inferences. Rather, we *explored* factors and mechanisms that could explain crisis-induced organizational learning, and did not attempt to 'measure' any causal relationships or 'effects'. The aim was to provide new insights by looking in depth into mechanisms that recur in different contexts (Pawson and Tilly, 1997; De Vaus, 2001). In the various sub-studies, crisis-induced learning was studied in specific contexts in terms of the type of crisis, policy field, kind of public organization, and institutional context. There are several reasons for being particularly cautious when considering generalizing the research findings to other contexts. First, in the present study, we defined crises according to shared characteristics. However, we are aware that, in reality, crises are to some extent unique phenomena, and that they can be classified in different ways, such as by the type of crisis event (Rosenthal *et al*., 2001; Kuipers and Welsh, 2017). We should nevertheless note that we found remarkable similarity between "unique" crises in many respects. In sub-study 3, we observed that if variation in kinds of crises would systematically intervene in organizational learning, it is not so much the type of crisis event but the duration of the crisis (i.e. the time available for reflection) and the actors involved. Second, as discussed above, crisis-induced organizational learning is affected by a variety of factors, often indirectly and through different mechanisms, which makes comparing results from different contexts potentially problematic. Third, we must be aware that public

organizations, as our entity of study, differ including in their character, responsibilities and size. Public organizations have different levels of formal authority in carrying out tasks and operate in different networks of organizations, both horizontally and vertically (Van den Berg, 2011; Van der Meer *et al.*, 2012). Within each of the sub-studies of the present study, we attempted to decrease any generalizability bias by keeping the context as constant as possible. Within the first three sub-studies, we kept the public organizations studied constant, while in sub-study 4 we studied the same type of organization (i.e., municipalities) and controlled for their size and the characteristics of their public leader. Within sub-studies 1, 2, and 4, we further kept the type of crisis constant, while in sub-study 3 we controlled for the type of crisis. Nevertheless, we would emphasize that the findings might only partially apply in different organizational, institutional and crisis contexts.

A third important limitation of the present study concerns *the reliability of data* and this is an issue that is common in crisis management research. Crises are very much political in nature. Even issues that are considered 'factual' in normal times, can become questioned and heavily debated during a crisis (Boin *et al.*, 2008). In sub-study 2, we saw how politics can come to the fore during a crisis and how learning is also heavily debated. As such, when studying crisis management, there is an inherent threat of collecting politically biased information. When collecting data through interviews in sub-studies 1 and 3, we aimed to reduce this threat by not asking explicitly about learning and emphasizing confidentiality. Further, since interview and secondary data might also be subject to hindsight bias – seen as particularly likely in crisis studies due to psychological aspects such as intense chaos, stress, and political pressure (Rosenthal, 2001) – we triangulated data whenever possible. Another threat stems from the problem of *"latent"* crises. Since a crisis is the starting point of this research, data from incidents that might have, but did not, evolve into a crisis – possibly because of effective learning – are not included in the analysis. This limitation cannot be eliminated because one can never verify that an incident has the potential to turn into a crisis.

6.6 SUGGESTIONS FOR FURTHER RESEARCH

Based on the present explorative research, we propose five promising avenues for further research that are largely connected to the contributions discussed above. First, in line with our first contribution, we recommend further empirical studies on crisis-induced organizational learning. Additional empirical research is needed to verify the findings in other contexts; including different types of crises (specifically in terms of duration and actors involved), different public organizations (specifically in terms of size and responsibilities), different policy fields, and different institutional systems. We need to gain a more comprehensive understanding of the roles of these context variables in the learning

process. Crisis-induced learning requires extended empirical verification in order to establish a more solid theory and a more systematic measurement instrument. The present research's proposed theoretical model and improved operationalization can serve as an initial framework to guide developments. The second suggested avenue for further research concerns the adoption of new methods in the field of crisis management research alongside small-n case descriptions. Given the current limitations, the field of crisis management would benefit from systematic analyses using data from a large number of crises in order to identify recurring patterns and to be able to make stronger inferences. Third, in line with our first notable additional finding, we recommend further studies on 'quasi-learning' (see sub-study 2) to understand how frequently this occurs and what the consequences are. The field also calls for a clearer differentiation between studies on organizational learning and studies on organizational change. Following on from this, based on our second additional finding, our fourth suggestion would be to put organizational forgetting on the research agenda since we saw its significant relevance to the process of organizational learning and to crisis management in general. Fifth, and linked to our final contribution, we propose further studies on the role of public inquiries in the crisis-induced learning process. It is very relevant to understand how different aspects of public inquiries, such as the form of their recommendations, affect learning. Finally, we would encourage further research into organizational learning in groups/teams and networks of organizations. Although organizational learning often occurs in groups of people and in groups of organizations, there is little knowledge about 'group learning' and 'network learning', and particularly how these relate to individual learning.

6.7 PRACTICAL IMPLICATIONS

Based on the findings of the present research, we are able to identify several implications for crisis management practice in public organizations. The present research provides a better understanding of crisis-induced learning processes, which can contribute to public organizations more adequately achieving learning. Enhanced learning would help to avoid and manage crises, which could have major positive effects given the potential tremendous adverse impacts that crises can have. Moreover, achieving learning contributes to the legitimacy of public organizations.

First, with regard to *learning in general*, the results of the present research highlight the complexity of crisis-induced learning and the importance of public organizations putting in sufficient time, effort, and capacity. The research findings show that learning is multifaceted, that organizations can learn in many different ways. The research provides an overview of important learning distinctions and sub-processes, which makes the abstract concept more tangible and can serve as a 'checklist' for public managers and crisis management

practitioners to verify which aspects of learning an organization has covered and which need more attention. Practitioners should also be aware of the dangers of quasi-learning and should ensure that organizational changes are heavily based on genuine investigation and group discussions. When collecting data, a crisis expert raised the question: '*how do other organizations do that?*' As a partial answer to this, the present study provides empirical information and practical examples of learning and non-learning by different public organizations in various real-life situations. Crisis management practitioners can gain ideas and draw lessons from this. Finally, we would advise evaluation organizations, if possible, to include multiple crises in evaluation studies since this will enable them to identify recurring patterns and draw more reliable conclusions.

Second, the present study shows the need for public organizations to pay attention to *retaining and disseminating lessons learnt* in the organization. Although similarly important to learning, forestalling organizational forgetting seems to get disproportionately little attention. The results of our research show that it would be wrong for public managers and crisis practitioners to underestimate the importance of achieving an open atmosphere of trust and close personal ties between employees for organizational learning to take place. The data indicate the enormous negative effects that reorganizations and high outflow rates of employees can have on a learning culture. Public organizations often seem unaware of the fact that learning largely takes place within groups of people. Public organizations would benefit from their managers having a clear oversight of where, by whom, and when cognitive lessons are drawn, and then implemented, and how information is disseminated. The research findings show that basic, and stable, financial and human capacities are necessary for an organization to be able to achieve learning in the first place (see sub-studies 1 and 2). Capacity provides the expertise for drawing lessons, and then enables changes to be implemented and lessons stored in the organization. Without capacity, there is no learning. Based on the findings, we recommend political decision-makers to ensure that a stable financial budget is allocated to the crisis management responsibilities of public organizations. For the reasons described above, a fluctuating budget – increasing after a crisis, and decreasing in peaceful times – has a negative effect on organizational learning. Furthermore, we would urge external actors, and the media specifically, to only make realistic and feasible demands of public organizations as regards learning, and then to monitor the learning process over a lengthy post-crisis period since this helps guarantee learning far more than making general accusations that can lead to suboptimum responses.

The research findings suggest that public organizations should already start putting effort into crisis-induced learning in the calm periods when there are no crises (in practice often referred to as the 'cold phase'). Although it is challenging to make *preparations* for an unknown crisis, efforts in this period can be very beneficial. As our theoretical model shows, politicization facilitates learning only in a context where there is an adequate

organizational culture and structure, and appropriate external political-economic context and expertise, and these can all be partly developed in the period of calm before the storm. A lack of political pressure, and more time and resources available in non-crisis periods, provides room for extensive reflection. In these periods, public organizations would be able to develop communication channels and train their staff in learning routines. As part of this, crisis protocols, which can facilitate learning during a crisis, can be updated. We would recommend public organizations to map the expertise in terms of knowledge and skills that is internally available and identify gaps. The expertise potentially needed during a crisis can be mapped and linked to specific types of crises and policy domains. In non-crisis times, public organizations can start to establish and then maintain a network of external experts who can subsequently be rapidly consulted when a crisis occurs. The findings also indicate that it is advisable to include external parties in contingency plans in order to clarify mutual responsibilities and cooperation. It is also particularly important that public organizations that have not recently faced a crisis retain learning on the agenda.

Ironically and paradoxically, public organizations seem currently only capable of learning extensively from crises over a longer period, rather than forgetting lessons learnt previously, if fresh crises occur at not too infrequent intervals. Notwithstanding this, we express the hope that, in the future, we will improve our abilities to prevent crises. Crises are adverse events that one should try to avoid at any time. Nevertheless, if a crisis strikes, we need to make the best of it. Let us hope that, over the longer term, by using the disruption a crisis creates as an opportunity to implement improvements, public organizations emerge stronger and more resilient from a crisis. In accomplishing this, learning is the key process. Therefore, we must further extend our knowledge on how and why public organizations learn, or fail to learn, from crises: that is, we need to further improve our understanding of 'when the phoenix rises'.

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Appendices

Appendix A. List of 60 crises in the Netherlands from 2000 to 2012[22]

Code	Start date	Incident	GRIP level	Safety Region	Municipality	# Reports (evaluation organizations)
2000						
00.A	13-May-00	Explosion fireworks warehouse, Enschede	0	Twente	Enschede	8 (Commission; Health Care Inspectorate; Inspectorate of Fire Services and Disaster Prevention; National Traffic Inspectorate; Labour Inspectorate; Environmental Health Inspectorate; Spatial Planning Inspectorate / Housing Inspectorate / Environmental Health Inspectorate; Police Inspectorate)
00.B	16-Dec-00	Den Bosch riots	0	Brabant-Noord	's-Hertogenbosch	2 (COT; Police)
2001						
01.A	01-Jan-01	Café fire 't Hemeltje, Volendam	0	Nood-Holland Noord	Volendam	2 (Commission; Health Care Inspectorate)
01.B	21-Mar-01	Foot-and-mouth disease outbreak	R	n.v.t.	n.v.t.	2 (B&A Groep; COT)
01.C	07-May-01	Fire entertainment center De Bonte Wever	0	IJsselland	Hardenberg	1 (Nibra)
2002						
02.A	06-May-02	Assassination Pim Fortuyn	0	n.v.t.	n.v.t.	1 (Commission)

02.B	12-Jul-02	House fire, Roermond	0	Limburg-Noord	Roermond	1 (COT)
02.C	20-Aug-02	Fuel wagon leak Amersfoort train station	3	Utrecht	Amersfoort	1 (B&A Groep)
2003						
03.A	28-Feb-03	Avian Influenza outbreak	R	n.v.t.	n.v.t.	3 (Berenschot; Municipality, RIVM / Institute of Psychotrauma; Dutch Product Board for Poultry and Eggs)
03.B	23-Mar-03	Fire King's Church, Haarlem	0	Kennemerland	Haarlem	2 (Inspectorate of Public Order and Security; Municipality)
03.C	26-Aug-03	Dike inundation, Wilnis	3	Utrecht	De Ronde Venen	Municipality
03.D	28-Sep-03	Scaffolding collapse Amercentrale power station	0	Midden-West-Brabant	Geertruidenberg	4 (COT; Labour Inspectorate; Inspectorate of Public Order and Security; TNO)
2004						
04.A	02-Nov-04	Assassination Theo van Gogh	0	Amsterdam-Amstelland	Amsterdam	1 (CTIVD)
04.B	13-Nov-04	Mosque fire, Helden	1	Limburg-Noord	Helden	1 (FORUM)

22 This list was created as part of a research project for the Research and Documentation Centre (WODC) of the Dutch Ministry of Security and Justice. A Dutch version of the list was published in the project's report: Van Eijk, C.J.A, Broekema, W., Torenvlied, R. (2013). '*Geen uniformen, maar specialisten*'. *Betrokkenheid van externe experts in crisissituaties*. Den Haag: WODC / Universiteit Leiden.

Code	Start date	Incident	GRIP level	Safety Region	Municipality	# Reports (evaluation organizations)
2005						
05.A	20-Sep-05	Grounding Fowairet container ship, Westerschelde	4	Zeeland	Hulst, Reimerswaal, Vlissingen, Kapelle	2 (LogicaCMG Nederland; COT)
05.B	28-Sep-05	High mortality Radboud hospital	0	Gelderland-Zuid	Nijmegen	2 (Commission; Dutch Safety Board)
05.C	27-Oct-05	Fire detention center Schiphol	0	Kennemerland	Haarlemmermeer	2 (Commission; Dutch Safety Board)
05.D	25-Nov-05	Power outage, Haaksbergen	3	Twente	Haaksbergen	2 (Inspectorate of Public Order and Security; Municipality, Dutch Competition Authority)
2006						
06.A	06-May-06	Oranjefeesten riots, Pijnacker	0	Haaglanden	Pijnacker-Nootdorp	1 (B&A Groep)
06.B	28-Sept-06	Fire operating room Twenteborg hospital	2	Twente	Almelo	3 (Dutch Safety Board; Health Care Inspectorate; Commission, TNO)
06.C	21-Nov-06	Emergency landing helicopter, North Sea	3	Nood-Holland Noord	Den Helder	2 (COT; Dutch Safety Board)
2007						
07.A	30-Jan-07	Ship fire, Velsen	3	Kennemerland	Velsen	1 (COT / NIFV *Nibra*)
07.B	04-Apr-07	Release and spread of white substance, Spijkenisse	2	Rotterdam-Rijnmond	Spijkenisse	1 (Municipality)

07.C	13-Jun-07	Q fever disease outbreak	R	n.v.t.	n.v.t.	4 (Commission; National Ombudsman; RIVM / GD Animal Health / University of Utrecht / Wageningen UR; Mirte Post)
07.D	17-Sep-07	Drinking water supply failure, Noord-Holland	4	Nood-Holland Noord	22 gemeenten provincie Noord-Holland	1 (COT)
07.E	22-Okt-07	Fire Armando Museum, Amersfoort	2	Utrecht	Amersfoort	1 (B&A Groep)
07.F	05-Nov-07	Acute health problems pet store, Hoogeveen	3	Drenthe	Hoogeveen	1 (COT)
07.G	12-Nov-07	Senseless violence, Lottum	3	Limburg-Noord	Horst aan de Maas	1 (Municipality)
07.H	12-Dec-07	Power outage, Apache helicopter crash, Bommeler- en Tielerwaard	4	Gelderland-Zuid	Zaltbommel, Maasdriel, Geldermalsen, Lingewaal en Neerijnen	2 (NIFV *Nibra* / Police Academy / CrisisLab; Dutch Safety Board)
2008						
08.A	13-Jan-08	Asbestos fire, Vroomshop	3	Twente	Twenterand	2 (COT; Region)
08.B	14-Feb-08	Crash emergency vessel, Ooij	0	Gelderland-Zuid	Millingen aan de Rijn, Ubbergen, Groesbeek	1 (Inspectorate of Public Order and Security)
08.C	09-May-08	Fire shipyard, De Punt	3	Drenthe	Tynaarlo	3 (Commission; DGMR; Dutch Safety Board)

Code	Start date	Incident	GRIP level	Safety Region	Municipality	# Reports (evaluation organizations)
08.D	13-May-08	Fire Delft University of Technology	3	Haaglanden	Delft	1 (COT)
08.E	07-Jul-08	Explosion bunker, Bilthoven	0	Utrecht	De Bilt	1 (COT)
08.F	24-Dec-08	Stabbing incidents Jack de Prikker	0	Flevoland	Lelystad	1 (DSP-Groep)
2009						
09.A	09-Feb-09	Death threats schools, Weesp	0	Gooi- en Vechtstreek	Weesp	1 (COT)
09.B	25-Feb-09	Plane crash Turkish Airlines	3	Kennemerland	Haarlemmermeer	2 (Inspectorate of Public Order and Security / Health Care Inspectorate; Dutch Safety Board)
09.C	15-Apr-09	Stomach surgery Scheper hospital	0	Drenthe	Emmen	2 (Commission; Dutch Safety Board)
09.D	24-Apr-09	Mexican flu pandemic	R	n.v.t.	n.v.t.	2 (Berenschot / CrisisLab; Health Care Inspectorate / Inspectorate of Public Order and Security)
09.E	30-Apr-09	Assault Queen's day, Apeldoorn	4	Noord- en Oost-Gelderland	Apeldoorn	3 (Inspectorate of Public Order and Security; NCTb; Nationale Recherche)
09.F	08-Jun-09	Den Bosch sex crimes case swim teacher	4	Brabant-Noord	's-Hertogenbosch	1 (COT)

09.G	22-Aug-09	Hoek van Holland beach riots	1	Rotterdam-Rijnmond	Rotterdam	1 (COT / Bureau Beke)
2010						
10.A	08-Mar-10	Fire fighter casualty, Veendam	1	Groningen	Veendam	1 (Inspectorate of Public Order and Security / Labour Inspectorate)
10.B	02-Jul-10	Wildfire Strabrecht's Heath	4	Zuid-oost Brabant	Heeze-Leende, Someren	1 (Inspectorate of Public Order and Security)
10.C	07-Dec-10	Day-care sex crimes case, Amsterdam	0	Amsterdam-Amstelland	Amsterdam	1 (Commission)
2011						
11.A	05-Jan-11	Fire chemical firm Chemie-Pack Moerdijk	4	Midden-West-Brabant	Moerdijk	8 (Inspectorate of Public Order and Security; Dutch Safety Board; PWC; Crisisplan; Region; Labour Inspectorate; Fire department; VROM-Inspectorate)
11.B	12-Mar-11	Fire GGZ healthcare facility Rivierduinen	1	Hollands-Midden	Oegstgeest	2 (Dutch Safety Board; COT)
11.C	09-Apr-11	Shooting Alphen aan den Rijn shopping mall	3	Hollands-Midden	Alphen a/d Rijn	3 (Inspectorate of Public Order and Security; Dutch Safety Board; Police Academy)
11.D	31-May-11	Klebsiella outbreak Maasstad hospital	0	Rotterdam-Rijnmond	Rotterdam	2 (Commission; Health Care Inspectorate)
11.E	07-Jul-11	Roof collapse Grolsch Veste stadium	3	Twente	Enschede	3 (Xaro Consult / Bestuursacademie Nederland; Dutch Safety Board; Labour Inspectorate)

Code	Start date	Incident	GRIP level	Safety Region	Municipality	# Reports (evaluation organizations)
11.F	27-Jul-11	Breakdown KPN network Waalhaven	4	Rotterdam-Rijnmond, Zuid-Holland-Zuid, Hollands-Midden, Zeeland	Rotterdam	1 (Inspectorate of Justice and Security)
11.G	02-Sep-11	Diginotar cyber security hack	R	n.v.t.	n.v.t.	2 (Inspectorate of Justice and Security; Dutch Safety Board)
11.H	17-Sep-11	Riots Maasgebouw	0	Rotterdam-Rijnmond	Rotterdam	1 (Auditteam Soccer and Security)
11.I	07-Nov-11	Natrium fire, Farmsum	3	Groningen	Delfzijl	1 (Region / COT)
11.J	02-Dec-11	Sinking of 't Loon shopping mall, Heerlen	1	Limburg-Zuid	Heerlen	1 (Municipality / T&G / Beeldvormer)
2012						
12.A	02-Jan-12	High water Groningen	4	Groningen	Veiligheidsregio	2 (Region; Water Board)
12.B	04-Jan-12	High water Friesland	4	Friesland	Veiligheidsregio	1 (Region)
12.C	21-Apr-12	Westerpark train accident	2	Amsterdam-Amstelland	Amsterdam	2 (Dutch Safety Board; Human Environment and Transport Inspectorate)
12.D	22-Jul-12	Asbestos discovery Kanaleneiland	2	Utrecht	Utrecht	1 (Commission)
12.E	21-Sep-12	Project-X Facebook riots Haren	3	Groningen	Haren	1 (Commission)

Appendix B. List of 114 post-crisis evaluation reports published after the 60 crises in the Netherlands from 2000 to 2012[23]

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23 This list was created as part of a research project for the Research and Documentation Centre (WODC) of the Dutch Ministry of Security and Justice. The list was published in the project's report: Van Eijk, C.J.A, Broekema, W., Torenvlied, R. (2013). '*Geen uniformen, maar specialisten*'. *Betrokkenheid van externe experts in crisissituaties*. Den Haag: WODC / Universiteit Leiden.

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Dutch summary

DUTCH SUMMARY

Wanneer herrijst de feniks? Factoren en mechanismen die het crisis-geïnduceerd leren van publieke organisaties beïnvloeden

Crises vinden niet frequent plaats, maar hebben desalniettemin een enorme impact op de maatschappij en de mensen die daarin leven. Het garanderen van de veiligheid van burgers is van oudsher één van de kerntaken van de overheid. Door het proces van leren van een crisis stellen publieke organisatie zich in staat om (vergelijkbare) toekomstige crises te voorkomen, dan wel effectiever te reageren wanneer deze toch plaatsvinden. Leren draagt dus bij aan het creëren van een veerkrachtige organisatie en samenleving. We zien echter dat publieke organisaties doorgaans veel moeite ondervinden met het leren van crises. Tegelijkertijd nemen we een grote variatie in leren waar: waar leren vaak moeilijk gaat, leert een organisatie soms plotseling heel sterk. Deze variatie kan onvoldoende verklaard worden aan de hand van bestaande theorie, mede door een gebrek aan studies aangaande de factoren die leren van crises bepalen. Daarom poneerden we de onderzoeksvraag: *"Hoe leren publieke organisaties van crises; en welke factoren en mechanismen verklaren dit proces van crisis-geïnduceerd leren?"*

Het huidige onderzoek betreft een exploratieve studie naar onderliggende factoren en mechanismen die werken in verschillende contexten. Naast het gebruik van theorie was de empirische data leidend in het onderzoek. Het doel was het genereren van inzichten in het crisis-geïnduceerd leerproces en het vormen van een aanzet tot systematische operationalisering en integraal theoretisch raamwerk voor bepalende factoren. Verdergaande inzichten in het complexe proces van leren zijn essentieel omdat het bijdraagt aan een effectievere crisisbeheersing, het verminderen van de consequenties van crises, en daarmee aan een veerkrachtiger maatschappij.

De literatuur geeft aan dat de relatie tussen crisis en leren ambivalent is. Aan de ene kant creëert crisis een plotselinge mogelijkheid voor het doorvoeren van structurele organisationele veranderingen. Aan de andere kant kunnen crisis-kenmerkende omstandigheden, zoals chaos, tijdsdruk, een tekort aan informatie, en sterke invloed van uiteenlopende belangen, leren belemmeren. Het concept organisationeel leren is onderhevig aan discussie aangaande definitiekwesties in de literatuur. Wij kiezen voor een integrale benadering van het concept en definiëren 'organisationeel leren' als *het proces van het verkrijgen van nieuwe kennis en begrip (cognitieve dimensie) en het omzetten van deze nieuwe kennis en begrip in verbeterd organisationeel handelen (gedragsdimensie)*. Op basis van beschikbare wetenschappelijke literatuur stellen we een raamwerk op voor crisis-geïnduceerd leren waarin we 'wie-wat-waarom-wanneer' distincties onderscheiden.

Dit onderzoek is gestructureerd in vier deelstudies, waarbij de eerste deelstudie als basis fungeert voor de drie aansluitende deelstudies. Er is een combinatie van kwalitatieve,

kwantitatieve en gemengde methoden gebruikt, waarbij de keuze gebaseerd is op het doel van elke deelstudie. Het onderzoek kenmerkt zich door de grote hoeveelheid empirische data, vergaard over een groot aantal crises.

De eerste deelstudie bestaat uit een exploratie van de factoren en mechanismen die crisis-geïnduceerd leren beïnvloeden, middels een analyse van de reactie van de Nederlandse Voedsel- en Warenautoriteit (NVWA) op vier veterinaire crises (Varkenspest, 1997; Mond-en-klauwzeer, 2001; Vogelpest, 2003; Q-koorts, 2007). Data werd vergaard op basis van crisisdocumenten en 17 interviews met sleutelexperts van het NVWA Incident en Crisiscentrum. Op basis van deze studie onderscheiden wij zes cruciale factoren voor crisis-geïnduceerd leren, die van uiteenlopende aard zijn en volgens verschillende mechanismen werken.

In de tweede deelstudie is de specifieke de rol van politisering in het crisis-geïnduceerd leerproces onderzocht, middels een studie op issue-niveau naar de reactie van de Europese Unie op vier olierampen (Braer, 1993; Sea Empress, 1996; Erika, 1999; Prestige, 2002). Een 'politieke claims-analyse' van krantenartikelen, verslagen van debatten in nationale parlementen en het Europees Parlement, en een studie naar evaluatierapporten en nieuwe EU-wetgeving aangenomen op basis van deze rampen werd uitgevoerd. We concluderen dat politisering zowel een positieve als negatieve invloed kan hebben, afhankelijk van interveniërende variabelen. Wij vinden geen bewijs voor 'quasi-leren'.

In de derde deelstudie is de rol van externe experts in 'in-crisisleren' bestudeerd, waarbij de reguliere crisisorganisatie externe experts betrekt in de crisisbeheersing. Dit is uitgevoerd middels een researchsynthese van data uit 114 evaluatierapporten in reactie op 60 verschillende crises die tussen 2000 en 2013 in Nederland hebben plaatsvonden. We identificeren zes mechanismen van kansen en bedreigingen voor het betrekken van externe experts en tien condities waarin hun betrokkenheid bijdraagt aan een adequate crisisbeheersing.

In de vierde en laatste deelstudie is de invloed van eigenschappen van publieke leiders op het crisis-geïnduceerd leerproces onderzocht middels een survey van alle burgemeesters in Nederland, aangaande hun prioriteiten voor leeraspecten direct na een hypothetische crisis in hun gemeente. We concluderen dat publiek leiders met een hogere 'public service motivation' (PSM) zowel meer op 'instrumenteel leren' als op 'politiek leren' georiënteerd zijn. Crisiservaring van leiders heeft een positieve en hun ambtstermijn een negatieve invloed.

Op basis van de vier deelstudies gecombineerd doen we verschillende bevindingen. We concluderen dat crisis-geïnduceerd organisationeel leren een uitermate complex proces is: het kan verschillende vormen aannemen, factoren zijn deels onderling verweven, en leren is lastig omdat crises zich moeilijk laten voorspellen. Op basis van de resultaten vormen we een theoretisch conceptueel model, bestaande uit zeven cruciale factoren voor crisis-geïnduceerd

leren: *politisering*, *politiek-economische context*, *(externe) expertise*, *organisatiestructuur*, *organisatiecultuur*, *publieke leider oriëntatie* en *organisationeel vergeten*. Politisering lijkt een sleutelrol te spelen, door in samenhang met vijf andere kernfactoren het optreden van leren te beïnvloeden. Daarnaast onderscheiden we een aantal typerende verschillen tussen in-crisis leren en post-crisis leren, waarbij we een link leggen tussen de conditie en het type les die geleerd wordt.

Deze studie draagt in meerdere opzichten bij aan wetenschap en praktijk. Het laat het nut zien van sterke empirische fundering en een analyse van een groot aantal crises. De studie integreert de verschillende cruciale factoren en het geeft een aanzet tot een theoretisch raamwerk en systematischer operationalisering van crisis-geïnduceerd organisationeel leren. Het geeft de essentiële onderscheiden in crisis-geïnduceerd leren weer en laat de onderlinge samenhang tussen factoren zien. Zowel in onderzoek als praktijk is het onderscheid in organisationeel *leren* en organisationele *verandering* van belang. Een proces van 'organisationeel vergeten' speelt een essentiële rol in publieke organisaties en dient meer aandacht te krijgen. De rol van crisis evaluatierapporten in het crisis-geïnduceerd leerproces is niet eenduidig, hetgeen vraagt om nader onderzoek naar de vorm van rapporten en bepalende condities. De in dit onderzoek in kaart gebrachte typen lessen en factoren, en empirische voorbeelden, kunnen fungeren als 'checklist' voor crisismanagers. Deze studie geeft het belang aan voor publieke organisaties om voldoende aandacht te besteden aan het 'vasthouden' en 'verspreiden' van lessen en, ondanks de moeilijkheid, reeds in de 'koude fase' aan de slag te gaan met het voorbereiden op leren na toekomstige crises. Wij raden vervolgstappen aan richting een meetinstrument voor crisis-geïnduceerd organisationeel leren. Tot slot adviseren wij vervolgonderzoek dat het model en de factoren daarin verder onderzoekt, in andere typen crises, publieke organisaties en institutionele contexten, om zo ons begrip van 'wanneer de feniks herrijst' verder te verbeteren.

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Wout Broekema,
The Hague, August 2018

Curriculum vitae

CURRICULUM VITAE

Wout Broekema was born on January 21st 1984 in Amersfoort, the Netherlands. He obtained a Bachelor of Science degree in Architecture from Delft University of Technology in 2009 and a Master of Science degree *cum laude* in Public Administration with a specialization in Crisis and Security Management from Leiden University in 2011. His master's thesis, on EU policy changes following oil spill disasters, was awarded the Jan van Hout Prize.

Broekema joined the Institute of Public Administration at Leiden University in 2011 as a teacher and researcher. He taught bachelor's and master's courses in the areas of Research Methods, Public Policymaking and Implementation, Organizational Theory, Public Institutions, Crisis Management, EU Politics, and Public Management. Wout obtained a University Teaching Qualification (BKO, 2014) and was a member of the Program Committee (2014-2015).

Wout worked on his PhD dissertation on a part-time basis (2014-2018) by becoming involved in research activities that were part of the VENI research project 'Double Bind' funded by The Netherlands Organisation for Scientific Research (NWO) and led by prof. dr. T.P.S Steen. In addition, he was involved in external projects for the Research and Documentation Centre of the Ministry of Justice and Security (WODC) on the role of external experts in crisis decision-making (2012-2013), and in an evaluation of the national crisis management organization after the crash of flight MH17 (2015); both led by prof. dr. R. Torenvlied. In addition, he participated in the international EU COST action research network on Local Public Sector Reform (2014-2015).

In July 2017, Broekema was appointed as Assistant Professor of safety and governance of crises at the Institute of Security and Global Affairs, at Leiden University in The Hague. Currently, his main research interest is in the governance of crises in which he employs various qualitative and quantitative methods. He has, together with dr. G. Landucci, established a safety course based on the Fukushima nuclear disaster as part of the new bachelor program in Security Studies, and currently teaches the Research Methods course in the Crisis and Security Management master program.

Broekema's work has been published in both international academic journals, such as *Public Administration*, *Journal of Contingencies and Crisis Management*, and *International Journal of Disaster Risk Reduction*, and in professional journals such as *Magazine Nationale Veiligheid en Crisisbeheersing* and *Secondant*. He has presented his work at international conferences, such as those of the European Group of Public Administration (EGPA) and the International Research Society for Public Management (IRSPM).

Crises can disrupt entire societies and severely affect the lives of the people within them. If a crisis occurs, citizens and other societal actors expect governments to learn from it in order to prevent the terrible events from happening again in the future, or, at least to be able to respond more effectively to them the next time.

However, government organizations generally seem to have major difficulties in learning from crises. Nevertheless, every now and then, they do manage to learn extensively, and change their protocols, implement new policies, open up the organization's culture, establish new organizational units, introduce training and simulation exercises, or improve communication. Why is it that public organizations sometimes learn from a crisis, but other times do not?

The work reported here reveals the major factors and mechanisms that explain crisis-induced learning by public organizations. The research draws on data from crisis management documents and interviews with employees of the Dutch food safety services (NVWA) related to four veterinary crises; EU legislation, evaluation reports, newspaper articles, and reports of national and EU parliamentary debates following four major oil spillages; 114 post-crisis evaluation reports in response to 60 crises in the Netherlands; and a survey of Dutch mayors.

This book will be relevant for scholars and students of safety, security and public administration, crisis management practitioners, public managers, and everyone interested in how a government organizes and manages its response to a crisis and prepares for a future one.

Wout Broekema is an Assistant Professor of safety and governance of crises at the Institute of Security and Global Affairs at Leiden University in The Hague, the Netherlands.