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A Cocitation Analysis of Crisis Management Literature

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THESIS

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Abstract

The purpose of this thesis is to address the need for a structured mapping of academic literature relating to crisis management. In order to highlight the need for a crisis management literature taxonomy, an overview of current crisis management literature will be provided, with a concentration on the predominant themes that have been identified in previous taxonomy oriented reviews, as well as those extracted from other influential works. A description of this gap, the need for organization within the literature, will be presented, focused on the emergence of the field, multidisciplinary and anecdotal nature of the literature, and the need to classify tacit knowledge. A review of bibliometric methodology will be highlighted as a way to address the existing gap. Research goals will be named and the phased methodology necessary to meet those goals will be outlined and followed. Results will be covered in detail: The resultant factor analysis and multidimensional scaling confirm previous efforts to taxonomize the literature, further reinforcing the call to mature the field of crisis management literature.

To my Father, who believes in life long learning, and to my Mother, who is an inspiration.

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A COCITATION ANALSYSIS OF CRISIS MANAGEMENT LITERATURE

I. Introduction

The purpose of this chapter is to outline the need for structure within the field of crisis management. In order to accomplish this, an overview of current crisis management literature will be provided, with a concentration on the predominant themes that have been identified in previous taxonomy oriented reviews, as well as those extracted from other influential works. Reasons for the existence of this gap in the literature will be presented, based on the emergence of the field, multidisciplinary and anecdotal nature of the literature, and the need both to define crisis and its management as well as to classify tacit knowledge. A review of bibliometric methodology will be highlighted as a way to address the existing gap. Research goals will be named and the methodology necessary to meet those goals will be outlined. Finally, this chapter will outline the benefits of the research to both the academic community and, specifically, the United States Air Force.

Brief Overview of Crisis Management Literature

World events have highlighted the importance of understanding and effectively managing crises across multiple disciplines (Pearson & Clair, 1998). It is imperative for an organization to be able to respond to a crisis in a prepared, timely, and ethical manner. As stated by Pearson and Clair, "effective crisis management can mean the difference between life and death to organizations, to products or service divisions, and to individual employees" (Pearson & Clair, 1998, p. 74). Organizations typically understand the potential outcome of ineffective crisis management. Therefore, to ensure they are best prepared to handle crises, organizations have sought to create guidelines for crisis response. In fact, consulting plans and protocols

surrounding crisis response have become “cottage industry” (Heath, 2004). This implies enthusiastic and somewhat specialized efforts by these organizations; however, it also implies that these efforts are poorly organized and coordinated.

However, a great deal can be learned from existing literature on crisis management. This literature comes primarily in either anecdotal form or case study analysis. By nature, crisis situations are complex (Mitroff, 2001; Smith & Elliott, 2006; Lalonde, 2007). Fink (2002), Hermann (1963), Pauchant and Douville (1992), Pearson and Clair (1998), as well as Smith and Elliott (2006) have all stated that various fields view "crisis" differently and have established their own "working definitions" of industrial, organizational crisis and or effective crisis management. Pearson and Clair (1998) expanded on and explained this point by saying “authors typically have adopted cognitive theories and, to some extent, psychoanalytic theory to explain and predict individual forces involved in the creation of an organizational crisis….the mere existence of policies and procedures may be false signals of preparedness” (Pearson & Clair, 1998, p. 62, 69).

Pearson and Clair (1998), as well as Pauchant and Douville (1992), made attempts at defining crisis across disciplines as shown in Table 1. Pearson and Clair’s work focuses on defining the different views of crisis along the “4C”s: causes, consequences, caution and coping. Pauchant and Douville also looked at defining crisis; however, their focus was on the definitions used within each discipline. These authors are not alone in their attempts to define crisis though; Table 2 shows the array of different definitions for both terms.

Table 1. Classifying and defining crisis

			"4Cs"				
	View of Crisis	Assumptions	Causes	Consequences	Caution	Coping	Citation
Psychological	Crisis cannot be separated from the viewpoint of one who's undergoing it	(1) Crises are "wicked problems" (2) People have limited processing ability during crises (3) Crises arise/spiral out of control due to irrational behavior or error in decision making	(1) Behaviors (2) Ineffectual organizations (3) Cognitive limitations of personnel in interaction with technology	(1) Victimization of emotionally or physically harmed employees (2) Shattering of employees' personal assumptions (3) Belief that one's personal system is threatened	Recognizing (1) Fundamental vulnerability (2) Repercussions for victimization	Cognitive readjustment through organizational support systems	Pearson & Clair, 1998, p. 62-3
Social-Political	A disaster or cultural collapse happens due to an inaccuracy or inadequacy in the accepted norms/beliefs	NA	Collective breakdown in the sense making and role structuring	(1) Meltdown of social order, followership, and commonly held values and beliefs, (2) where extreme individualism, incivility, and violence may increase	(1) Improvisation (2) Virtual role systems (3) Attitude of wisdom (4) Norms of respectful interaction	Collective behaviors, cognition, emotions that reverse the breakdown in shared meanings, social order and belief in leadership	Pearson & Clair, 1998, p. 63-4
Technological-Structural	Technology is expanding humankind beyond bodily limits, giving rise to a new species that can see further, run faster, etc.	NA	Interactive, tightly coupled technologies that interact with managerial, structure and other factors in/out of the organization in unforeseen ways	(1) Enhanced structural design, (2) Organizational system design	(1) Widespread destruction: loss of life and livelihood (2) Devastation of the technology itself	Triage of wounded personnel and recovery of (in)tangible assets	Pearson & Clair, 1998, p. 64-5
	View of Crisis						**Citation**
Economics	emphasis on notions of recession, unemployment or governmental deficit, with postulated caused ranging from faulty governmental decisions to the use of inadequate models						Pauchant & Douville, 1992, p. 45
History	crisis is a result of a cumulative loss of harmony among the elements of a society, such as over-expansion in military power, sexual behavior or superstitious beliefs						Pauchant & Douville, 1992, p. 45
Psychology	crisis is a breakdown of individual's concept of identity and/or a developmental transformation, and attribute their cause to intrapsychic, interpersonal, social or societal processes						Pauchant & Douville, 1992, p. 45
Science	scientific revolutions through a succession of paradigm shifts and crises						Pauchant & Douville, 1992, p. 45
Marxist political economic	crises are attributed to a number of dialectic processes						Pauchant & Douville, 1992, p. 45
Management	crises are evaluated from a military, political, and traditional business situations standpoint						Pauchant & Douville, 1992, p. 45

Table 2. Literature Review Identified Definitions

Term	Definition	Citation
Crisis	an unstable time or state of affairs in which a decisive change is impending—either one with the distinct possibility of a highly undesirable outcome or one with the distinct possibility of a highly desirable and extremely positive outcome….a crisis…is not necessarily bad. It is merely characterized by a certain degree of risk and uncertainty.	Fink, 2002, p. 15
Crisis	an event that affects or has the potential to affect the whole of an organization. Thus, if something affects only a small, isolated part of an organization, it may not be a major crisis. In order for a major crisis to occur, it must exact a major toll on human lives, property, financial earnings, the reputation, and the general health and well-being of an organization. More often than not, these occur simultaneously. That is, a major crisis is something that "cannot be completely contained within the walls of an organization"	Mitroff, 2001, p. 34-5
Crisis	crises are disruptive situations affecting an organization or a given system as a whole and challenging previously held basic assumptions; they often require urgent and novel decisions and actions, leading potentially to a later restructuring of both the affected system and the basic assumptions made by the system's members	Pauchant & Douville, 1992, p. 45-6
Crisis	A damaging event, or series of events, that display emergent properties which exceed and [organization's] abilities to cope with the task demands that it generates and has implications that can effect a considerable proportion of the [organization] as well as other bodies. The damage that can be caused can be physical, financial, or reputational in its scope. In addition, crises will have both a spatial and temporal dimension and will invariably occur within the sense of "place". Crises will normally be "triggered" by an incident or another set of circumstances (these can be internal or external to the [organization]), that exposes the inherent vulnerability that has been embedded within the "system" over time.	Smith & Elliott, 2006, p. 7
Crisis	used in reference to a period of discontinuity, during which the core values of a system (a small group, organization, town, society, or the world) have come under threat	Smith & Elliott, 2006, p. 86
Crisis (Organizational)	(1) threatens high-priority values of an organization, (2) presents a restricted amount of time in which a response can be made, and (3) is unexpected or unanticipated by the organization	Hermann, 1963, p. 64
Crisis (Organizational)	a low-probability, high-impact situation that is perceived by critical stakeholders to threaten the viability of the organization and that is subjectively experienced by these individuals as personally and socially threatening	Pearson & Clair, 1998, p. 66

However, a key difficulty and major concern is how to move from "the rhetoric of conflict prevention to one of institutionalized practice" (Ackermann, 2003, p. 339). This inherent intricacy of crisis can allow corporations the freedom and potential to tailor responses to meet their desired organizational outcome, which might result in ethically questionable behavior (Ulmer, 2000). Further, there can be major concerns about the relationship between quality decision-making in a crisis and the desired outcome (Welch, 1989). Organizations seeking guidance on how to best manage crises find that although some current literature is well intentioned, their authorship lacks empirical support and is based on anecdotal evidence gained through situational experiences and subsequent training. Pearson and Clair (1998) emphasize the need to address this concern:

> Extensive additional research is needed to better inform those who study organizational crises and to better assist those who manage them. The crisis management literature, although replete with speculation and prescription, has undergone scant empirical testing" (p. 73)

A further issue is the fact that crisis management extends across multiple disciplines and efforts across all have not been synthesized (Hermann, 1963; Pauchant & Douville, 1992; Pearson & Clair, 1998; Smith & Elliott, 2006; Lalonde, 2007).

Authors of crisis management literature represent a variety of several disciplines, positions, and educational levels. A cursory investigation of crisis management literature reveals the struggles research groups have had conducting a comprehensive analysis of this range of academic work in its entirety. A summary of these reviews is addressed below to highlight Pearson and Clair's claim that there is no synthesis of available literature, evaluated and organized into bounded areas within crisis management. As prescribed by Pearson and Clair (1998), a systems approach, with focus specifically on psychological, social-political, and

technological-structural disciplines is necessary to address this concern. Researchers feel this is necessary because

> these perspectives have not been considered jointly….there is a lack of common, explicit agreement about the nature and meaning of crisis even within each of these three disciplinary perspectives….no one has…suggested a systematic, multidisciplinary perspective of…examples of success and failure, as well as midground outcomes (Pearson & Clair, 1998, p. 61, 67)

Previous Reviews

In an effort to bring structure to the field two comprehensive reviews have been conducted on the existing body of crisis management literature. Pauchant and Douville (1992) looked at 24 authors, 74 articles, and 12 books during January 1986 to December 1990. They identified the following eight major themes throughout the authors' works: (1) theory building, (2) technological issues, (3) subjective and cultural issues, (4) social criticism, (5) structural issues, (6) communication issues, (7) strategic issues, and (8) stakeholder management (p. 49). Each of these themes had certain aspects, findings or propositions, associated with them. Similarly, Smith and Elliott (2006) edited a compilation of 25 articles written by authors deemed influential by the editors in the field. The editors took efforts to taxonomize the literature and presented a method of organizing the works of seminal authors along four major themes: understanding crisis management, modeling the crisis management process, the crisis of management, and crisis management in practice (Smith & Elliott, 2006).

Neither of the taxonomies proposed by the previous reviews proved a perfect fit for the existing literature; in fact, the two reviews were not complimentary. Pauchant and Douville's (1992) themes of communication, strategy, theory, technology, stakeholder, subjectivity, and social criticism do not directly match Smith and Elliott's (2006) themes of understanding crisis management, modeling the crisis management process, the crisis of management, and crisis

management in practice. Although each review was a step towards a coherent taxonomy, the themes proposed in both reviews are not easy to navigate because it is difficult to discern the meaning of each theme. Therefore, the concern lay in the confusing taxonomy.

To help address this confusion, a literature review as part of this thesis's research effort has revealed there to be five overarching themes, common in both Pauchant and Douville's (1992), and Smith and Elliott's (2006) reviews. Since the literature repeatedly showed key statements made by different seminal authors, further analysis of these statements enabled the identification and grouping of five major themes: (1) no structure with crisis management literature for taxonomy, (2) defining crisis and its management, (3) modeling the crisis management process, (4) the causes of crisis, and (5) keys to successful management.

The Gap in the Literature

There are four main factors contributing to the existing gap within the crisis management literature: (1) it is a developing and multi-disciplinary field, (2) crisis, and its management, are not clearly defined, (3) it is anecdotal and case study based, and (4) the tacit knowledge across disciplines within the field has not been captured. As shown with the definitions of crisis, there are multiple views of what crisis management is, what is important within it, and even why it is important. The fact that crisis management is an emerging field of study, coupled with the multidisciplinary nature of crisis management, results in a lack of structure within the crisis management literature (Pauchant & Douville, 1992; Pearson & Clair, 1998; Smith & Elliott, 2006; Hermann, 1963; Lalonde, 2007). The overlapping nature of and lack of structure within the crisis management literature has been an interest item within the field and seminal authors have each strived to bring much needed clarity to the existing literature.

However, the majority of crisis management literature appears to examine crisis response as a case study, offering a personal stamp of success or failure, while providing lessons learned. Murray (2000) specifically states that individuals learn response through experience, in trial by fire.

> The way by which such an ad hoc team from several disciplines can rapidly be helped to function effectively together is by teaching all the "strangers" the principles of Crisis Resource Management. These principles are not as well-presented in a written text or lecture format, as one cannot introduce the sense of urgency that emotionally charges and changes the impact (p. 633)

Murray points out that the knowledge gained through anecdotes or through case study analysis needs to be codified in such a way as to be of use to those needing to apply it in the future. As the literature now stands, some elements of crisis management are not passed along and are lost in the translation. Soo (2002) addresses this issue when stating there is a "'knowing-doing gap' which highlights the distinction between 'knowing' something and converting what is known into action" (p. 130).

Unfortunately though, it is difficult to capture this tacit knowledge. Informal interactions serve as a critical resource in the exchange of tacit knowledge; however, Soo (2002) briefly discusses the weakness of relying on them.

> …the risk of these informal interactions being too dependent on 'chance meetings'. This lack of structure within informal channels can result in important information being lost—there is no guarantee that an essential piece of information will be communicated to all relevant parties….'information is shared anecdotally and sometimes by sheer luck'….This anecdotal sharing may work for smaller first but as organizations grow in size, it becomes more and more random and people need to rely on the strength of their personal networks….So there is a certain amount of luck involved (p. 139-140)

Therefore, researching and collecting crisis management literature data, in terms of author cocitation counts, may provide a foundational literature map of crisis management literature,

which individual researchers and organizational practitioners can use to increase their knowledge of, and ability to access, crisis management literature.

Drucker stated "power comes from transmitting information to make it productive, not from hiding it" (Alavi, 2001, p. 108). The power of information is an important element of knowledge management: One of the three goals of knowledge management is to "build a knowledge infrastructure—not only a technical system, but a web of connections among people given space, time, tools, and encouragement to interact and collaborate" (Alavi, 2001, p. 114). "Finding sources of knowledge…to codify is…essential….Mapping corporate knowledge sources is and important part of the codification process" (Davenport, 2000, p. 69). While this web of connections is important, it is also important to note that "empirical studies have shown that while organizations create knowledge and learn, they also forget" (Alavi, 2001, p. 118).

> A knowledge map…points to knowledge but does not contain it. It is a guide, not a repository….The principal purpose and clearest benefit of a knowledge map is to show people in the organization where to go when they need expertise….It can be used as a tool to evaluate the corporate knowledge stock, revealing strengths to be exploited and gaps that need to be filled….A good knowledge map goes beyond conventional departmental boundaries (Davenport, 2000, p. 72-3)

In addition "an important aspect of the knowledge-based theory of the firm is that the source of competitive advantage resides in the application of the knowledge rather than in the knowledge itself" (Alavi, 2001, p. 122).

Brief Overview of Bibliometric Methods

The purpose of this section is to outline appropriate methods in order to meet the primary research goals. Bibliometrics provides an effective means of identifying seminal authors; it can be defined as "the application of mathematical and statistical techniques to the study of publishing and professional communication" (Diodato, 1994, p. 1). Hérubel (1999) defines it as:

> Bibliometrics is essentially a quantitative analysis of publications for the purpose of ascertaining specific kinds of phenomena. Among the various data found, characteristics of materials used and intellectual content analysis of published material are generally explored through bibliometrics. From statistical bibliography to *bibliometrics* to *scientometrics* and *informetrics*, this type of analysis of publications has become instrumental for library and information science, as well as for scholarly communication. Researchers can examine literatures and establish characteristics of disciplines, obsolescence of scholarship, institutional affiliations and relationships, and types of materials constituting scholarly pursuits. As bibliometric literature is primarily journal dependent, much of its contribution is found in discrete research, itself appearing in scattered journals (p. 380-381)

Jean (1987) defines bibliometrics as "the measurement of scientific publications and of their impact on the scientific community, assessed by the citations they attract, provides a portfolio of indicators that can be combined to give a useful picture of recent research activity" (p. 261).

One subtype of bibliometrics is citation analysis. A citation is an act of quoting, for example, one *cites* another author's work within their own work. In citation analysis the researcher studies the pattern and frequency of citations in articles and books by a single author (Rousseau, 2004). The author data can be input into an Institute of Scientific Information (ISI) database such an Science Citation Index (SCI), Social Sciences Citation Index (SSCI), etc. in order to determine the number of cocitations (Rousseau, 2004). The information garnered from this index can placed into software in order classify and taxonomize the literature (White & Griffith, 1981; McCain, 1990).

Citation analysis is an effective process to identify seminal authors and key areas of study within a field of literature. Crisis management literature, as a developing and multi-disciplinary field, has yet to set one definition of crisis and its effective management across all disciplines. Moreover, the anecdotal and case study based nature of the literature itself also fails to capture the tacit knowledge across the disciplines. A citation analysis of crisis management literature

will help address and resolve this existing gap in the literature. The following section will outline the specific research goals in order to accomplish this.

Proposed Research Goals and Questions

The primary research goals of this thesis are as follows:

1. Determine seminal authors within of crisis management
2. Determine influential manuscripts, journals, books and book series.
3. Identify key areas of crisis management literature
4. Identify and classify key fields of study within crisis management literature
5. Provide a mapping tool to display seminal authors with respect to their specific field of study within crisis management
6. Provide an all accessible, user-friendly interface available to researchers and individuals interested in crisis management literature

Phased Methodological Approach

In order to best address the research goals outlined above in an auditable fashion, a phased approach to the research is best suited.

Phase 1

The intent of Phase 1 was to address the first two research goals: determine seminal authors within crisis management, and determine influential manuscripts, journals, books and book series. This will be accomplished in part during the literature review. However, an email was sent to those seminal authors and influential journals editors asking for their assistance in identifying the authors and works they find most influential. This information was used in Phase 2.

Phase 2

The intent of Phase 2 was to address the following research goals: identify key areas of crisis management literature, classify key fields of study within crisis management literature, and provide a mapping tool to display seminal authors with respect to their specific field of study within crisis management. In order to accomplish this, a review of bibliometric literature has shown a cocitation analysis to be an effective methodology given the nature of creating a literature map of crisis management. The authors identified in Phase 1 were used in the SSCI. The SSCI is the most fitting index to use as it contains 5,000 journals across 50 disciplines, including several of the relevant journals uncovered in the literature. A single citation and a cocitation count per author were accomplished and SPSS was used in order to correlate the cocitation counts, run factor analysis, and map the data. The "map," or graphic representation of the data, was reviewed by focusing on the clustering revealed in the data. The titles and abstracts of the authors within clusters were reviewed to classify major themes within each cluster. Revalidation of the classification was accomplished as factor analysis is an iterative process. A key challenge was to create an accurate representation of the knowledge base and correctly identify the appropriate number of themes. A step-wise discussion of the proposed citation analysis and glossary of specific bibliometric methodological terms is provided in Chapter 3.

Phase 3

The intent of Phase 3 was to answer the last research goal: to provide an all accessible, user-friendly, interface that is available to researchers and individuals interested in crisis management literature. In order to do this, the mapping tool that was created in Phase 2 was made available on the internet. Additionally, the information has the potential to be shared to the larger academic community through conferences and publication.

Benefits of Research

The creation of a crisis management literature mapping tool offers direct academic and Air Force benefits. Specifically, the tool:

1. Determined seminal authors within crisis management literature
2. Identified key areas of crisis management literature
3. Provided a mapping tool to display seminal authors with respect to their specific field of study within crisis management
4. Provided an accessible, user-friendly interface available to researchers and individuals interested in crisis management literature
5. Serves as an outline to inform those who study organizational crises and to aides those who manage them,
6. Outlined where to locate guidance on truly effective crisis management that has been screened across multiple disciplines,
7. Provided a comprehensive picture of current crisis management literature,
8. Directs researchers towards relevant crisis management literature,
9. Supports an increased crisis management research focus,
10. Enhances individual and organizational crisis management ability,
11. Shows people in the organization where to go for expertise,
12. Serves as a tool to evaluate the knowledge stock's strengths and gaps.

Air Force Benefits of Research

The United States Air Force (AF) is responsible for delivering superior Air, Space and Cyberspace options for the defense of the United States of America and its global interests

through global vigilance, global reach and global power. Due to the nature of the AF mission, failure is not an affordable option as Weick (2001) explained.

> These [nuclear aircraft carriers, air traffic control systems, aircraft operations, hostage negotiations, emergency medical treatment, nuclear power generation, continuous processing firms, and wildland firefighting crews] diverse organizations share a singular demand: They have no choice but to function reliably. If reliability is compromised, severe harm results….we lumped these organizations together and called them *high reliability organizations* (HROs) (p. xiii)

The US Air Force is a prime example of an HRO in which successful understanding and management of crises is imperative to organizational and personnel success.

The creation of a crisis management literature mapping tool facilitates the Air Force's goal of improving management and leadership decisions within a crisis. The tool assists Air Force leadership by providing access to key crisis management literature. Having this information at their disposal allows for more informed and proactive decision making: Leaders will improve their situational awareness by learning to read signals in order to anticipate probable crises and prepare appropriately. The crisis management literature mapping tool serves as just that, an addition to their toolbox or "bag of tricks."

In today's day and age, there is a climate of uncertainty. A leader can no longer just check the boxes on a checklist: they must be able to apply the models of crisis management and use an array of information at their disposal to be effective. Leaders are required to be more and more prepared, while still flexible enough to adapt to all crises. The Air Force mission requires all Airmen to be capable of effectively and efficiently accomplishing the mission with limited damage to personnel and resources. In a time of growing conflict across several theaters and a reduction to shape the force of personnel, the capability to think smarter is more critical than ever. Tacit lessons garnered from experience, and those captured in post crisis feedback

sessions, although of benefit, encapsulate only a portion of what is available. The crisis management literature mapping tool will enhances these lessons by providing access to academically proven, effective means of crisis management.

II. Literature Review

To gain an appreciation for the extent of crisis management literature available, this chapter synthesizes the works of seminal authors within the crisis management field.

The purpose of this chapter is to set a strong foundation on which to build a cocitation analysis of crisis management literature and answer proposed the research questions. The literature review did, in part, address the first four research goals of (1) determining the seminal authors within the crisis management literature, (2) determining influential manuscripts, journals, books and book series, (3) identifying key areas of crisis management literature, and (4) identifying and classifying key fields of study within crisis management literature. Additionally, the literature review provided a foundation for the researcher's knowledge base that was required during the author cocitation analysis (ACA) portion. The researcher's thorough understanding of crisis management literature was imperative in order to effectively identify key areas of crisis management literature, identify and classify key fields of study during factor analysis, and to provide a mapping tool to display seminal authors with respect to their specific field of study within crisis management.

In an effort to demonstrate an exhaustive review of crisis management literature, this chapter is broken down into two sections. The first section provides an introduction to crisis management literature through an overview and comparison of two prominent reviews. The second section contains conclusions drawn from the intensive literature review through the synthesis of the material. The conclusions include working definitions of key terms; the identification of seminal authors, their areas of study, and influential works; and commonalities found in the literature along with a summary of five overarching themes.

Introduction to Crisis Management Literature

Crisis management literature began to grow in the 1980s. The nature of the field made it applicable across multiple disciplines and interest grew as world events such as Chernobyl, Bhopal, and the Challenger proved the importance of crisis management (Mitroff, 2001). Table 3 highlights a few other significant case studies done with a crisis management focus. Partly because of these studies, organizations began taking steps to enact programs and develop crisis management plans, but the relatively new emergence of the field made this challenging as organizations were unaware of where to go for guidance. Initially, authors published books based on their experiences. Over time, researchers and authors capitalized on the need for more guidance, by building on the anecdotal literature through case study analysis. However, the case study analysis was done with a discipline-specific bias and results have not been synthesized across all the disciplines. The resulting available literature is far reaching in breadth and depth; however, it is not organized. This lack of structure within the crisis management literature has been an interest item with in the field. Pauchant and Douville (1992); Pearson and Clair (1998); Mitroff (2001); Lalonde (2007); Hermann (1963); as well as articles written by Pauchant, Shrivastava, Miller, Roberts, Smith, and Elliott and Smith (Smith & Elliott, 2006) have all articulated that crisis management is a relatively new field of study extending across multiple disciplines, and that efforts across all disciplines have not been synthesized.

Table 3: Crisis Management Case Studies (Lalonde, 2007, p. 96)

Crises	Authors
Anthrax	Babbs and O'Connor (2003) Clarke et al. (2006) Boin et al. (2003)
World Trade Center	Connell (2001) Cox (2002) Kendra and Wachtendorf (2003) Michel-Kerjan (2003) Tierney (2003) Peek and Sutton (2003) Burke (2005)
Three Mile Island	Perrow (1994, 1999) Hopkins (2001)
Heart Wave	Lagadec (2003) Thirion (2005)
Rwanda genocide	Reyntjens (2001) Buruchara et al. (2002)
Darfur	Pinto et al. (2005)
Hurricane Katrina	Connelly (2006) Banipal (2006)
Mad cow	Lanska (1997) Grönvall (2001) Pennings et al. (2002)
Avian influenza	Thorson and Edkall (2005)
Bhopal	Shrivastava (1994)
SARS	Maunder et al. (2003) Nickell et al. (2004) Buus and Olsson (2006)
Contaminated blood scandal	Feldman and Bayer (1999)
Tsunami	Rodiguez et al. (2006) Oloruntoba (2005) Shaw (2006)
Global warming	Boiral (2006) Van Aaslt (2006) O'Brien et al. (2006)
Bam earthquake (Iran)	Pinera et al. (2005) Bowman and Kunreuther (1988)
Oklahoma bombing	Sprang (1999) North (2002)

Previous Reviews

In an effort to bring structure to the field, two previous reviews were accomplished on the existing body of crisis management literature. In the first study Pauchant and Douville (1992) identified seminal authors within the field of crisis management during a five year period and categorized their areas of study into major themes, both macro and micro in size. Their intent was to provide a road map for the field by presenting the most active and committed researchers; however, they admitted their study had the following limitations: (1) the period of review was from January 1986 to December 1990 and therefore not all inclusive; (2) the study focused only on literature related to man-made crises; (3) the history of the crisis management field was limited; and (4) the focus of study was on industrial and organization crises and their relation to the environment, not political science, sociology, medicine, psychology, or economic crises (Pauchant & Douville, 1992). The scoping efforts of the study are of concern because of the multidisciplinary nature of the field of crisis management.

The methodology used to identify seminal authors was straightforward. Thirty-two major management journals with a strong academic orientation were selected for review. A scan was done of the journal titles and abstracts using 49 key words, which resulted in over 200 articles. The results were subject to three criteria: (1) 60% or more of the article had to address or relate to crises and/or crisis management, (2) the types of crises discussed in the article had to relate to an organization or system as a whole, and (3) articles were only kept if the author published another article or book in the same field with the five year period (Pauchant & Douville, 1992). Applying these criteria to the 200 articles resulted in 24 authors, 74 articles, and 12 books during January 1986 to December 1990 (Pauchant & Douville, 1992). The eight majors themes the authors' work identified are depicted in Figure 1.

Each of the themes was identified by Pauchant and Douville because it had certain aspects, findings, or propositions associated with them that distinguished them from one another. An additional limitation of Pauchant and Douville's work, and an important caveat, is that the 24 authors studied did not use a common methodology; therefore, a comparison of their studies to one another is like comparing apples to oranges and is not necessarily valid (Pauchant & Douville, 1992).

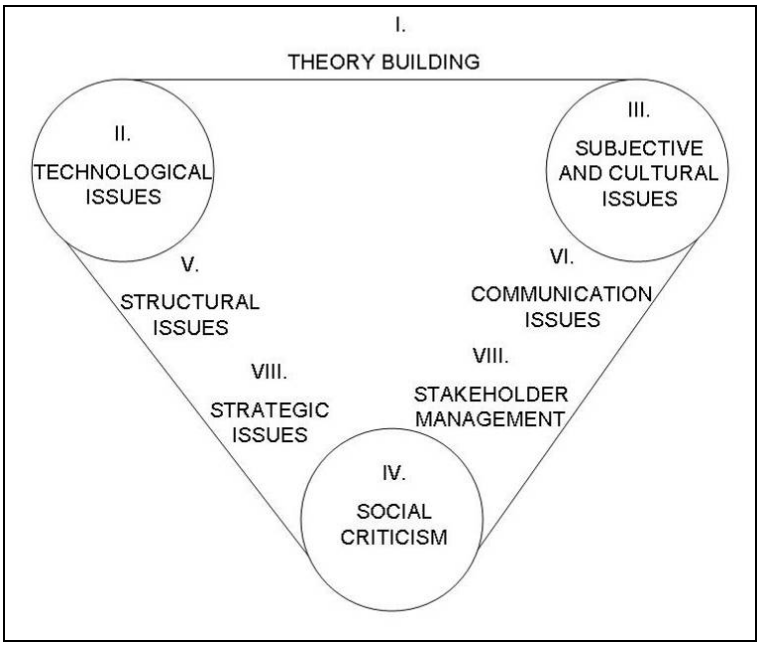


Figure 1. Eight major themes (Pauchant & Douville, 1992, p. 49)

In similar work Smith and Elliott (2006) edited a compilation of 25 articles written by authors the editors determined to be influential in the field. In an effort to taxonomize the existing literature, the authors presented a method of organizing the works of seminal authors along self-selected major themes: understanding crisis management, modeling the crisis management process, the crisis of management, and crisis management in practice (Smith & Elliott, 2006). In their review of these 25 articles, the intent was to highlight key issues associated with crisis

management and the inherent difficulties associated with providing a taxonomy in a field in which there is still conflict. Although the term "crisis" is frequently used by organizations, there is some debate as to what it means (Smith & Elliot, 2006), and organizations often use the terms "crisis", "disaster", "business continuity", and "risk" interchangeably, despite their differences (Smith & Elliot, 2006). Smith & Elliott (2006) further explain that "crises can be constructed within a spatial setting,…display emergent properties, and are represented as complex, non-linear events that generate problems for those who are responsible for attempting to manage them" (p. 2). The very practical nature of and cultural problems associated with crises must also be evaluated (Smith & Elliot, 2006). These two concepts combined, demonstrate that a crisis as seen "through the eyes of the beholder" is the first step in the practice of crisis management (Smith & Elliot, 2006). Moreover, "effective crisis management…takes place before the operational phase and requires organizations to develop capabilities aimed at recognizing and acting upon early warnings and weak signals around potential problems" (Smith & Elliot, 2006, p. 3). This entire process of crisis management, however, is complex and difficult, and there are problems associated with an organization's knowledge of their processes (Smith & Elliot, 2006).

"The analysis of crises does not fall neatly within any particular analytical or theoretical paradigm in the literature….the practice of crisis management is beginning to challenge many of the core assumptions…held within some disciplines" (Smith & Elliot, 2006, p.6). There are three aspects to a crisis: place, time, and emergence and scale (Smith & Elliot, 2006, p.6). Place refers to a "particular location and setting." Time "[influences] both the nature of the crisis and its consequences". Emergence and scale refer to the contingency approach and processes in which mangers deal with "complex, non-linear problems". Synthesizing the above information, Smith & Elliott (2006) present their following working definition for crisis:

> A damaging event, or series of events, that display emergent properties which exceed and [organization's] abilities to cope with the task demands that it generates and has implications that can effect a considerable proportion of the [organization] as well as other bodies. The damage that can be caused can be physical, financial, or reputational in its scope. In addition, crises will have both a spatial and temporal dimension and will invariably occur within the sense of "place". Crises will normally be "triggered" by an incident or another set of circumstances (these can be internal or external to the [organization]), that exposes the inherent vulnerability that has been embedded within the "system" over time (Smith & Elliot, 2006, p.7)

Conclusions from Reviews

Tables 4-5 summarize the work from both Pauchant and Douville (1992), and Smith and Elliott (2006). It shows the themes identified by the researchers and their associated authors, indicates the taxonomies proposed by the previous reviews were not a perfect fit, and serves as a visual display of the current disorganization within the field.

Table 4: Seminal authors' research themes

AUTHOR		MAJOR THEME OF RESEARCH (Pauchant & Douville, 1992, p. 48; Smith & Elliott, 2006, p. v-vii; independent research)											
Last	First	Understanding Crisis Management	Modeling the crisis management process	The crisis of management	Crisis management in practice	Communication	Strategy	Structure	Theory	Technology	Stakeholder	Subjectivity	Social Criticism
Barton	Laurence		x			x	x	x					
Boin	Arjen	x											
Bowonder	B							x	x	x			
Cannell	William					x			x	x			
Clair	Judith	x	x										
D'Aveni	Richard							x	x		x		
Davidson	Wallaces							x	x		x		
Douville	Roseline	x	x										
Elliott	Dominic				x								
Fink	Stephen						x		x			x	
Fortune	Joyce		x										
Foster	Patrick	x	x		x								
Gephart	Robert							x		x			x
Hermann	Charles	x			x								
Kunreuther	Howard								x	x	x		
Lagadec	Patrick					x	x			x			
Marcus	Alfred							x	x		x		
Miglani	Anil	x											
Miller	Danny	x						x	x			x	
Mitroff	Ian	x	x				x	x	x				
Murray	W	x	x		x								

Table 5: Seminal authors' research themes (continued)

AUTHOR		MAJOR THEME OF RESEARCH (Pauchant & Douville, 1992, p. 48; Smith & Elliott, 2006, p. v-vii; independent research)											
Last	First	Understanding Crisis Management	Modeling the crisis management process	The crisis of management	Crisis management in practice	Communication	Strategy	Structure	Theory	Technology	Stakeholder	Subjectivity	Social Criticism
Nelkin	Dorothy					x		x				x	
Otway	Harry					x	x	x					
Pauchant	Thierry	x	x				x		x			x	
Pearson	Christine	x	x										
Perrow	Charles	x											
Peters	Goeff		x										
Radell	Willard			x									
Rasmussen	Jens			x									
Reason	James			x									
Roberts	Karlene		x		x		x	x		x			
Schwartz	Howard							x	x			x	
Sethi	Prakash						x				x		x
Shrivastava	Paul	x					x		x		x		
Siomkos	George						x		x				x
Smart	Carolyne				x								
Smith	Denis		x	x	x		x	x	x				
Sutcliffe	Kathlene		x	x	x								
Sutton	Robert					x		x				x	
Toft	Barry		x										
Turner	Barry		x										
Vertinsky	Ilan				x								
Weick	Karl		x	x	x			x	x			x	
Zimmerman	Rae								x	x	x		

The two reviews were not complimentary and the lack of cohesion between them proves problematic. Both reviews were not conduced in the same way; where Pauchant and Douville (1992) clearly outlined their methodology and results, Smith and Elliott (2006) did not clearly outline their reasoning behind why they chose to classify the literature the way they did. Additionally, Pauchant and Douville's themes of communication, strategy, theory, technology, stakeholder, subjectivity, and social criticism do not directly match Smith and Elliott's themes of understanding crisis management, modeling the crisis management process, the crisis of management, and crisis management in practice as depicted in the above tables. Further, the greatest concern lies in the confusing taxonomy presented in the above reviews. The authors' respective themes are not easy to discern meaning from or navigate in order to locate the desired information. A proposed structuring of the field of crisis management would be more beneficial if it was accurately representative of the knowledge within the field and geared towards the users that will apply the taxonomy. Although each review was a step towards taxonomy, neither one was entirely successful as they have not been shown to be accurate representations of the field.

Conclusions from Literature Review

Review of various works within the field of crisis management provided an appreciation for the extent of crisis management literature available. Key definitions and a comparison of "crisis" were provided in order to demonstrate the lack of consensus among disciplines and within the field. Additionally, assessments of two previous attempts at crisis management literature taxonomy were provided. This revealed that throughout the readings different authors focused on different research themes within the crisis management literature; however, regardless of the fields of study, seminal authors shared several commonalities. The final section

in this chapter synthesizes and captures the works provided by the seminal authors in crisis management literature in order to provide partial answers to research goals three and four. First, key terms frequently used within the field are defined and a separate look at comparing "crisis" across disciplines is provided. A listing of research identified seminal authors and influential works will also be outlined. Finally, the commonalities across all reviewed works have been synthesized and are presented.

Key Definitions

Tables 6-10 synthesize working definitions of various constructs and themes within the crisis management literature. The purpose was two fold: (1) the definitions provide a good working understanding of important terms used in the literature and (2) allow readers to visually see the complex nature of crisis management, highlighting that despite recent developments in the field, this highlights that there is still much research to be done. These definitions, proposed by the various authors, demonstrate how the field has struggled to operationalize its constructs and develop a nomological foundation for future research. In addition to the compiled definitions of crisis management, authors specifically compare definitions of the term crisis. Table 11 provides a crisis comparison chart as one such example.

Table 6: Key Definitions

Term	Definition	Citation
Active Failures	those errors and violations having an immediate adverse effect. These are generally associated with the activities of 'front-line' operators: control room personnel, ships' crews, train drivers, signalmen, pilots, air traffic controllers, etc.	Smith & Elliott, 2006, p. 247
Acute Crisis Stage	Also known as the point of no return. Some damage has been done by the prodrome and the key to this stage is to control as much of the crisis as possible. If control is not an option the key is to exert some degree of influence over where, how, and when the crisis erupts.	Fink, 2002, p. 22-3
Causes	include the immediate failures that triggered the crisis, and the antecedent conditions that allowed failures to occur	Pearson & Clair, 1998, p. 61-2
Caution	includes the measures taken to prevent or minimize the impact of a potential crisis	Pearson & Clair, 1998, p. 62
Chronic Crisis Stage	Clean-up or post-mortem phase. The focus of this phase is recovery, self-analysis, self-doubt, healing or congratulations, plaudits, and testimonials.	Fink, 2002, p. 23-25
Complexity	Refers to the fact that systems (technological, financial, communication, educational, entertainment, etc) that we have built have more parts and do more things (calculations, operations, control processes, etc.) than ever before.	Mitroff, 2001, p. 24
Consequences	immediate and long-term impacts	Pearson & Clair, 1998, p. 62
Coping	compromises measures taken to respond to a crisis that already occurred.	Pearson & Clair, 1998, p. 62
Corporate crisis	characterized by low-probability, high-consequence organizational events that threaten the most fundamental goals of an organization.…[they are triggered by major industrial accidents, environmental jolts, product defects, occupational hazards, and pollution incidents that arise from within corporations. These triggering events cause extensive damage…to human life and the environment. Corporations are usually held liable for these damages caused by crises, and therefore suffer severe financial and reputational setbacks	Smith & Elliott, 2006, p. 48
Corporate culture	The goals, interpersonal styles, and overriding beliefs and ideologies of the dominant group of mangers	Smith & Elliott, 2006, p. 76
Coupling	Refers to the fact that everything everywhere can be almost instantaneously connected with and affected by everything anywhere else in the world.	Mitroff, 2001, p. 24

Table 7. Key definitions (continued)

Term	Definition	Citation
Crisis	an unstable time or state of affairs in which a decisive change is impending—either one with the distinct possibility of a highly undesirable outcome or one with the distinct possibility of a highly desirable and extremely positive outcome….a crisis…is not necessarily bad. It is merely characterized by a certain degree of risk and uncertainty.	Fink, 2002, p. 15
Crisis	an event that affects or has the potential to affect the whole of an organization. Thus, if something affects only a small, isolated part of an organization, it may not be a major crisis. In order for a major crisis to occur, it must exact a major toll on human lives, property, financial earnings, the reputation, and the general health and well-being of an organization. More often than not, these occur simultaneously. That is, a major crisis is something that "cannot be completely contained within the walls of an organization"	Mitroff, 2001, p. 34-5
Crisis	crises are disruptive situations affecting an organization or a given system as a whole and challenging previously held basic assumptions; they often require urgent and novel decisions and actions, leading potentially to a later restructuring of both the affected system and the basic assumptions made by the system's members	Pauchant & Douville, 1992, p. 45-6
Crisis	A damaging event, or series of events, that display emergent properties which exceed and [organization's] abilities to cope with the task demands that it generates and has implications that can effect a considerable proportion of the [organization] as well as other bodies. The damage that can be caused can be physical, financial, or reputational in its scope. In addition, crises will have both a spatial and temporal dimension and will invariably occur within the sense of "place". Crises will normally be "triggered" by an incident or another set of circumstances (these can be internal or external to the [organization]), that exposes the inherent vulnerability that has been embedded within the "system" over time.	Smith & Elliott, 2006, p. 7
Crisis	used in reference to a period of discontinuity, during which the core values of a system (a small group, organization, town, society, or the world) have come under threat	Smith & Elliott, 2006, p. 86

Table 8: Key definitions (continued)

Term	Definition	Citation
Crisis (Organizational)	(1) threatens high-priority values of an organization, (2) presents a restricted amount of time in which a response can be made, and (3) is unexpected or unanticipated by the organization	Hermann, 1963, p. 64
Crisis (Organizational)	a low-probability, high-impact situation that is perceived by critical stakeholders to threaten the viability of the organization and that is subjectively experienced by these individuals as personally and socially threatening	Pearson & Clair, 1998, p. 66
Crisis Management	planning for a crisis, a turning point—is the art of removing much of the risk and uncertainty to allow you to achieve more control over your own destiny	Fink, 2002, p. 15
Crisis Management	In contrast to the disciplines of emergency and risk management, which deal primarily with *natural* disasters, the field of Crisis Management deals mainly with *man*-made or *human*-caused crises, such as computer hacking, environmental contamination, executive kidnapping fraud, product tampering, sexual harassment, and workplace violence. Unlike natural disasters, human-caused crises are *not* inevitable. They do not need to happen. For this reason, the public is extremely critical of those organizations that are responsible for their occurrence.	Mitroff, 2001, p. 6
Crisis Resolution Stage	In this stage operations have returned to normal and the organization is well and whole.	Fink, 2002, p. 25
Effective Crisis Management	involves minimizing potential risk before a triggering event. In response to a triggering event, effective crisis management involves improvising and interacting by key stakeholders so that individual and collective sense making, shared meaning, and roles are reconstructed. Following a triggering event, effective crisis management entails individual and organizational readjustment of basic assumptions, as well as behavioral and emotional responses aimed at recovery and readjustment	Pearson and Clair, 1998, p. 66
Enacted environment	the residuum of changes produced by enactment	Smith & Elliott, 2006, p. 207
Enactment	the social process by which a 'material and symbolic record of action' is laid down	Smith & Elliott, 2006, p. 207
Environment	The nature of the firm's markets--its customers, competitors, and the legal and social infrastructure	Smith & Elliott, 2006, p. 76-7
Industrial Crisis	situations in which organized industrial activities are the source of major damage to human life, and natural and social environments….often occurring in an environment of economic crises	Smith & Elliott, 2006, p. 31

Table 9. Key definitions (continued)

Term	Definition	Citation
Latent Failures	these are decisions ore actions, the damaging consequences of which m ay lie dormant for a long time, only to become evident when they combine with local triggering factors (that is, active failures, technical faults, atypical system conditions, etc.) to breach the system's deficiencies. Their defining feature is that they were present within the system will before the onset of a recognizable accident sequence. They are most likely to be spawned b those whose activities are removed in both time and space from the direct human-machine interface: designers, high-lever decision makers, regulators, managers and maintenance staff	Smith & Elliott, 2006, p. 247
Mindfulness	the combination of ongoing scrutiny of existing expectations, continuous refinement and differentiation of expectations based on newer experiences, willingness and capability to invent new expectations that make sense of unprecedented events, a more nuanced appreciation of context and ways to deal with it, and the identification of new dimensions of context that improve foresight and current functioning	Weick, 2001, p. 42
Organizational Crisis	a crisis that revolves around some threat to the organizaiton.	Smith & Elliott, 2006, p. 86
Organizational Strategy	The product-market scope an organization defines for itself and the competitive distinctive competencies that it develops	Smith & Elliott, 2006, p. 76
Organizational Structure	The set up of administrative procedures--the hierarchy, the allocation of responsibility and authority, the nature and membership of committees (integrative devices)--that are used to develop and implement the strategy	Smith & Elliott, 2006, p. 76
Personality	The enduring, entrenched needs, goals, basic assumptions and beliefs of top managers	Smith & Elliott, 2006, p. 77
Prodromal Crisis Stage	The warning stage and turning point. Can also be referred to as the precrisis stage after the crisis is identified. The key to this stage is early detection and seize of the prodrome to allow for control and easier calculation of the most direct and expedient route to achieving a crisis resolution.	Fink, 2002, p. 21, 25
Scope and size	Refer to the fact that no only are the systems that we have built bigger in their scope and size, but they are distributed over larger portions of the earth's surface than ever before. As a result they are larger in their effects on the environment and on humans.	Mitroff, 2001, p. 24
Services recovery	Recognizes the cumulative impact of many service failures which, together, may constitute a crisis	Smith & Elliott, 2006, p. 406

Table 10. Key definitions (continued)

Term	Definition	Citation
Speed	Refers to the fact that both the good and the bad effects of our systems spread themselves more rapidly than ever before	Mitroff, 2001, p. 24
Systems Thinking	there is such a notion [as that of system], and systems thinking is simply consciously organized throughout which makes use of that concept…the most basic core idea of systems thinking [is] that a complex whole may have properties which refer to the whole and are meaningless in terms of the parts which make up the whole. These are the so-called "emergent" properties.	Smith & Elliott, 2006, p. 180
Visibility	Refers to the fact that it is increasingly more difficult, if not outright impossible, to hide the effects of disasters or large-scale systems breakdowns.	Mitroff, 2001, p. 24

Table 11. Crisis Comparison Chart

			"4Cs"				
	View of Crisis	Assumptions	Causes	Consequences	Caution	Coping	Citation
Psychological	Crisis cannot be separated from the viewpoint of one who's undergoing it	(1) Crises are "wicked problems" (2) People have limited processing ability during crises (3) Crises arise/spiral out of control due to irrational behavior or error in decision making	(1) Behaviors (2) Ineffectual organizations (3) Cognitive limitations of personnel in interaction with technology	(1) Victimization of emotionally or physically harmed employees (2) Shattering of employees' personal assumptions (3) Belief that one's personal system is threatened	Recognizing (1) Fundamental vulnerability (2) Repercussions for victimization	Cognitive readjustment through organizational support systems	Pearson & Clair, 1998, p. 62-3
Social-Political	A disaster or cultural collapse happens due to an inaccuracy or inadequacy in the accepted norms/beliefs	NA	Collective breakdown in the sense making and role structuring	(1) Meltdown of social order, followership, and commonly held values and beliefs, (2) where extreme individualism, incivility, and violence may increase	(1) Improvisation (2) Virtual role systems (3) Attitude of wisdom (4) Norms of respectful interaction	Collective behaviors, cognition, emotions that reverse the breakdown in shared meanings, social order and belief in leadership	Pearson & Clair, 1998, p. 63-4
Technological-Structural	Technology is expanding humankind beyond bodily limits, giving rise to a new species that can see further, run faster, etc.	NA	Interactive, tightly coupled technologies that interact with managerial, structure and other factors in/out of the organization in unforeseen ways	(1) Enhanced structural design, (2) Organizational system design	(1) Widespread destruction: loss of life and livelihood (2) Devastation of the technology itself	Triage of wounded personnel and recovery of (in)tangible assets	Pearson & Clair, 1998, p. 64-5
	View of Crisis						Citation
Economics	emphasis on notions of recession, unemployment or governmental deficit, with postulated caused ranging from faulty governmental decisions to the use of inadequate models						Pauchant & Douville, 1992, p. 45
History	crisis is a result of a cumulative loss of harmony among the elements of a society, such as over-expansion in military power, sexual behavior or superstitious beliefs						Pauchant & Douville, 1992, p. 45
Psychology	crisis is a breakdown of individual's concept of identity and/or a developmental transformation, and attribute their cause to intrapsychic, interpersonal, social or societal processes						Pauchant & Douville, 1992, p. 45
Science	scientific revolutions through a succession of paradigm shifts and crises						Pauchant & Douville, 1992, p. 45
Marxist political economic	crises are attributed to a number of dialectic processes						Pauchant & Douville, 1992, p. 45
Management	crises are evaluated from a military, political, and traditional business situations standpoint						Pauchant & Douville, 1992, p. 45

Seminal Authors

For purposes of this thesis, seminal authors are those authors that have contributed extensively to the field of crisis management. One of the primary research goals of this thesis was to determine seminal authors within crisis management. This is important because the authors identified were used in order to conduct author cocitation analysis (ACA) in an effort to provide a taxonomy and map of the crisis management field. Seminal authors were identified through the following three methods: (1) individual reading and research, (2) identified by authors within readings done in the literature review, and (3) those identified for study in an independent study. The resultant 44 authors are depicted in Table 12.

Table 12: Literature Review Identified Seminal Authors

SEMINAL AUTHORS			
Last	**First**	**Last**	**First**
Barton	Laurence	Otway	Harry
Boin	Arjen	Pauchant	Thierry
Bowonder	B	Pearson	Christine
Cannell	William	Perrow	Charles
Clair	Judith	Peters	Goeff
D'Aveni	Richard	Radell	Willard
Davidson	Wallaces	Rasmussen	Jens
Douville	Roseline	Reason	James
Elliott	Dominic	Roberts	Karlene
Fink	Stephen	Schwartz	Howard
Fortune	Joyce	Sethi	Prakash
Foster	Patrick	Shrivastava	Paul
Gephart	Robert	Siomkos	George
Hermann	Charles	Smart	Carolyne
Kunreuther	Howard	Smith	Denis
Lagadec	Patrick	Sutcliffe	Kathlene
Marcus	Alfred	Sutton	Robert
Miglani	Anil	Toft	Barry
Miller	Danny	Turner	Barry
Mitroff	Ian	Vertinsky	Ilan
Murray	W	Weick	Karl
Nelkin	Dorothy	Zimmerman	Rae

Influential Works

The second research goal was to determine influential manuscripts, journals, books, and book series, where influential works were those works that have aided in the further development of the field. The literature review provided the initial step in identifying those influential works that were later verified and bounded by the ACA. This was done, in part, through the extensive literature review. The compilation of works was identified in three ways: (1) through individual reading and research, (2) identified by authors within readings done in the literature review, and (3) those identified in an independent study. In addition to influential books, crisis management literature is found in several journals, across many fields. Table 13 lists the 59 journals identified in the literature review, four of the leading books on crisis management literature, and two helpful websites as identified in the literature review.

Table 13. Influential Works

INFLUENTIAL WORKS	
Journals	
Academy of Management Perspectives	Journal of Management Studies
Academy of Management Journal	Journal of Marketing
Academy of Management Review	Journal of Medical Education
Administravie Science Quarterly	Journal of Organizational Change Management
California Management Review	Journal of Public Administration Research and Theory
Canadian Journal of Anesthesia	Journal of Risk and Insurance
Chief Executive	Journal of Travel Research
Journal of World Business	JSTOR
Cornell Hotel and Restaurant Administration Quarterly	Leadership
Decision Support Systems (Netherlands)	Long Range Planning (U.K.)
Disaster Prevention and Management	Management Communication Quarterly
Environment	Management Decision
Forum for Applied Research and Public Policy	Management Learning
Futures (U.K.)	Management Science
Geneva Papers on Risk and Insurance	Nation's Business
Industrial Engineering	Organization & Environment
Institute of Crisis Management	Organizational Dynamics
International Journal Mass Emergencies and Disasters	Organizational Science
International Journal of Cross-cultural Management	Preventiqué (France)
International Journal of Project Management	Public Relations Quarterly
International Journal of Service Industry Management	Review of Business
Journal of Business Ethics	SAGE Journals online
Journal of Business Strategy (Canada)	Security Management
Journal of Clinical Anesthesia	Sloan Management Review
Journal of Contingencies and Crisis Management	Strategic Management Journal
Journal of European Public Policy	Technological Forecasting and Social Change
Journal of Management	The Journal of Finance
Books and Book Series	
Fink, S. (2002). Crisis Management: Planning for the Inevitable. Lincoln, NE: iUniverse, Inc.	
Mitroff, I. I. (2001). Managing Crises Before They Happen: What Every Executive and Manager Needs to Know About Crisis Management. New York: AMACOM American Management Association.	
Smith, D., & Elliott, S. (Eds.). (2006). Key Readings in Crisis Management: Systems and Structures for Prevention	
Weick, K., & Sutcliffe, K. (2001). Managing the Unexpected: Assuring High Performance in an Age of	
Websites	
http://www.jstor.org/about/alpha.content.html	Currently Available Journals - Complete Detailed List
http://www.crisisexperts.com/index.html	Founded in 1989, provides focus on crisis communications, uses a research-based approach to crisis consulting, and provides proven communicatoins planning techniques

Key Themes from the Literature Review

The literature review exposed key, recurring commonalities within the literature; however, a classification of these commonalities into themes proved difficult. Smith and Elliott (2006) illustrated this key concern above: "The analysis of crises does not fall neatly within any particular analytical or theoretical paradigm in the literature….the practice of crisis management is beginning to challenge many of the core assumptions…held within some disciplines" (p. 6). A review of the literature confirmed that. As an emerging and multidisciplinary field, crisis management literature lacks definition and structure. The multidisciplinary nature of the field poses a further problem. The crisis management literature as it now exists is both anecdotal and case study based; therefore, it lacks generalizability to contexts outside those of the specific cases studied (Pauchant & Douville, 1992).

Smith and Elliott (2006), as well as Pauchant and Douville (1992), reviewed existing literature and presented methods of organizing the works of seminal authors along major themes. In order to best capture crisis management literature, it was most effectively structured by identifying key themes. The synthesis of literature provided in this chapter was initially done mirroring the themes provided by Smith and Elliott (2006). Further review allowed for the extraction of key statements repeatedly proposed by different seminal authors. Additional analysis of these statements enabled the identification and grouping of five major themes: (1) no structure with crisis management literature for taxonomy, (2) defining crisis and its management, (3) modeling the crisis management process, (4) the causes of crisis, and (5) keys to successful management.

These 5 themes formed the following information about crises and crisis management. Crisis management is a relatively new and multidisciplinary field of study. As it is still in its

infancy efforts across all disciplines have not been synthesized. In such there is currently no structure within crisis management literature for taxonomy.

As an emerging field efforts have been made to define crisis and its management. Various fields view "crisis" differently: Each field has established a "working definition" of industrial, organizational crisis and or effective crisis management. Further, the terms crisis, disaster, risk, etc. are not interchangeable. Crises have been shown as complex, tightly coupled events that are strategic in nature. Organizations hold to a belief that they are vulnerable to crises, as crises are inevitable, and human-caused crises have increased in frequency.

In an effort to understand crises, the crisis management process has been modeled, to aid in their systematic and holistic analysis. Themes within crisis management literature show types of crises with certain characteristics, and reveal relationships between crisis and organizational variables. Additionally, crises are dynamic, can result in a chain reaction or ripple effect, have stages or phases, and can be caused by different factors.

Through case study analysis and anecdotal evidence, several keys to successful crisis management have been identified. A key lies in being proactive and having a crisis management plan. A cardinal rule for crisis management is that no crisis occurs exactly as predicted. Organizations must plan and be prepared for the unexpected. They must be able to answer "what if" questions. Crises give off warning signs and signal detection is important. Crises cannot be addressed by a checklist, but can be handled by following certain steps as outlined by a framework or model, and successful crisis management requires central management. Commitment in a crisis is good (generates meaning) and bad (blind spots): It's important to ensure the organization is continually solving the correct problem. Organizational culture and an appropriate mindset are important to successful crisis management. This can be done through

organizational learning, which is important to successful crisis management. Organizational denial is a key barrier for organizations to overcome in order to effectively manage crises. Crisis communications are important, specifically to stakeholders on all levels, as stakeholders can have an affect in organizational success in crises. Lastly, the human, or socio-, element within a crisis results in crises having an emotional effect that must be weighed, considered, and appropriately addressed.

Tables 14-18 synthesize the information collected in the literature review. It is a tabular view of the above to identify major similarities between authors that have dictated certain themes among the literature.

Table 14. Commonalities

Theme	Statement	Citations	Authors	Understanding crisis management	Modeling the crisis management process	The crisis of management	Crisis management in practice
No structure with crisis management literature for taxonomy	Crisis management is a relatively new field of study and is still in its infancy.	Pauchant & Douville, 1992, p. 58	Pauchant & Douville				
		Pearson & Clair, 1998, p. 73	Pearson & Clair				
		Smith & Elliott, 2006, p. 70, 72, 75, 84-5, 160, 175, 369, 371	Mitroff, Pauchant, Shrivastava				
			Miller				
			Smith				
			Roberts				
			Elliott and Smith	x	x		x
	Crisis/Crisis management extends across multiple disciplines and efforts across all have not been synethesized	Hermann, 1963, p. 62	Hermann				
		Lalonde, 2007, p. 95, 96	Lalonde				
		Pauchant & Douville, 1992, p. 59	Pauchant & Douville				
		Pearson & Clair, 1998, p. 59, 61, 67, 73	Pearson & Clair				
		Smith & Elliott, 2006, p. 70, 101-2, 149, 160, 302, 371	Mitroff, Pauchant, Shrivastava				
			Smith				
			Roberts				
			Elliott and Smith	x	x	x	x

Table 15. Commonalities (continued)

Theme	Statement	Citations	Authors	Understanding crisis management	Modeling the crisis management process	The crisis of management	Crisis management in practice
Defining crisis and its management	Crises are complex, with tightly coupled events	Lalonde, 2007, p. 95	Lalonde				
		Mitroff, 2001, p. 23-4	Mitroff				
		Smith & Elliott, 2006, p. 2, 3, 6, 15, 21, 115, 136, 163, 249, 274-5, 301, 321, 386	Smith				
			Perrow				
			Turner				
			Pauchant and Mitroff				
			Roberts				
			Reason				
			Weick				
			Smart and Vertinsky				
			Elliott	x	x	x	x
	Crises are strategic in nature	Fink, 2002, p. 141	Fink				
		Smith & Elliott, 2006, p. 16, 21, 26, 29, 62-3, 77-81, 100, 103, 152-3, 163, 222, 249, 274-5, 371, 373, 394	Perrow				
			Shrivastava, Mitroff, Miller, Miglani				
			Mitroff, Pauchant, Shrivastava				
			Miller				
			Smith				
			Roberts				
			Barton				
			Reason				
			Weick				
			Elliott and Smith				
			Elliott				
		Weick and Sutcliffe, 2001, p. 8-9	Weick and Sutcliffe	x	x	x	x
	Organizations hold to a belief that they are vulnerable to crises, as crises are inevitable, and human-caused crises have increased in frequency	Fink, 2002, p. 67	Fink				
		Hermann, 1963, p. 63	Hermann				
		Lalonde, 2007, p. 95	Lalonde				
		Mitroff, 2001, p. 3, 9, 22-3	Mitroff				
		Smith & Elliott, 2006, p. 15, 21, 48, 137-8, 147-8, 246, 321	Perrow				
			Mitroff, Pauchant, Shrivastava				
			Pauchant and Mitroff				
			Smith				
			Reason				
			Smart and Vertinsky	x	x	x	x
	Various fields view "crisis" differently	Hermann, 1963, p. 63	Hermann				
		Pauchant & Douville, 1992, p. 44-	Pauchant & Douville				
		Pearson & Clair, 1998, p. 62-5	Pearson & Clair				
		Smith and Elliot, 2006, p. 101-2, 148-9, 302	Smith	x	x		
	Each field has established a "working definition" of (industrial, organizational) crisis and/or (effective) crisis management: As a whole crisis is poorly defined	Fink, 2002, p. 15	Fink				
		Hermann, 1963, p. 64	Hermann				
		Mitroff, 2001, 6, p. 34-5	Mitroff				
		Lalonde, 2007, p. 96	Lalonde				
		Pauchant & Douville, 1992, p. 45-	Pauchant & Douville				
		Pearson & Clair, 1998, p. 66	Pearson & Clair				
		Roux-Dufort, 2007, p. 107	Roux-Dufort				
		Smith & Elliott, 2006, p. 7, 31, 48, 76, 86, 148-9	Smith				
			Shrivastava, Mitroff, Miller, Miglani				
			Mitroff, Pauchant, Shrivastava				
			Miller				
			Boin	x	x		
	The terms crisis, disaster, risk, etc are not interchangeable	Lalonde, 2007, p. 96	Lalonde				
		Mitroff, 2001, p. 6	Mitroff				
		Pauchant & Douville, 1992, p. 44	Pauchant & Douville				
		Smith & Elliott, 2006, p. 1, 85	Smith				
			Boin	x			

Table 16. Commonalities (continued)

Theme	Statement	Citations	Authors	Understanding crisis management	Modeling the crisis management process	The crisis of management	Crisis management in practice
Modeling the crisis management process	There are themes within crisis management literature and types of crises with certain characteristics	Mitroff, 2001, p. 34-5	Mitroff				
		Pauchant & Douville, 1992, p. 49	Pauchant & Douville				
		Smith & Elliott, 2006, p. 31-6, 191	Shrivastava, Mitroff, Miller, Miglani				
			Turner and Toft				
		Weick and Sutcliffe, 2001, p. 22-3	Weick and Sutcliffe	x	x		
	There is a relationship between crisis and organizational variables	Hermann, 1963, p. 66	Hermann				
		Mitroff, 2001, p. 42-7	Mitroff				
		Pearson & Clair, 1998, p. 61-2	Pearson & Clair				
	Crises should be studied systematically, holistically.	Hermann, 1963, p. 63	Hermann				
		Mitroff, 2001, p. 140, 153	Mitroff				
		Smith & Elliott, 2006, p. 67, 99, 176, 180-90, 301-2	Mitroff, Pauchant, Shrivastava				
			Smith				
			Roberts				
			Fortune and Peters	x	x	x	
	Crisis are dynamic and can result in a chain reaction or ripple effect	Fink, 2002, p. 34, 80, 81	Fink				
		Mitroff, 2001, p. 38	Mitroff				
		Smith & Elliott, 2006, p. 21, 110, 174	Perrow				
			Smith				
			Roberts	x	x		
	A crisis has stages or phases.	Fink, 2002, p. 10-25, 73	Fink				
		Smith & Elliott, 2006, p. 2, 6, 15, 21, 99, 149, 151, 154-6, 384-9	Smith				
			Perrow				
			Elliott and Smith	x	x		x
	Crises cannot be addressed by a checklist, but can be handled by following certain steps as outlined by a framework or model	Fink, 2002, p. 34-36, 73	Fink				
		Lalonde, 2007, p. 97	Lalonde				
		Mitroff, 2001, p. 140, 143	Mitoff				
		Pearson & Clair, 1998, p. 66	Pearson & Clair				
		Smith and Elliot, 2006, p. 101, 110, 115, 149-55, 193, 198-203, 406-9	Smith				
			Turner				
			Turner and Toft				
			Elliott		x	x	
Causes of Crisis	A crisis can be caused by different factors	Mitroff, 2001, p. 24, 50, 55	Mitroff				
		Pearson & Clair, 1998, p. 62-5	Pearson & Clair				
		Roux-Dufort, 2007, p. 108	Roux-Dufort				
		Smith & Elliott, 2006, p. 31	Shrivastava, Mitroff, Miller, Miglani	x			
	Crises give off warning signs and signal detection is important.	Fink, 2002, p. 180	Fink				
		Mitroff, 2001, p. 40, 102, 107-112	Mitroff				
		Roux-Dufort, 2007, p. 108-10	Roux-Dufort				
		Smith & Elliott, 2006, p. 3, 70	Smith				
			Mitroff, Pauchant, Shrivastava	x			

Table 17. Commonalities (continued)

Theme	Statement	Citations	Authors	Understanding crisis management	Modeling the crisis management process	The crisis of management	Crisis management in practice
Keys to successful crisis management	A key to successful crisis management is in being proactive and having a crisis management plan	Fink, 2002, p. 34-36, 47-8, 54, 55, 67, 70, 109, 114, 180-1	Fink				
		Mitroff, 2001, p. 8-9, 40, 42-8	Mitroff				
		Pauchant & Douville, 1992, p. 58-9	Pauchant & Douville				
		Smith & Elliott, 2006, p. 69, 143, 153-4, 249	Mitroff, Pauchant, Shrivastava				
			Smith				
			Reason	x	x	x	
	A cardinal rule for crisis management is that no crisis occurs exactly as predicted: Organizations must plan and be prepared for the unexpected, and be able to answer "what if" questions.	Fink, 2002, p. 36, 55, 57-8	Fink				
		Hermann, 1963, p. 64	Hermann				
		Mitroff, 2001, p. 14	Mitroff				
		Murray, 2000, p. 634	Murray				
		Smith & Elliott, 2006, p. 15, 21, 26, 70	Perrow				
			Mitroff, Pauchant, Shrivastava				
		Weick and Sutcliffe, 2001, p. 3, 8-9, 49-50, 83, 159	Weick and Sutcliffe	x			
	Successful crisis management requires central management.	Mitroff, 2001, p. 121	Mitoff				
		Roux-Dufort, 2007, p. 112	Roux-Dufort				
		Smith & Elliott, 2006, p. 18-9, 103	Perrow				
			Smith	x	x		
	Commitment in a crisis is good (generates meaning) and bad (blind spots): It's important to ensure the organization is continually solving the correct problem.	Mitroff, 2001, p. 124	Mitoff				
		Roux-Dufort, 2007, p. 111	Roux-Dufort				
		Smith & Elliott, 2006, p. 125, 193-4, 210	Turner				
			Turner and Toft				
			Weick		x		
	Organizational culture and an appropriate mindset is important to successful crisis management.	Fink, 2002, p. 83, 134	Fink				
		Mitroff, 2001, p. xii, 42-3	Mitoff				
		Smith & Elliott, 2006, p. 103, 110, 115, 148, 150, 152, 156, 220-3, 271, 343, 348, 360, 372-3, 384-9, 399	Smith				
			Turner				
			Barton				
			Weick				
			Weick and Roberts				
			Elliott				
		Weick and Sutcliffe, 2001, p. 3, 10, 42, 46, 49-50, 114, 115, 119, 147	Weick and Sutcliffe		x	x	x
	Organizational learning is important to successful crisis management	Fink, 2002, p. 151, 153-218	Fink				
		Mitroff, 2001, p. 87-8, 90, 94, 98, 104, 115, 120-1, 124, 126, 127, 153	Mitoff				
		Smith & Elliott, 2006, p. 15, 70, 103, 389	Perrow				
			Mitroff, Pauchant, Shrivastava				
			Smith				
			Smith & Elliott	x	x		x
	Organizational denial is a key barrier for organizations to overcome in order to effectively manage crises.	Mitroff, 2001, p. 8-9, 47-8, 90	Mitoff				
		Smith & Elliott, 2006, p. 67, 100, 140, 302	Mitroff, Pauchant, Shrivastava				
			Smith				
			Pauchant and Mitroff	x	x	x	

Table 18: Commonalities (continued)

Theme	Statement	Citations	Authors	Understanding crisis management	Modeling the crisis management process	The crisis of management	Crisis management in practice
Keys to successful crisis management	Crisis communications are important	Fink, 2002, p. 88, 89, 92, 93, 99-100, 105, 180	Fink				
		Lalonde, 2007, p. 95	Lalonde				
		Mitroff, 2001, p. 61, 62, 68	Mitroff				
		Smith & Elliott, 2006, p. 120, 151-2, 156, 192, 379-80, 384-9, 404-6	Turner				
			Smith				
			Turner and Toft				
			Elliott and Smith				
			Elliott		x		x
	Stakeholders can have an affect in organizational success in crises.	Fink, 2002, p. 125	Fink				
		Mitroff, 2001, p. 50, 124	Mitroff				
		Pearson & Clair, 1998, p. 66	Pearson & Clair				
		Smith & Elliott, 2006, p. 29, 31-6, 75, 107, 139-41, 143, 398-9, 404-6	Shrivastava, Mitroff, Miller, Miglani				
			Miller				
			Smith				
			Pauchant and Mitroff				
			Elliott				
		Weick & Suttcliffe, 2001, p. 1-224	Weick and Sutcliffe	x	x		x
	The human (socio-) element with a crisis results in crises having an emotional effect that must be weighed, considered, and appropriately addressed.	Fink, 2002, p. 197	Fink				
		Lalonde, 2007, p. 97	Lalonde				
		Mitroff, 2001, p. 88, 98, 120-1, 127	Mitroff				
		Pearson & Clair, 1998, p. 66	Pearson & Clair				
		Smith & Elliott, 2006, p. 58, 140-3, 192, 196, 209, 387	Mitroff, Pauchant, Shrivastava				
			Pauchant and Mitroff				
			Weick				
			Elliott and Smith	x	x		x

The commonalities depicted in Tables 14-18 further highlight the gap in the literature by focusing on the anecdotal nature of crisis management literature. There were only 10 seminal authors that studied the causes of crises, leading to only two major statements: (1) a crisis can be caused by different factors and (2) crises give off warning signs and signal detection is important. In comparison, 22 seminal authors offered keys to successful management, ranging from having a plan to the importance of effective communication to stakeholders in crises. Furthermore, by comparing the statement (or theme identified through research), the citation, and the themes identified by Smith and Elliott (2006), one can see that the existing literature is not easy to follow; it does not have an easily auditable taxonomy. This provided further support for

the research goals of providing a mapping tool to display seminal authors with respect to their specific field of study within crisis management and for an all accessible, user-friendly interface available to researchers and individuals interested in crisis management literature.

The purpose of this chapter was twofold: to gain an appreciation for the extent of crisis management literature and to synthesize the works of seminal authors within the crisis management field. The strong foundation of crisis management literature established in the literature review was a building block and basis for a cocitation analysis of crisis management literature and to fully answer the proposed research questions.

III. Methodology

The purpose of this chapter is to explain the methodology chosen in order to address the proposed research goals. In order to do this, a background will be provided on bibliometrics, specifically author cocitation analysis (ACA). The research goals for the thesis will be presented and a phased methodological approach is further explained that addresses each goal. Finally, the chapter concludes with a synopsis of the potential limiting factors.

Bibliometrics

Bibliometrics is typically used in library sciences. Bayer et al. (1990) defined bibliometrics to be "all efforts to quantify the communication processes embodied in written and published works" (p. 444). One subtype of bibliometrics is citation analysis. The field of citation analysis began with the inception of the *Science Citation Index* in 1961 (MacRoberts & MacRoberts, 1989). Citation analysis rests on the theory that "bibliographies are lists of influences that authors cite in order to give credit where credit is due; that is, when an author uses information from another's work, he will cite that work" (MacRoberts & MacRoberts, 1989, p. 342). Using this theory, one performing citation analysis assumes that the works cited by an author are in turn a valid indicator of the influence of those works on their own (MacRoberts & MacRoberts, 1989). Influence then can be defined as an extension of that: "When an author makes use of another's work either directly or through secondary sources, and this is evident in the text, he has been influenced by that work" (MacRoberts & MacRoberts, 1989, p. 342). In citation analysis, "one analyzes the patterns and frequencies of citations given as well as received" (Rousseau, 2004, p. 513).

In addition to citation analysis, there is also cocitation analysis. In 1973 at the Institute for Scientific Information, Henry Small and colleagues developed the cocitation analysis (Bayer

et al., 1990). In 1979, author cocitation analysis (ACA) was used at Drexel University (White, 2003, p. 1250). In 1981 White (2003) and White and Griffith (1981) developed a newer author cocitation analysis tool (Bayer et al., 1990). While the intent of ACA is not to replace a solid understanding of the field of literature (Bayer et al., 1990), it has, according to White (2003) and McCain (1990) grown in use and popularity since and is considered "the principal bibliometric technique used to discern the intellectual structure of science and the connectedness of specialty areas" (Bayer et al., 1990, p. 444). ACA has been utilized across many different fields: sociology, management information systems, information sciences, macroeconomics, production and operations management, operations research, management sciences, and industrial engineering to name a few (Bayer et al., 1990; Culnan, 1986; White & Griffith, 1981; McCain, 1986; Pilkington, et al., 1999).

One area of concern with cocitation in the past has been in its definition: "the cocitationist's use of oeuvres, or 'body of writings by the same author or first author in collaborations'. Expressed otherwise, it is stated that 'two authors are cocited when at least one document in each other's oeuvre occurs in the same reference list'" (Rousseau, 2004, p. 514). This definition can still be troublesome to understand. Bayer et al. (1990) explained that the underlying foundation for cocitation analysis lies in the number of times a pair of documents is cited together: The higher the count, the greater the chances are that the documents are related in content (Bayer et al., 1990; White & Griffith, 1981; Pilkington et al., 1999).

> the frequency with which *any work by an author* is linked to *any work by another author* in a third and later work….the more frequently two scientists are cited together, and the more similar their patters of cocitations with others, the closer the relationship between them (Bayer et al., 1990, p. 444)

McCain (1990) and White and Griffith (1981) state that it is important to understand that "cocitation analysis assumes that the more often authors are cited together; the closer the relationship is between them" (White & Griffith, 1981, p. 163). Further the term "author" does not refer to the actual author as the "oeuvre," or body of writing done by that author. This means that the authors are used as "surrogates" for the ideas that are represented within the article (White & Griffith, 1981; Culnan, 1986; McCain, 1990). By graphing documents, and the inverse of their cocitation levels as points, one can create maps to depict relationships at various levels (White & Griffith, 1981; McCain, 1984; McCain, 1990).

Rousseau (2004, p. 513-5) attempted to address the confusing definition of cocitedness by classifying author cocitation forms according to the four types of author cocitation:

(1) Pure first author cocitation, or Author Cocitation Analysis (ACA),

(2) Pure author cocitation,

(3) General author cocitation, and

(4) Special coauthor/cocitation

Each of the four types of author cocitation proves to be the best fit for bibliometric studies under different circumstances, as shown in Table 10. Once the desired cocitation form is determined, the author data is inputted into an Institute of Scientific Information (ISI) database such the Science Citation Index (SCI), Social Sciences Citation Index (SSCI), etc. in order to determine the number of cocitations (Rousseau, 2004; McCain, 1984; Pilkington, et al., 1999).

Table 19. Comparison of cocitation form uses (Rousseau, 2004, p. 517)

CO-CITATION FORM	USE
(1) Pure first-author - Given one publication with author A and one publication with author B	- Provides themed picture of data
(2) Pure author co-citation - Given one publication with author A as co-author and one publication with author B as co-author co-occur in the reference list of the article	- Shows individual author's contribution in instances of high author co-citation
(3) General author co-citation - Given one publication with author A as co-author and one publication with author B as co-author co-occur in the reference list, including articles co-authored by A and B	- Shows individual author's contribution in instances of high author co-citation
(4) Co-author/co-citation - Same as (3) but with special count for a co-authored (A & B) paper which recognizes intellectual link between authors based on collaborative work.	- Provides themed picture of data - Can be used in the ACA matrix

McCain outlined the ACA procedures in 1990, breaking down each step thoroughly. She showed six overall steps, as represented in Figure 2.

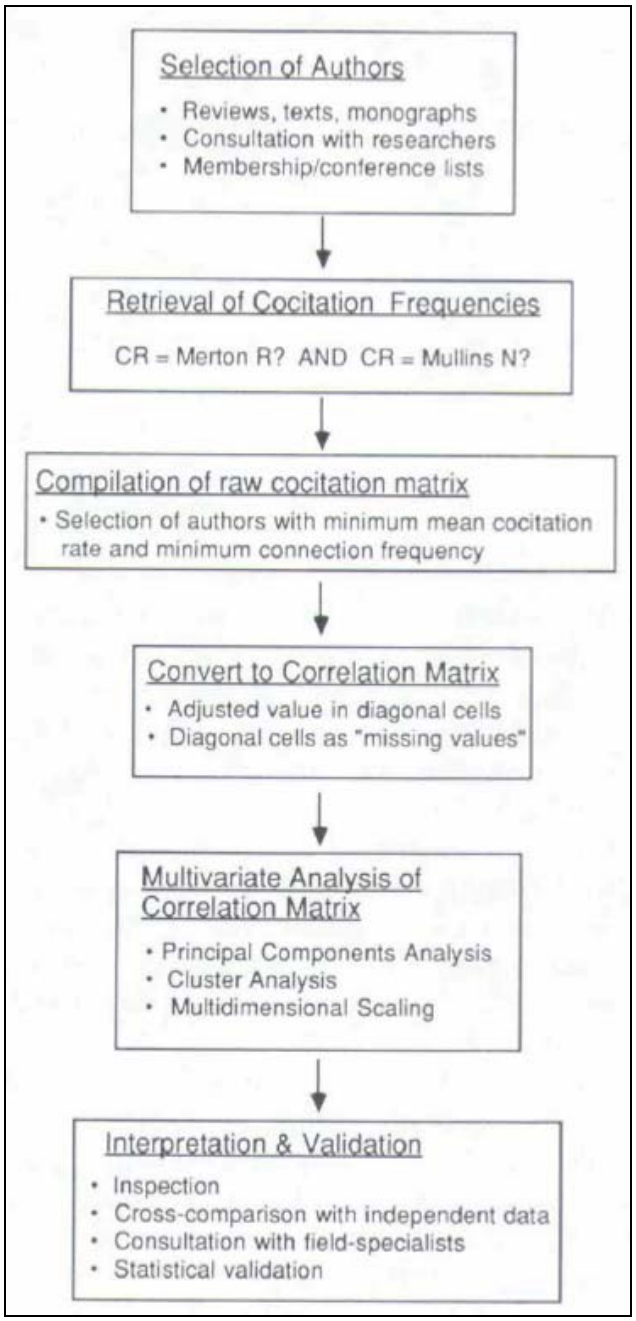


Figure 2. McCain's ACA procedures (McCain, 1990, p. 434)

Phased Methodology

The most effective and easily auditable method to address the research goals was through a phased methodology that follows the steps outlined by McCain (1990). Phase 1 addressed the first two research goals: determine seminal authors within crisis management and influential

manuscripts, journals, books, and book series. Phase 2 identified key areas of crisis management literature, classified key fields of study within crisis management literature, and provided a mapping tool to display seminal authors with respect to their specific field of study within crisis management. Phase 3 provided an all accessible, user-friendly interface available to researchers and individuals interested in crisis management literature. The chart in Figure 3 outlines the steps that were followed for the purposes of this thesis.

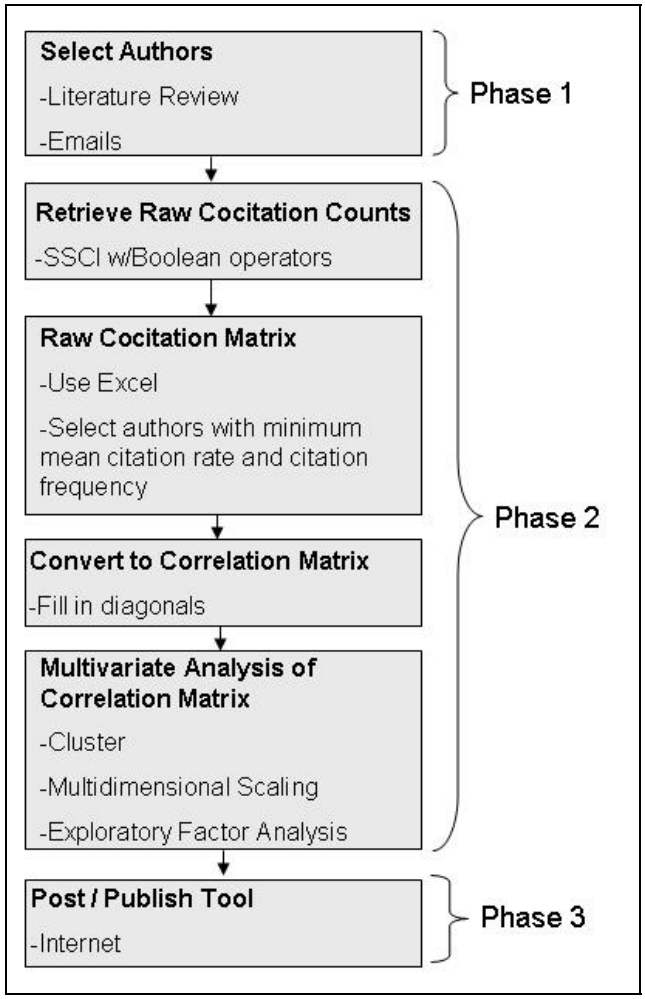


Figure 3. Methodology Flow Chart

Phase 1

Phase 1 addressed the first two research goals. This was accomplished in part during the literature review. The literature review provided an initial review of those authors and works shown as seminal. However, it was important to study the largest, relative sample size (Culnan, 1986; McCain, 1990). In order to identify and select a representative sample size, contact was made within the field. An electronic letter was sent to those seminal authors and influential journals' editors identified in the literature review. The letter asked for assistance in identifying the authors and works they felt are most influential. The information provided was compiled to provide a peer evaluated and objective list in accordance with Bayer et al. (1990). In order to avoid personal judgment, as recommended by White and Griffith (1981) and McCain (1990), all author names identified through contact with the field and those identified in the literature review were used.

Phase 2

Phase 2 identified key areas of crisis management literature, classified key fields of study within crisis management literature, and provided a mapping tool to display seminal authors with respect to their specific field of study within crisis management. As stated by McCain (1990) ACA was the most effective methodology given the nature of creating a literature map of crisis management. The Social Sciences Citation Index (SSCI) was used because it best suited the multidisciplinary nature of crisis management literature. The SSCI is a compilation of approximately 7,000 journals across 50 disciplines (Thomson Scientific, 2007; McCain, 1990). In order to address the research goals, the following steps were taken.

Cocitation Retrieval Procedures

SSCI was used to obtain author citation and cocitation counts. The authors identified in Phase 1 were entered into the SSCI using Boolean statements. First, each individual author was searched to determine the citation count. As stated by Culnan (1986) and echoed by McCain (1984, 1990) "authors whose works are generally seen to be repeatedly cited together in subsequent publications tend to cluster together when mapped" (p. 158). For this reason, authors with 30 or less citation counts were removed from the study because clustering has been shown to not happen at that level (Culnan, 1986).

Second, in accordance with Bayer et al. (1990) and Culnan (1986) a matrix to annotate the author cocitation counts was populated in Excel, such that there will be $n(n\text{-}1)/2$ possible pairs of co-citations, i.e. each of the authors was paired with one another. Each author received a binary count where, as outlined by Rousseau (2004) a "1" acknowledged the cocitedness of two authors in a given reference list and a "0" did not. Research has shown the most widely used determination for computing the diagonals for the matrix, those that cross each author with themselves, as taking the sum of the three highest intersections for that author and dividing by two (Culnan, 1986; White & Griffith, 1981; White, 2003; Pilkington et al., 1999; McCain, 1990). This is the preferred method as opposed to leaving the field blank, as it maintains the relatively importance of the author within the field (Culnan, 1986; White & Griffith, 1981; White, 2003). McCain provided a graphical representation of these steps, as shown in Figure 4.

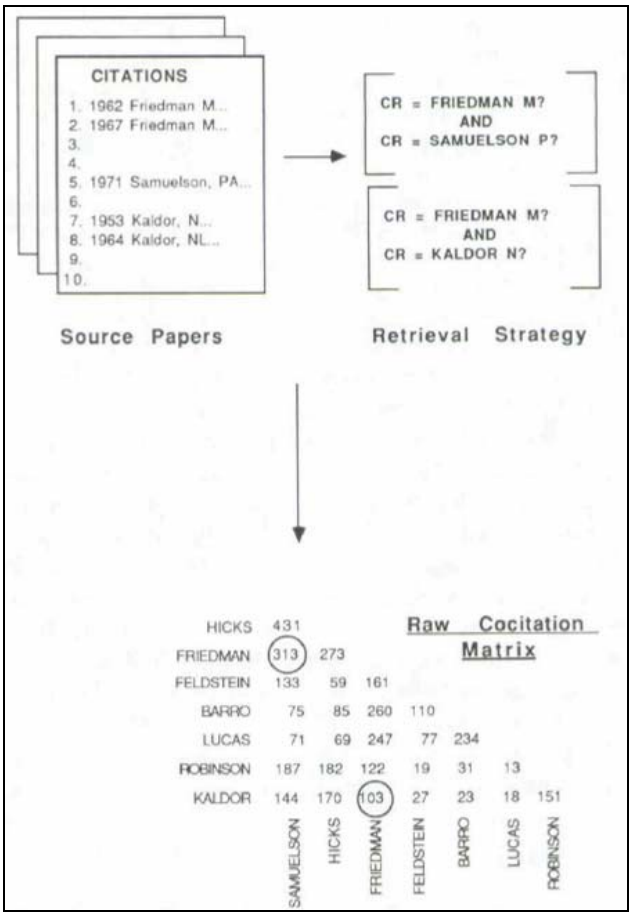


Figure 4. Cocitation data retrieval (McCain, 1990, 435)

Analysis

This section outlines the steps taken to adjust and analyze the raw author cocitation counts in accordance with ACA procedures.

Conversion to Correlation Matrix

In order to be able to map and cluster the cocited authors, the ACA matrix was adjusted in accordance with McCain (1990) in order to highlight the cocitation frequencies in rank order. This results in what Bayer et al. (1990) refer to as a dissimilarity matrix. In this matrix, "each row represent[s] the relative similarity of each scholar with all other scholars and where a lower rank represent[s] greater dissimilarity between pairs of scholars" (Bayer et al., 1990, p. 446).

The matrix was then converted into a correlation matrix: McCain shows how the raw cocitation counts are converted to a correlation matrix in Figure 5.

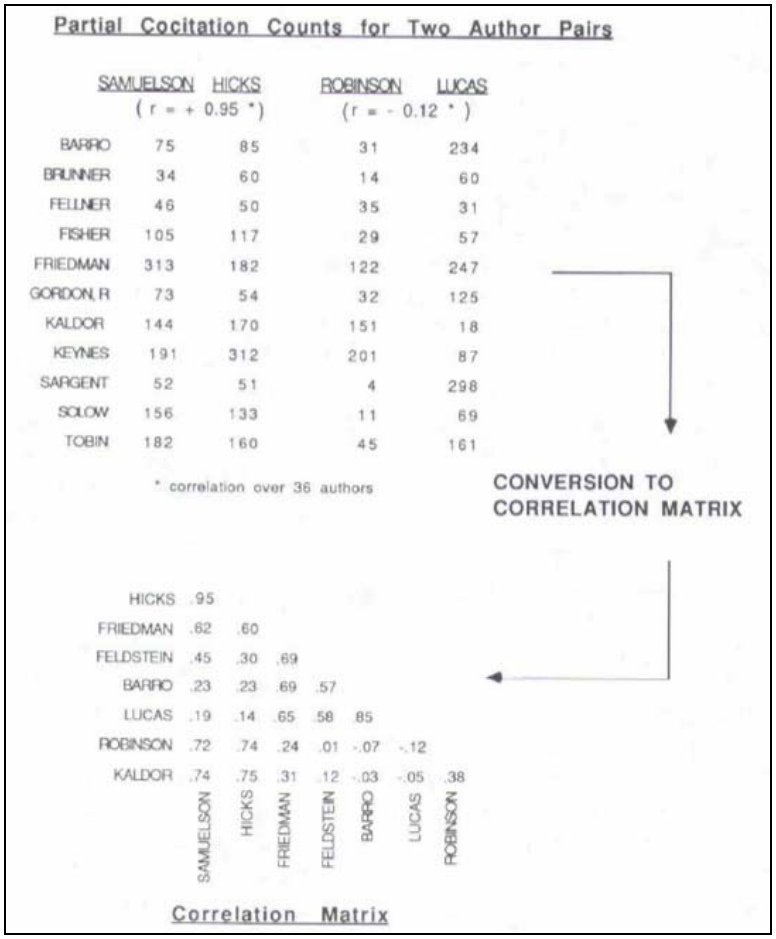


Figure 5: Cocitation counts converted to correlation matrix (McCain, 1990, p. 436)

Correlation, or Pearson's Product Moment Correlation, *r*, is a measurement of the association between two variables. Its values range from -1.0 to 1.0, where the negative or positive provides the direction of correlation and the absolute value of *r* shows the strength of the correlation: The higher the value the more correlated the two factors are. The correlation was calculate for each of the cocitated author counts and placed into a matrix as shown in Figure 5. This correlation matrix shows the inter-author proximities; these similarities are one dimensional (McCain, 1990). In order to produce a more detailed understanding and breakdown of the data,

researchers can show inter-author relationships through cluster analysis, multidimensional scaling, and factor analysis (McCain, 1990). It is important to convert the data, these cocitation counts, into useable knowledge. Culnan (1986) outlined the importance of having a mapping tool to depict the clustering within literature.

> Within these networks, one researcher's concepts and findings are soon picked up by another to be extended, tested and refined, and in this way each person's work builds on that of another….Researchers can benefit by understanding this process and its outcomes because it reveals the vitality and the evolution of through in a discipline and because it gives a sense of its future (p. 156)

Multivariate Analysis of Correlation Matrix

There are 150 different methods of cluster analysis. The two most popular techniques are hierarchical agglomerative (bottom-up building) and iterative portioning (top-down splitting) (McCain, 1990). Cluster analysis is a method of grouping the cocited authors in order to show more depth to the field; it provides the "intellectual organization" (McCain, 1990). ACA primarily uses agglomerative clustering (McCain, 1990). In order to cluster the authors, the correlation matrix was used because it showed the similarities between the authors (McCain, 1990). In agglomerative clustering, the researcher pairs authors and compares them to one another, gradually revealing clusters that best represent the given information and provide a better picture of the data (McCain, 1990). Additionally, software programs, such as SPSS-X can be used to determine appropriate clustering (McCain, 1990). McCain (1990) provided an illustration of cluster analysis as shown in Figure 6.

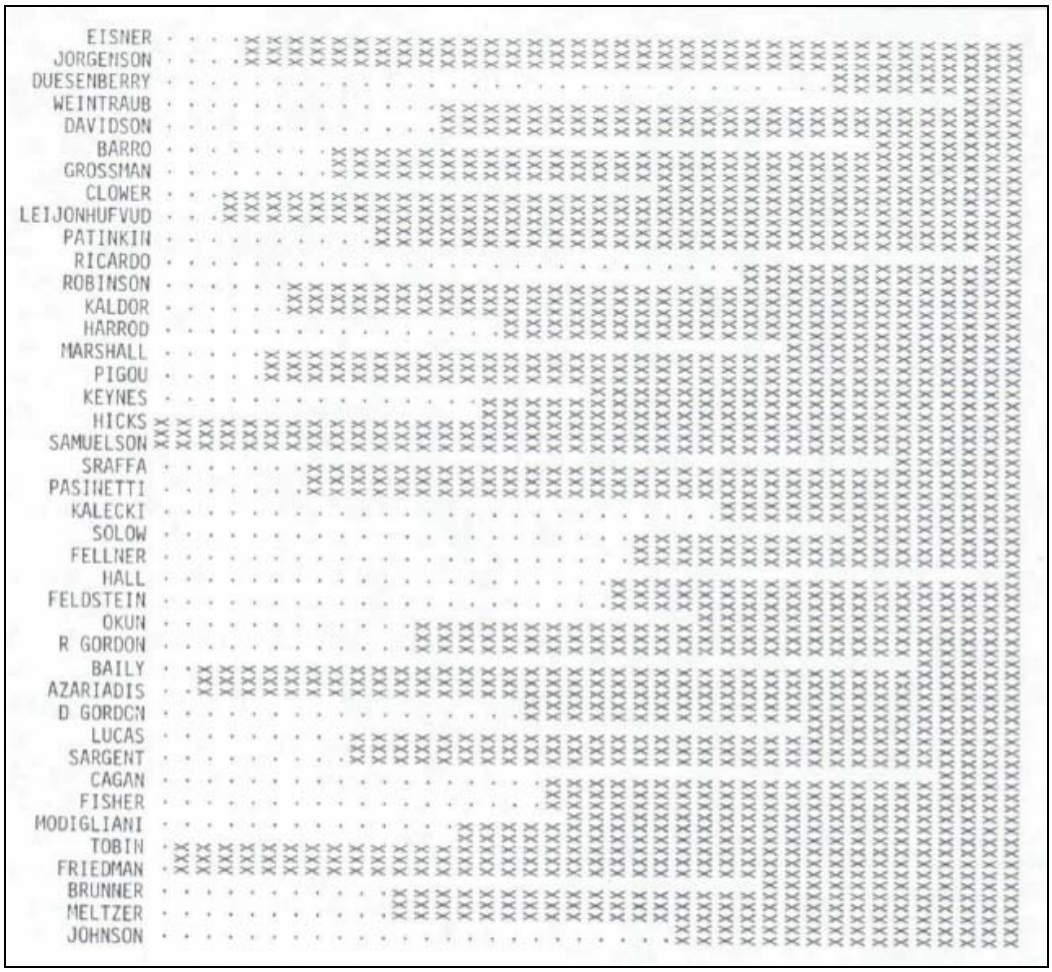


Figure 6: Example of clustered data (McCain, 1990, p. 438)

Multidimensional scaling (MDS) is used to "provide an information-rich display of the cocitation linkages and to identify the salient dimensions underlying their placement….and to capture as much of the original data as possible in only two or three dimensions" (McCain, 1990, 437, 438). Pearson's *r* from the correlation matrix was put into SPSS to show clustering among relatively like groups of authors by graphing the highly cocited authors as points in space (White & Griffith, 1981; McCain, 1984; McCain, 1990). The distance between the authors as they are mapped is as a stress measure, or R Square (McCain, 1990). McCain provides the diagram shown in Figure 7 as an example MDS output. In the below diagram, the horizontal axis

represents the "subject dimension" and the vertical axis represents the "style dimension" (McCain, 1990, p. 439).

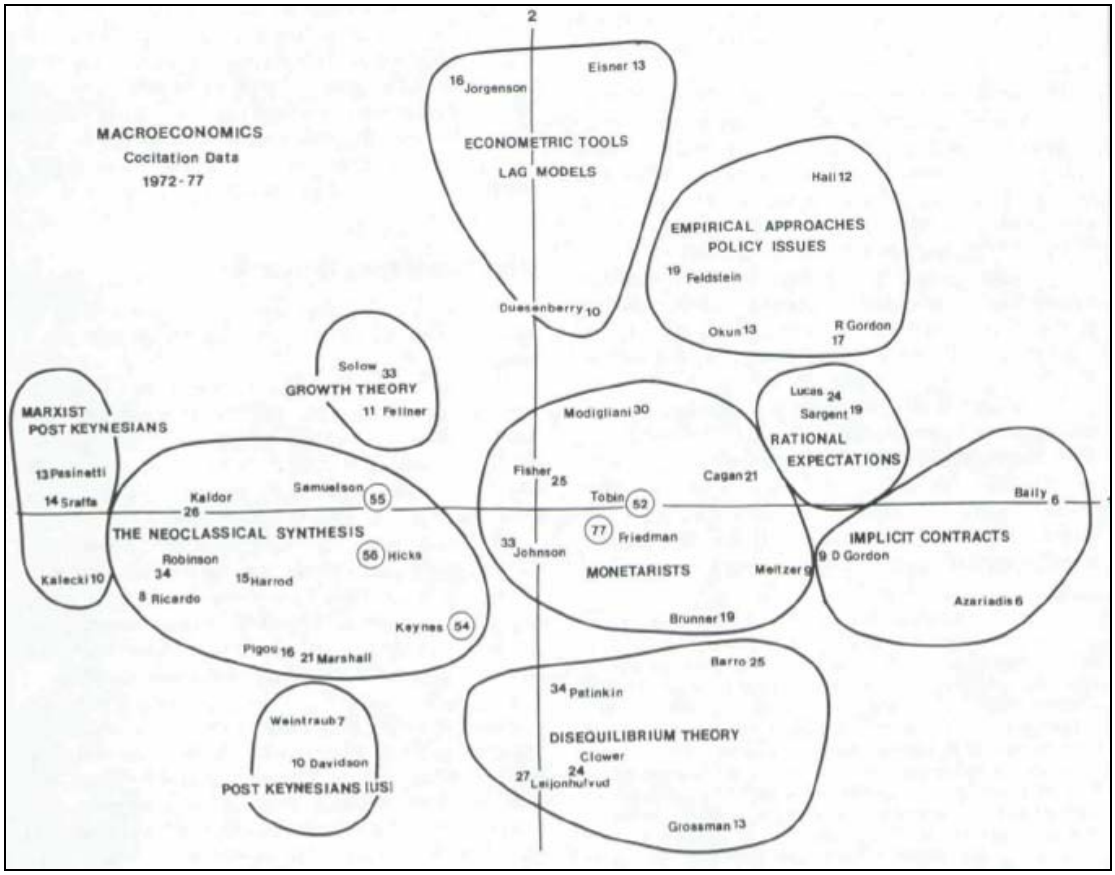


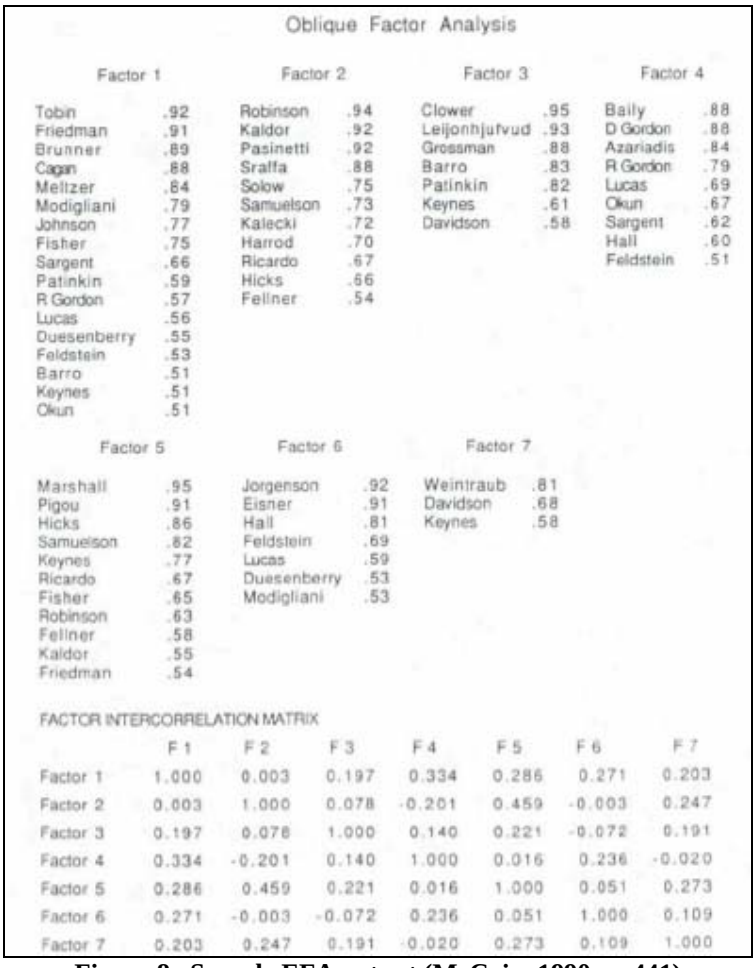
Figure 7: Sample MDS output (McCain, 1990, p. 439)

A form of principal components analysis, exploratory factor analysis (EFA) can be used to complement cluster analysis and MDS by aligning the data (McCain, 1990). In ACA each author is loaded onto, or contributes to, certain factors (McCain, 1990). EFA serves as an organizational tool to align data along those factors in order to make the data more manageable (Conway & Huffcutt, 2003; McCain, 1990) and is most often used for preliminary evaluation of new or ad hoc measures (Conway & Huffcutt, 2003). In order to accomplish this, the number of and most relevant factors, in the data must be identified (Conway & Huffcutt, 2003). This was

accomplished through a combination of methods; orthogonal and oblique rotations are used to identify uncorrelated and correlated factors respectively (Conway & Huffcutt, 2003).

White and Griffith (1981) recommend also using orthogonal factor analysis with rotation varimax solution in SPSS. Culnan (1986) also recommends varimax rotation in order to factor analyze the raw cocitation counts. A Scree test reveals the number of factors (Culnan, 1986). In order to determine the nature of each of these factors, an additional cocitation count is done. Those authors that did not load on to any of the identified factors can be removed from study (Culnan, 1986). The factors themselves are then named by the researcher based on general assessment (Culnan, 1986). This can be accomplished by doing a word frequency analysis on the titles and/or abstracts of each of the cocited papers for each factor (Culnan, 1986).

The matrix, or author profile, obtained above, can also be used in order to separate the underlying structure of the literature. This is done by using SPSS to determine factors according to Pearson's correlation coefficient, *r* (Bayer et al., 1990; Culnan, 1986; White & Griffith, 1981; White, 2003; McCain, 1984; McCain, 1990). Pearson's *r*, a representation the relative author citedness, is used in factor analysis so scale effects are not a concern. In essence the data becomes normalized by nature of the method in which it was collected (White & Griffith, 1981; White, 2003). The literature discusses the value of Pearson's *r*, with some studies suggesting that those authors with an *r* less than .4 or .3 be discarded (White & Griffith, 1981; Pilkington et al., 1999). McCain (1990) further explains that those cocited authors with an absolute value *r* of .7 help interpret the factor, where those cocited authors with an absolute value *r* of .5 or .4 are reported. For this thesis, those authors with a cocitation correlation less than .5 will be disregarded; .5 was selected in order to help reduce the number of authors that are assigned to more than one factor. McCain provides a sample EFA output as shown in Figure 8.



Oblique Factor Analysis

Factor 1		Factor 2		Factor 3		Factor 4	
Tobin	.92	Robinson	.94	Clower	.95	Baily	.88
Friedman	.91	Kaldor	.92	Leijonhjufvud	.93	D Gordon	.88
Brunner	.89	Pasinetti	.92	Grossman	.88	Azariadis	.84
Cagan	.88	Sraffa	.88	Barro	.83	R Gordon	.79
Meltzer	.84	Solow	.75	Patinkin	.82	Lucas	.69
Modigliani	.79	Samuelson	.73	Keynes	.61	Okun	.67
Johnson	.77	Kalecki	.72	Davidson	.58	Sargent	.62
Fisher	.75	Harrod	.70			Hall	.60
Sargent	.66	Ricardo	.67			Feldstein	.51
Patinkin	.59	Hicks	.66				
R Gordon	.57	Fellner	.54				
Lucas	.56						
Duesenberry	.55						
Feldstein	.53						
Barro	.51						
Keynes	.51						
Okun	.51						

Factor 5		Factor 6		Factor 7	
Marshall	.95	Jorgenson	.92	Weintraub	.81
Pigou	.91	Eisner	.91	Davidson	.68
Hicks	.86	Hall	.81	Keynes	.58
Samuelson	.82	Feldstein	.69		
Keynes	.77	Lucas	.59		
Ricardo	.67	Duesenberry	.53		
Fisher	.65	Modigliani	.53		
Robinson	.63				
Fellner	.58				
Kaldor	.55				
Friedman	.54				

FACTOR INTERCORRELATION MATRIX

	F 1	F 2	F 3	F 4	F 5	F 6	F 7
Factor 1	1.000	0.003	0.197	0.334	0.286	0.271	0.203
Factor 2	0.003	1.000	0.078	-0.201	0.459	-0.003	0.247
Factor 3	0.197	0.078	1.000	0.140	0.221	-0.072	0.191
Factor 4	0.334	-0.201	0.140	1.000	0.016	0.236	-0.020
Factor 5	0.286	0.459	0.221	0.016	1.000	0.051	0.273
Factor 6	0.271	-0.003	-0.072	0.236	0.051	1.000	0.109
Factor 7	0.203	0.247	0.191	-0.020	0.273	0.109	1.000

Figure 8. Sample EFA output (McCain, 1990, p. 441)

Phase 3

Phase 3 provided an all accessible, user-friendly interface available to researchers and individuals interested in crisis management literature. In order to do this, the mapping tool created in Phase 2 will be shared to the larger academic community through conferences and through publication in a peer-reviewed journal.

Limiting Factors

It was important to outline the limitations of the methodology since it is vital that readers understand the process as a whole. Limiting factors are just that; they have the potential to skew

the research data. They also serve as a caution. However, identifying limiting factors also proposes areas for further research.

MacRoberts and MacRoberts' (1989) published a review of problems with citation analysis. They highlighted seven event-data problems of citation analysis.

(1) *Formal influences not cited*. A study of two different cases revealed that only 30-64% of the author's influences are covered due to author oversight or not understanding (p. 343).

(2) *Biased citing*. Facts used are only correctly cited 39% of the time (p. 343).

(3) *Informal influences not cited*. Citation analysis is a product of the index used, and the index uses formal level scientific communication through publications. Because of this "measures of 'influence', 'impact', or 'communication' are limited to citable items, such as papers and books" and the tacit knowledge within fields is not captured (p. 344). McCain (1984) recommended repeating the work at a later date in order to address this concern. Due to the nature of existing crisis management literature this could be a strong limitation of this study.

(4) S*elf-citing*. 10-30% of all citations are self-citations (p. 344).

(5) *Different types of citations*. Citations are either affirmative or negative and citation counts retrieved from the index do not differentiate between the two. Authors avoid negative citation by either not citing, or by giving both positive and negative credit with in the same work (MacRoberts & MacRoberts, 1989).

(6) *Variations in citation rate*. Within each field, citations varied based on the type of publication, nationality of the author, time period published, and the size and type of specialty (MacRoberts & MacRoberts, 1989).

(7) *Technical limitations*. As aforementioned citation analysis is only as good as the index used. There is an issue with how to assign citation counts to works done by multiple authors. Searches

within SSCI provide the first author's name and citation count is then only given to that singular author, which may not be an accurate representation of work done (MacRoberts & MacRoberts, 1989; Bayer et al., 1990; Culnan, 1986). As a means of addressing this issue, Rousseau (2004) proposes using weighed counting in addition to binary counting, to account for the number of citations in the same document. Also, there are concerns with the index search algorithms and authors' names. Several authors have synonyms where "R. Jones" and "R.A. Jones" could be one in same, or there could be multiple "R. Jones". Likewise, women authors may change names upon marriage (MacRoberts & MacRoberts, 1989; Bayer et al., 1990; White, 2003). Another limitation lies in the bibliography itself, which is the primary source for the citation analysis. Clerical errors such as typos, mistakes, or transcription errors could pose a problem (MacRoberts & MacRoberts, 1989; Culnan, 1986; Pilkington et al., 1999). The final technical concern lies in the coverage of the literature. According to Thomson Scientific the SSCI is current from 1980 on, further, the index covers not all data, but data that is "significant, recognized, influential and mainstream" (MacRoberts & MacRoberts, 1989, p. 346). The coverage of literature within the index depends on the type of literature, field of study, where it was and what was published (MacRoberts & MacRoberts, 1989).

The purpose of this chapter was to explain the selected methodology and how it addresses the proposed research goals. A three phased methodological approach using ACA was shown to effectively address all research questions. The subsequent chapter will present the results for each of the phases outlined in this chapter.

IV. Results

The purpose of this chapter is to explain the results achieved by following the phased methodology outlined in Chapter III. An in depth discussion is provided detailing each step within each phase. The diagram in Figure 9 outlines this methodology.

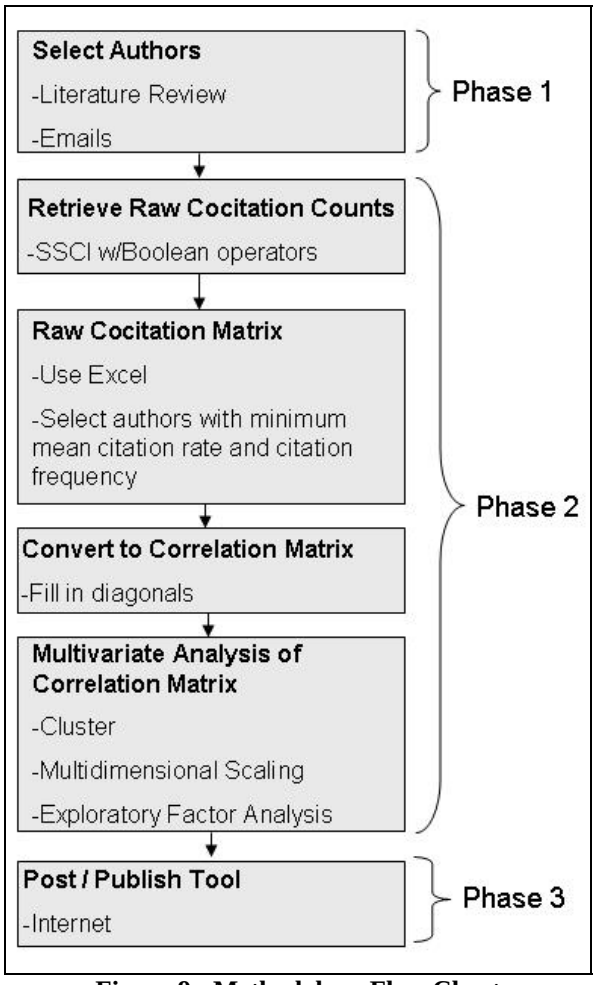


Figure 9: Methodology Flow Chart

Phase 1

The purpose of Phase 1 was to address the first two research goals: determine seminal authors within crisis management and influential manuscripts, journals, books, and book series. In order to identify and select a representative sample size, contact was made within the field. An electronic message was sent to those seminal authors and influential journals' editors

identified in the literature review asking for their assistance in identifying the authors and works they feel are most influential (McCain, 1990). Thirty-six authors were contacted. Of the 36 authors contacted, 6 replied, with 5 positive replies and 1 negative reply. This information can be seen in Appendices A-D. Additionally, 45 editors were contacted. Of the 45 editors contacted, 4 replied and there were 3 positive replies and 1 negative reply. This information can be seen in Appendices E-G.

In accordance with White and Griffith (1981) and McCain (1990), the names of all authors identified in the literature and through contact in the field were used as a basis in the remaining analyses that follow. This was done in order to remove opinion bias, providing a peer evaluated and objective list (Bayer et al., 1990). The chart in Table 20 depicts the resultant *a priori* list.

Table 20. *a priori* author list

***a priori* author list**						
't Hart P	Comfort L	Fortune J	Lagadec P	Pauchant TC	Rosenthal U	Staw BM
Barker JR	Cronin K	Foster P	LaPorte T	Pearson CM	Roux-Dufort C	Sundelius B
Barton L	D'Aveni R	George A	Marcus A	Perrow C	Schwartz HS	Sutcliffe K
Beck U	Davidson W	Gephart R	McKinney EH	Peters G	Sethi P	Sutton R
Boin A	Davis KJ	Hermann CF	Miglani A	Quarantelli H	Shrivastava P	ten Berge D
Bowonder B	Douville R	Hermann M	Miller D	Radell W	Siomkos G	Toft B
Brecher M	Dror Y	Ivine RB	Mitroff II	Rasmussen J	Smart C	Turner BA
Cannell W	Dynes R	Janis I	Murray WB	Reason J	Smith D	Vertinsky I
Catino M	Elliott D	Kovoor-Misra S	Nelkin D	Regester M	Smith DR	Weick KE
Clair JA	Fink S	Kunreuther H	Otway H	Roberts KH	Starbuck WH	Zimmerman R

Phase 2

The purpose of Phase 2 was to identify the key areas within the crisis management literature, to classify key fields of study within crisis management literature, and provide a mapping tool to display seminal authors with respect to their specific field of study within crisis management. In order to accomplish this, ACA was run using the Social Sciences Citation Index (SSCI) in accordance with McCain (1990).

Cocitation Retrieval

The first step of the ACA was to use SSCI to determine a single author citation count. The step is important in order to narrow the pool of authors revealing only the most salient. Each of the authors in the *a priori* list was inputted into SSCI. Table 13 depicts the author single citation counts. Those authors with a single citation count of less then 30, as recommended by Culnan (1986), were removed from further study. t'Hart, Cannell, Catino, Douville, Ivine, Kovoor-Misra, McKinney, Miglani, Quaranteli, Radell, Rgester, Roux-Dufort, Siomkos, and ten Berge all had single citation counts of less than 30. These authors were removed from the study. Their names are listed in Table 21; however, their names and count are highlighted in grey.

Table 21. Single Citation Count

Author	Single Citation Count	Author	Single Citation Count
't Hart P	27	Miller D	8552
Barker JR	407	Mitroff II	1645
Barton L	950	Murray WB	31
Beck U	4,789	Nelkin D	2143
Boin A	36	Otway H	368
Bowonder B	234	Pauchant TC	114
Brecher M	1626	Pearson CM	304
Cannell W	14	Perrow C	5117
Catino M	12	Peters G	1516
Clair JA	67	Quarantelli H	4
Comfort L	109	Radell W	11
Cronin K	242	Rasmussen J	2400
D'Aveni R	972	Reason J	2066
Davidson W	2923	Regester M	13
Davis KJ	154	Roberts KH	1647
Douville R	6	Rosenthal U	105
Dror Y	963	Roux-Dufort C	12
Dynes R	569	Schwartz HS	209
Elliott D	6118	Sethi P	129
Fink S	489	Shrivastava P	905
Fortune J	195	Siomkos G	29
Foster P	1534	Smart C	1844
George A	3965	Smith D	8245
Gephart R	258	Smith DR	897
Hermann CF	520	Starbuck WH	1695
Hermann M	645	Staw BM	3341
Ivine RB	0	Sundelius B	46
Janis I	7241	Sutcliffe K	551
Kovoor-Misra S	12	Sutton R	3445
Kunreuther H	1697	ten Berge D	4
Lagadec P	82	Toft B	126
LaPorte T	447	Turner BA	608
Marcus A	3239	Vertinsky I	727
McKinney EH	14	Weick KE	6612
Miglani A	28	Zimmerman R	3706

Analysis

The next step was to use SSCI to run an ACA on the most salient authors. As outlined in Chapter 3, research has shown the most widely used determination for computing the diagonals for the matrix, those that cross each author with themselves, is taking the sum of the three highest intersections for that author and dividing by two (Culnan, 1986; White & Griffith, 1981;

White, 2003; Pilkington, et al., 1999; McCain, 1990). These as it will maintain the relative importance of the author within the field (Culnan, 1986; White & Griffith, 1981; White, 2003). Tables 22-24 show the results of the co-citation search. The author cocitation matrix is an important piece of the analysis as it serves as the foundation. In order to be able to draw any conclusions as to the relationships depicted from the authors' cocitation counts shown in Tables 22-24, the next step was to run statistical analysis on the data. After inputting the data into SPSS the correlation matrix shown in Tables 25-27 were obtained.

Table 22. Author cocitation matrix with calculated diagonals

	Barker JR	Barton L	Beck U	Boin A	Bowonder B	Brecher M	Clair JA	Comfort L	Cronin K	D'Aveni R	Davidson W	Davis KJ	Dror Y	Dynes R	Elliott D	Fink S	Fortune J	Foster P	George A	Gephart R
Barker JR	**59**	0	9	0	0	0	0	0	0	5	1	2	0	0	0	1	0	1	0	5
Barton L	0	**27**	8	0	4	0	7	0	0	5	0	0	0	0	1	23	2	1	0	3
Beck U	9	8	**160**	1	5	2	0	2	1	1	1	0	3	6	8	1	3	5	4	14
Boin A	0	0	1	**7.5**	0	0	0	3	0	0	0	0	1	1	0	0	0	0	0	1
Bowonder B	0	4	5	0	**28**	0	2	0	0	5	0	0	3	0	1	7	0	0	1	3
Brecher M	0	0	2	0	0	**122**	0	1	0	0	5	0	12	2	2	3	0	1	130	0
Clair JA	0	7	0	0	2	0	**42**	0	0	7	3	0	0	0	2	12	0	0	0	3
Comfort L	0	0	2	3	0	1	0	**21**	0	0	0	0	5	16	0	1	0	0	3	0
Cronin K	0	0	1	0	0	0	0	0	**7.5**	0	0	2	0	0	0	0	0	0	0	0
D'Aveni R	5	5	1	0	5	0	7	0	0	**278**	42	1	0	0	0	7	0	2	2	14
Davidson W	1	0	1	0	0	5	3	0	0	42	**74**	0	0	0	44	5	0	1	7	11
Davis KJ	2	0	0	0	0	0	0	0	2	1	0	**4**	0	0	0	0	0	1	2	0
Dror Y	0	0	3	1	3	12	0	5	0	0	0	0	**48**	5	2	1	0	3	31	1
Dynes R	0	0	6	1	0	2	0	16	0	0	0	0	5	**32**	1	1	1	0	5	3
Elliott D	0	1	8	0	1	2	2	0	0	0	44	0	2	1	**72**	6	1	3	7	1
Fink S	1	23	1	0	7	3	12	1	0	7	5	0	1	1	6	**45**	0	0	3	6
Fortune J	0	2	3	0	0	0	0	0	0	0	0	0	0	1	1	0	**8.5**	0	0	0
Foster P	1	1	5	0	0	1	0	0	0	2	1	1	3	0	3	0	0	**24**	4	0
George A	0	0	4	0	1	130	0	3	0	2	7	2	31	5	7	3	0	4	**238**	0
Gephart R	5	3	14	1	3	0	3	0	0	14	11	0	1	3	1	6	0	0	0	**84**
Hermann CF	1	3	0	2	4	73	1	1	0	10	1	0	31	2	0	16	0	0	123	2
Hermann M	0	1	0	1	0	36	0	0	0	2	3	0	4	0	0	0	0	1	132	0
Janis I	12	3	6	2	1	40	1	3	1	36	9	1	28	15	8	10	0	2	220	4
Kunreuther H	0	0	22	0	10	0	1	2	0	4	0	0	4	14	0	3	1	0	4	6
Lagadec P	0	3	9	1	9	2	4	2	0	3	0	0	2	4	0	6	0	0	3	4
LaPorte T	2	2	19	0	3	1	2	7	0	4	0	0	10	3	1	2	2	1	10	9
Marcus A	1	4	5	0	1	0	4	0	7	20	31	3	2	2	10	5	0	11	4	14
Miller D	8	9	88	0	14	11	7	0	5	196	71	0	2	6	33	19	2	12	35	30
Mitroff II	2	15	7	1	20	1	18	3	1	25	6	0	33	3	3	35	1	0	12	20
Murray WB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0
Nelkin D	1	3	103	0	7	0	0	0	0	3	2	1	8	5	6	5	1	2	3	6
Otway H	0	0	23	0	9	0	0	0	0	0	0	0	1	5	3	0	0	0	0	1
Pauchant TC	1	14	5	1	7	0	8	1	0	14	2	0	3	2	1	21	2	0	1	6
Pearson CM	4	14	0	0	5	0	46	0	0	13	16	0	1	0	2	20	1	1	0	5
Perrow C	30	7	128	4	19	3	5	13	1	53	16	0	26	29	9	23	7	0	26	40
Peters G	1	2	9	0	0	1	1	0	0	3	7	2	5	0	5	1	4	1	5	2
Rasmussen J	1	1	8	0	2	1	0	0	0	2	2	0	0	1	4	0	2	3	4	8
Reason J	3	1	8	0	1	0	1	0	0	2	0	0	0	1	13	2	5	0	7	12
Roberts KH	18	2	9	0	5	0	4	4	0	28	4	1	0	4	1	7	4	5	4	23
Rosenthal U	0	1	4	6	1	4	3	9	0	1	0	0	12	3	1	0	0	0	13	2
Schwartz HS	3	1	3	0	3	0	0	0	0	1	0	0	0	0	0	4	1	0	0	3
Sethi P	0	0	1	0	0	0	0	0	0	0	2	0	1	0	0	0	0	0	1	0
Shrivastava P	6	9	28	0	16	2	13	3	0	22	15	0	7	7	2	24	3	1	8	30
Smart C	0	7	86	0	6	8	4	1	3	26	5	1	5	8	39	23	0	6	9	8
Smith D	1	15	57	1	3	12	2	1	0	4	24	3	3	2	57	8	5	25	43	1
Smith DR	2	1	3	0	0	0	0	0	0	0	3	2	0	0	5	1	0	0	0	1
Starbuck WH	7	6	9	0	9	3	5	3	0	144	26	0	6	4	0	22	1	0	19	24
Staw BM	15	8	5	0	6	4	10	2	0	178	32	0	6	3	5	22	2	1	33	24
Sundelius B	0	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	6	0
Sutcliffe K	7	1	2	1	1	0	1	1	0	33	5	0	0	0	0	0	1	1	2	4
Sutton R	26	5	0	1	1	1	5	0	0	113	29	0	0	1	0	9	0	6	12	33
Toft B	0	0	6	1	0	0	0	1	0	0	0	0	0	0	2	0	1	1	0	7
Turner BA	6	9	33	2	9	2	2	4	0	11	0	1	2	20	5	20	2	0	5	36
Vertinsky I	1	5	4	0	6	7	4	1	0	26	16	0	4	8	0	19	0	0	8	6
Weick KE	62	13	60	5	13	2	19	12	0	181	29	1	17	10	5	30	5	9	8	92
Zimmerman R	0	4	8	1	2	6	0	3	1	0	10	0	0	1	48	1	0	8	107	0

Table 23. Author cocitation matrix with calculated diagonals (continued)

	Hermann CF	Hermann M	Janis I	Kunreuther H	Lagadec P	LaPorte T	Marcus A	Miller D	Mitroff II	Murray WB	Nelkin D	Otway H	Pauchant TC	Pearson CM	Perrow C	Peters G	Rasmussen J	Reason J	Roberts KH	Rosenthal U
Barker JR	1	0	12	0	0	2	1	8	2	0	1	0	1	4	30	1	1	3	18	0
Barton L	3	1	3	0	3	2	4	9	15	0	3	0	14	14	7	2	1	1	2	1
Beck U	0	0	6	22	9	19	5	88	7	0	103	23	5	0	128	9	8	8	9	4
Boin A	2	1	2	0	1	0	0	0	1	0	0	0	1	0	4	0	0	0	0	6
Bowonder B	4	0	1	10	9	3	1	14	20	0	7	9	7	5	19	0	2	1	5	1
Brecher M	73	36	40	0	2	1	0	11	1	0	0	0	0	0	3	1	1	0	0	4
Clair JA	1	0	1	1	4	2	4	7	18	0	0	0	8	46	5	1	0	1	4	3
Comfort L	1	0	3	2	2	7	0	0	3	0	0	0	1	0	13	0	0	0	4	9
Cronin K	0	0	1	0	0	0	7	5	1	0	0	0	0	0	1	0	0	0	0	0
D'Aveni R	10	2	36	4	3	4	20	196	25	0	3	0	14	13	53	3	2	2	28	1
Davidson W	1	3	9	0	0	0	31	71	6	0	2	0	2	16	16	7	2	0	4	0
Davis KJ	0	0	1	0	0	0	3	0	0	0	1	0	0	0	0	2	0	0	1	0
Dror Y	31	4	28	4	2	10	2	2	33	0	8	1	3	1	26	5	0	0	0	12
Dynes R	2	0	15	14	4	3	2	6	3	0	5	5	2	0	29	0	1	1	4	3
Elliott D	0	0	8	0	0	1	10	33	3	0	6	3	1	2	9	5	4	13	1	1
Fink S	16	0	10	3	6	2	5	19	35	0	5	0	21	20	23	1	0	2	7	0
Fortune J	0	0	0	1	0	2	0	2	1	1	1	0	2	1	7	4	2	5	4	0
Foster P	0	1	2	0	0	1	11	12	0	1	2	0	0	1	0	1	3	0	5	0
George A	123	132	220	4	3	10	4	35	12	0	3	0	1	0	26	5	4	7	4	13
Gephart R	2	0	4	6	4	9	14	30	20	0	6	1	6	5	40	2	8	12	23	2
Hermann CF	**109**	102	67	1	5	2	2	20	16	0	3	0	7	3	22	1	0	0	2	10
Hermann M	102	**35**	47	1	0	0	0	2	0	0	0	0	0	0	3	2	1	0	1	8
Janis I	67	47	**305**	50	5	16	16	88	96	0	15	10	9	5	78	5	28	37	74	19
Kunreuther H	1	1	50	**57**	8	11	9	10	17	0	32	42	6	2	40	2	6	8	7	3
Lagadec P	5	0	5	8	**23**	3	3	5	5	0	9	9	9	5	20	0	1	3	10	7
LaPorte T	2	0	16	11	3	**144**	17	13	12	0	24	6	7	4	120	0	36	53	76	5
Marcus A	2	0	16	9	3	17	**93**	46	14	0	12	1	9	5	58	39	16	20	18	2
Miller D	20	2	88	10	5	13	46	**564**	96	0	22	1	24	19	178	17	17	13	67	2
Mitroff II	16	0	96	17	5	12	14	96	**262**	0	36	3	43	29	88	1	6	7	31	5
Murray WB	0	0	0	0	0	0	0	0	0	**0**	0	0	0	0	0	0	0	0	0	0
Nelkin D	3	0	15	32	9	24	12	22	36	0	**61**	39	4	1	60	1	3	2	7	2
Otway H	0	0	10	42	9	6	1	1	3	0	39	**23**	0	0	29	0	4	2	1	0
Pauchant TC	7	0	9	6	9	7	9	24	43	0	4	0	**49**	18	33	0	2	7	15	4
Pearson CM	3	0	5	2	5	4	5	19	29	0	1	0	18	**44**	14	1	1	3	9	3
Perrow C	22	3	78	40	20	120	58	178	88	0	60	29	33	14	**572**	6	133	185	219	14
Peters G	1	2	5	2	0	0	39	17	1	0	1	0	0	1	6	**19**	3	1	0	0
Rasmussen J	0	1	28	6	1	36	16	17	6	0	3	4	2	1	133	3	**252**	379	49	2
Reason J	0	0	37	8	3	53	20	13	7	0	2	2	7	3	185	1	379	**143**	89	4
Roberts KH	2	1	74	7	10	76	18	67	31	0	7	1	15	9	219	0	49	89	**431**	5
Rosenthal U	10	8	19	3	7	5	2	2	5	0	2	0	4	3	14	0	2	4	5	**12**
Schwartz HS	3	0	11	2	5	1	3	16	12	0	3	0	6	3	17	0	0	0	5	0
Sethi P	0	0	0	0	0	0	2	1	1	0	0	0	0	0	1	0	1	0	0	0
Shrivastava P	13	1	34	16	15	21	58	125	138	0	10	3	39	16	129	0	13	25	62	6
Smart C	39	0	32	7	5	2	22	64	32	0	11	2	13	5	28	7	3	3	9	5
Smith D	5	4	23	6	4	2	37	60	12	0	22	2	8	8	26	27	15	6	6	1
Smith DR	0	0	1	0	0	0	2	3	0	0	3	0	0	0	0	3	1	0	1	0
Starbuck WH	45	5	113	8	5	16	18	338	122	0	5	1	25	10	219	2	9	11	97	5
Staw BM	48	12	249	26	5	20	49	296	97	0	4	2	17	24	210	2	16	18	179	8
Sundelius B	4	4	4	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	5
Sutcliffe K	0	0	20	1	2	18	14	62	3	0	0	0	3	2	52	0	14	43	69	1
Sutton R	13	1	74	4	0	7	40	143	38	0	2	0	10	27	113	2	4	14	83	0
Toft B	0	0	3	1	2	4	1	2	2	0	0	0	1	0	13	0	9	16	7	3
Turner BA	14	0	27	12	9	26	9	40	38	0	9	11	19	8	127	0	29	56	50	7
Vertinsky I	34	3	35	9	5	3	13	55	36	0	6	3	12	7	26	1	5	1	14	5
Weick KE	39	10	247	25	10	91	70	494	264	0	13	4	8	36	706	3	76	140	586	9
Zimmerman R	0	1	5	15	0	0	28	46	2	0	6	6	0	2	9	3	1	4	0	0

Table 24: Author cocitation matrix with calculated diagonals (continued)

	Schwartz HS	Sethi P	Shrivastava P	Smart C	Smith D	Smith DR	Starbuck WH	Staw BM	Sundelius B	Sutcliffe K	Sutton R	Toft B	Turner BA	Vertinsky I	Weick KE	Zimmerman R
Barker JR	3	0	6	0	1	2	7	15	0	7	26	0	6	1	62	0
Barton L	1	0	9	7	15	1	6	8	0	1	5	0	9	5	13	4
Beck U	3	1	28	86	57	3	9	5	1	2	0	6	33	4	60	8
Boin A	0	0	0	0	1	0	0	0	1	1	1	1	2	0	5	1
Bowonder B	3	0	16	6	3	0	9	6	0	1	1	0	9	6	13	2
Brecher M	0	0	2	8	12	0	3	4	2	0	1	0	2	7	2	6
Clair JA	0	0	13	4	2	0	5	10	0	1	5	0	2	4	19	0
Comfort L	0	0	3	1	1	0	3	2	0	1	0	1	4	1	12	3
Cronin K	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	1
D'Aveni R	1	0	22	26	4	0	144	178	0	33	113	0	11	26	181	0
Davidson W	0	2	15	5	24	3	26	32	0	5	29	0	0	16	29	10
Davis KJ	0	0	0	1	3	2	0	0	0	0	0	0	1	0	1	0
Dror Y	0	1	7	5	3	0	6	6	0	0	0	0	2	4	17	0
Dynes R	0	0	7	8	2	0	4	3	0	0	1	0	20	8	10	1
Elliott D	0	0	2	39	57	5	0	5	0	0	0	2	5	0	5	48
Fink S	4	0	24	23	8	1	22	22	0	0	9	0	20	19	30	1
Fortune J	1	0	3	0	5	0	1	2	0	1	0	1	2	0	5	0
Foster P	0	0	1	6	25	0	0	1	0	1	6	1	0	0	9	8
George A	0	1	8	9	43	0	19	33	6	2	12	0	5	8	8	107
Gephart R	3	0	30	8	1	1	24	24	0	4	33	7	36	6	92	0
Hermann CF	3	0	13	39	5	0	45	48	4	0	13	0	14	34	39	0
Hermann M	0	0	1	0	4	0	5	12	4	0	1	0	0	3	10	1
Janis I	11	0	34	32	23	1	113	249	4	20	74	3	27	35	247	5
Kunreuther H	2	0	16	7	6	0	8	26	0	1	4	1	12	9	25	15
Lagadec P	5	0	15	5	4	0	5	5	0	2	0	2	9	5	10	0
LaPorte T	1	0	21	2	2	0	16	20	0	18	7	4	26	3	91	0
Marcus A	3	2	58	22	37	2	18	49	0	14	40	1	9	13	70	28
Miller D	16	1	125	64	60	3	338	296	0	62	143	2	40	55	494	46
Mitroff II	12	1	138	32	12	0	122	97	0	3	38	2	38	36	264	2
Murray WB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nelkin D	3	0	10	11	22	3	5	4	0	0	2	0	9	6	13	6
Otway H	0	0	3	2	2	0	1	2	0	0	0	0	11	3	4	6
Pauchant TC	6	0	39	13	8	0	25	17	0	3	10	1	19	12	8	0
Pearson CM	3	0	16	5	8	0	10	24	0	2	27	0	8	7	36	2
Perrow C	17	1	129	28	26	0	219	210	1	52	113	13	127	26	706	9
Peters G	0	0	0	7	27	3	2	2	0	0	2	0	0	1	3	3
Rasmussen J	0	1	13	3	15	1	9	16	0	14	4	9	29	5	76	1
Reason J	0	0	25	3	6	0	11	18	0	43	14	16	56	1	140	4
Roberts KH	5	0	62	9	6	1	97	179	0	69	83	7	50	14	586	0
Rosenthal U	0	0	6	5	1	0	5	8	5	1	0	3	7	5	9	0
Schwartz HS	**36**	0	7	3	1	1	13	20	0	0	14	1	12	3	37	0
Sethi P	0	**3.5**	2	0	3	0	1	2	0	0	0	0	0	0	0	1
Shrivastava P	7	2	**221**	22	17	1	113	83	0	17	48	6	51	27	246	2
Smart C	3	0	22	**138**	1	0	68	63	0	1	24	0	25	144	50	3
Smith D	1	3	17	1	**64**	15	8	12	0	3	22	3	13	3	28	77
Smith DR	1	0	1	0	15	**5**	0	1	0	0	1	0	0	1	2	7
Starbuck WH	13	1	113	68	8	0	**507**	291	0	37	128	2	60	63	595	1
Staw BM	20	2	83	63	12	1	291	**551**	2	54	451	3	51	67	584	3
Sundelius B	0	0	0	0	0	0	0	2	**0**	0	0	0	0	0	0	0
Sutcliffe K	0	0	17	1	3	0	37	54	0	**136**	39	2	15	1	217	0
Sutton R	14	0	48	24	22	1	128	451	0	39	**209**	0	27	27	363	2
Toft B	1	0	6	0	3	0	2	3	0	2	0	**15**	20	0	10	0
Turner BA	12	0	51	25	13	0	60	51	0	15	27	20	**80**	22	135	3
Vertinsky I	3	0	27	144	3	1	63	67	0	1	27	0	22	**29**	55	2
Weick KE	37	0	246	50	28	2	595	584	0	217	363	10	135	55	**1**	2
Zimmerman R	0	1	2	3	77	7	1	3	0	0	2	0	3	2	2	**0**

Table 25. Correlation matrix

	Barker JR	Barton L	Beck U	Boin A	Bowonder B	Brecher M	Clair JA	Comfort L	Cronin K	D'Aveni R	Davidson W	Davis KJ	Dror Y	Dynes R	Elliott D	Fink S	Fortune J	Foster P	George A	Gephart R
Barker JR	1.00																			
Barton L	0.12	1.00																		
Beck U	0.26	0.23	1.00																	
Boin A	0.26	-0.01	0.14	1.00																
Bowonder B	0.19	0.42	0.39	0.05	1.00															
Brecher M	-0.10	-0.15	-0.09	-0.02	-0.15	1.00														
Clair JA	0.14	0.52	-0.03	-0.03	0.26	-0.14	1.00													
Comfort L	0.24	-0.03	0.17	0.55	0.12	-0.02	-0.02	1.00												
Cronin K	-0.05	0.00	0.18	-0.11	0.02	-0.06	-0.04	-0.11	1.00											
D'Aveni R	0.41	0.22	0.15	0.04	0.28	-0.08	0.21	0.05	0.10	1.00										
Davidson W	0.19	0.15	0.14	-0.10	0.13	-0.03	0.18	-0.10	0.24	0.67	1.00									
Davis KJ	0.14	-0.06	0.03	-0.14	-0.22	0.08	-0.15	-0.14	0.42	-0.03	0.02	1.00								
Dror Y	0.10	0.02	0.11	0.27	0.24	0.48	0.01	0.33	-0.06	0.01	-0.07	-0.04	1.00							
Dynes R	0.19	0.01	0.39	0.31	0.28	0.01	-0.07	0.74	0.00	0.05	-0.04	-0.10	0.31	1.00						
Elliott D	-0.09	0.10	0.26	-0.10	-0.04	-0.01	-0.06	-0.11	0.16	0.03	0.55	0.12	-0.09	-0.04	1.00					
Fink S	0.25	0.82	0.20	0.04	0.59	-0.05	0.53	0.08	0.02	0.37	0.26	-0.16	0.22	0.19	0.05	1.00				
Fortune J	0.29	0.24	0.41	0.09	0.22	-0.18	0.04	0.19	-0.10	0.11	0.05	0.00	0.02	0.24	0.10	0.17	1.00			
Foster P	0.10	0.17	0.26	-0.04	-0.05	0.02	-0.04	-0.08	0.22	0.15	0.30	0.39	-0.03	-0.09	0.46	-0.02	0.15	1.00		
George A	-0.04	-0.12	-0.08	0.05	-0.14	0.84	-0.15	0.02	-0.02	-0.02	0.01	0.09	0.53	0.10	0.11	-0.04	-0.16	0.09	1.00	
Gephart R	0.58	0.27	0.32	0.26	0.39	-0.15	0.22	0.23	0.02	0.49	0.34	-0.07	0.09	0.27	-0.05	0.43	0.31	0.08	-0.14	1.00
Hermann CF	0.06	-0.01	-0.04	0.08	0.02	0.82	-0.05	0.04	-0.06	0.16	0.04	0.00	0.59	0.10	-0.07	0.21	-0.14	-0.03	0.83	0.03
Hermann M	-0.04	-0.13	-0.12	0.06	-0.12	0.87	-0.11	0.00	-0.08	-0.03	-0.05	0.11	0.56	0.03	-0.06	0.00	-0.16	-0.02	0.84	-0.11
Janis I	0.44	0.13	0.09	0.18	0.20	0.39	0.11	0.20	-0.01	0.50	0.27	0.06	0.51	0.27	-0.02	0.36	0.13	0.09	0.60	0.38
Kunreuther H	0.22	0.06	0.45	0.11	0.46	-0.06	-0.01	0.23	0.01	0.15	0.01	-0.09	0.28	0.56	-0.02	0.18	0.20	-0.03	0.17	0.25
Lagadec P	0.20	0.29	0.47	0.21	0.69	-0.08	0.20	0.29	-0.08	0.10	-0.05	-0.19	0.19	0.46	-0.13	0.42	0.29	-0.10	-0.08	0.35
LaPorte T	0.43	0.07	0.38	0.20	0.29	-0.10	0.06	0.42	-0.03	0.18	0.02	-0.07	0.23	0.35	-0.08	0.18	0.52	0.01	-0.05	0.46
Marcus A	0.40	0.25	0.31	0.07	0.28	-0.14	0.16	0.12	0.39	0.49	0.58	0.25	0.06	0.17	0.27	0.34	0.37	0.41	-0.04	0.54
Miller D	0.50	0.30	0.38	0.13	0.43	-0.05	0.22	0.16	0.21	0.85	0.67	-0.05	0.11	0.17	0.16	0.48	0.27	0.26	0.03	0.62
Mitroff II	0.47	0.46	0.24	0.22	0.62	-0.06	0.39	0.26	0.04	0.50	0.29	-0.09	0.44	0.24	-0.04	0.70	0.26	0.05	0.04	0.62
Murray WB	-0.08	-0.10	-0.08	-0.10	-0.15	-0.06	-0.10	-0.11	-0.07	-0.09	-0.11	0.00	-0.09	-0.11	-0.07	-0.16	0.31	0.36	-0.08	-0.12
Nelkin D	0.12	0.17	0.85	0.06	0.41	-0.10	-0.05	0.13	0.09	0.00	0.00	-0.05	0.21	0.34	0.09	0.11	0.28	0.11	-0.05	0.17
Otway H	0.05	-0.04	0.60	0.04	0.40	-0.11	-0.13	0.12	-0.05	-0.09	-0.13	-0.10	0.11	0.46	-0.01	-0.02	0.17	-0.08	-0.04	0.08
Pauchant TC	0.13	0.64	0.22	0.01	0.64	-0.15	0.42	0.08	0.05	0.32	0.21	-0.19	0.20	0.22	-0.05	0.78	0.27	-0.06	-0.11	0.34
Pearson CM	0.34	0.63	0.04	0.03	0.37	-0.17	0.90	0.02	-0.04	0.45	0.39	-0.17	0.04	-0.02	0.00	0.68	0.13	0.04	-0.15	0.42
Perrow C	0.70	0.24	0.49	0.35	0.47	-0.10	0.18	0.43	0.01	0.51	0.27	-0.05	0.25	0.43	-0.02	0.43	0.57	0.11	-0.04	0.73
Peters G	-0.03	0.14	0.26	-0.10	-0.05	0.01	-0.05	-0.13	0.52	0.11	0.43	0.52	0.01	-0.03	0.43	-0.01	0.21	0.56	0.07	0.04
Rasmussen J	0.15	-0.05	0.12	0.03	0.05	-0.08	-0.05	0.06	-0.04	0.02	-0.04	-0.09	-0.01	0.10	0.03	-0.02	0.44	-0.01	-0.05	0.19
Reason J	0.29	-0.01	0.19	0.13	0.14	-0.09	-0.01	0.17	-0.05	0.09	-0.01	-0.08	0.05	0.20	-0.02	0.06	0.43	0.02	-0.05	0.32
Roberts KH	0.70	0.17	0.23	0.28	0.30	-0.09	0.20	0.36	-0.05	0.47	0.21	0.02	0.14	0.24	-0.07	0.34	0.48	0.14	-0.04	0.67
Rosenthal U	0.16	-0.02	0.15	0.53	0.16	0.41	0.03	0.51	-0.10	0.07	-0.09	-0.13	0.73	0.49	-0.15	0.19	0.06	-0.14	0.57	0.17
Schwartz HS	0.57	0.29	0.26	0.21	0.43	-0.09	0.21	0.20	0.03	0.51	0.27	-0.09	0.17	0.24	-0.06	0.50	0.28	0.06	-0.01	0.60
Sethi P	-0.04	0.12	0.17	-0.12	0.09	0.01	-0.01	-0.05	0.15	0.12	0.39	0.13	0.11	-0.03	0.34	0.08	0.14	0.34	0.07	0.05
Shrivastava P	0.53	0.41	0.35	0.20	0.63	-0.11	0.34	0.29	0.11	0.53	0.38	-0.07	0.26	0.30	-0.01	0.64	0.40	0.12	-0.06	0.72
Smart C	0.14	0.26	0.44	-0.04	0.28	0.02	0.09	0.01	0.20	0.38	0.31	-0.08	0.12	0.22	0.21	0.50	0.01	0.09	0.02	0.25
Smith D	0.08	0.22	0.44	-0.04	0.06	0.15	-0.05	-0.05	0.21	0.14	0.48	0.21	0.06	0.03	0.71	0.05	0.22	0.62	0.31	0.10
Smith DR	0.04	0.20	0.25	-0.07	-0.09	-0.07	-0.10	-0.13	0.04	-0.02	0.33	0.43	-0.15	-0.13	0.70	-0.05	0.21	0.60	0.06	-0.03
Starbuck WH	0.57	0.29	0.28	0.21	0.44	-0.05	0.24	0.26	0.08	0.79	0.50	-0.07	0.20	0.23	0.00	0.54	0.29	0.13	0.03	0.67
Staw BM	0.62	0.25	0.18	0.18	0.30	-0.03	0.23	0.19	0.05	0.80	0.50	-0.05	0.17	0.19	-0.02	0.46	0.23	0.15	0.10	0.63
Sundelius B	-0.04	-0.16	-0.06	0.33	-0.15	0.71	-0.13	0.11	-0.08	-0.05	-0.09	0.01	0.49	0.06	-0.10	-0.08	-0.16	-0.08	0.79	-0.14
Sutcliffe K	0.66	0.16	0.21	0.28	0.24	-0.10	0.18	0.27	0.01	0.58	0.31	-0.01	0.07	0.14	-0.04	0.28	0.38	0.16	-0.06	0.63
Sutton R	0.60	0.25	0.15	0.15	0.26	-0.07	0.25	0.17	0.02	0.78	0.49	-0.03	0.10	0.13	-0.01	0.43	0.24	0.15	0.02	0.61
Toft B	0.26	0.07	0.30	0.25	0.20	-0.15	-0.03	0.22	-0.09	0.05	-0.05	-0.08	0.01	0.34	-0.01	0.14	0.49	-0.01	-0.12	0.51
Turner BA	0.60	0.33	0.49	0.32	0.54	-0.12	0.19	0.41	-0.02	0.45	0.20	-0.11	0.23	0.52	-0.03	0.55	0.55	0.03	-0.06	0.78
Vertinsky I	0.23	0.30	0.33	0.01	0.35	0.04	0.18	0.07	0.22	0.53	0.34	-0.04	0.20	0.23	0.20	0.60	0.03	0.10	0.09	0.36
Weick KE	0.35	0.16	0.27	0.02	0.39	-0.09	0.11	0.15	0.09	0.57	0.38	-0.13	0.15	0.28	-0.02	0.39	0.33	0.02	0.03	0.41
Zimmerman R	-0.09	0.05	0.17	-0.11	-0.02	0.47	-0.09	-0.06	0.15	0.02	0.34	0.37	0.19	0.02	0.51	-0.03	0.09	0.48	0.44	-0.07

Table 26. Correlation matrix (continued)

	Hermann CF	Hermann M	Janis I	Kunreuther H	Lagadec P	LaPorte T	Marcus A	Miller D	Mitroff II	Murray WB	Nelkin D	Otway H	Pauchant TC	Pearson CM	Perrow C	Peters G	Rasmussen J	Reason J	Roberts KH	Rosenthal U
Hermann CF	1.00																			
Hermann M	0.87	1.00																		
Janis I	0.62	0.51	1.00																	
Kunreuther H	0.07	0.00	0.47	1.00																
Lagadec P	0.02	-0.04	0.17	0.52	1.00															
LaPorte T	-0.01	-0.06	0.29	0.35	0.39	1.00														
Marcus A	0.00	-0.11	0.37	0.28	0.24	0.40	1.00													
Miller D	0.19	-0.01	0.58	0.25	0.23	0.30	0.60	1.00												
Mitroff II	0.21	0.00	0.62	0.38	0.36	0.34	0.48	0.68	1.00											
Murray WB	-0.11	-0.06	-0.11	-0.13	-0.18	-0.09	-0.10	-0.09	-0.11	1.00										
Nelkin D	-0.09	-0.10	0.06	0.62	0.47	0.35	0.16	0.17	0.22	-0.09	1.00									
Otway H	-0.11	-0.10	0.05	0.82	0.51	0.28	0.05	0.00	0.07	-0.09	0.76	1.00								
Pauchant TC	0.04	-0.12	0.21	0.22	0.53	0.24	0.35	0.40	0.64	-0.14	0.20	0.05	1.00							
Pearson CM	-0.01	-0.13	0.28	0.06	0.23	0.15	0.36	0.46	0.58	-0.12	-0.02	-0.13	0.56	1.00						
Perrow C	0.12	-0.04	0.54	0.43	0.48	0.75	0.61	0.70	0.67	-0.10	0.33	0.25	0.36	0.38	1.00					
Peters G	-0.02	-0.01	0.04	0.02	-0.08	-0.03	0.63	0.21	-0.01	-0.03	0.18	-0.03	0.00	-0.01	0.04	1.00				
Rasmussen J	-0.08	-0.06	0.12	0.13	0.09	0.48	0.21	0.08	0.07	-0.06	0.05	0.08	0.05	-0.01	0.43	-0.01	1.00			
Reason J	-0.05	-0.06	0.20	0.19	0.18	0.58	0.29	0.18	0.19	-0.07	0.10	0.13	0.10	0.05	0.57	-0.01	0.80	1.00		
Roberts KH	0.09	-0.03	0.56	0.28	0.35	0.67	0.50	0.60	0.59	-0.07	0.10	0.05	0.23	0.38	0.86	-0.04	0.30	0.46	1.00	
Rosenthal U	0.61	0.52	0.64	0.37	0.39	0.33	0.09	0.17	0.34	-0.18	0.13	0.12	0.21	0.04	0.37	-0.08	0.12	0.17	0.29	1.00
Schwartz HS	0.15	-0.03	0.55	0.31	0.37	0.34	0.45	0.66	0.67	-0.10	0.14	0.07	0.40	0.44	0.68	0.00	0.07	0.20	0.61	0.23
Sethi P	0.02	0.01	0.14	0.05	0.02	0.01	0.46	0.23	0.18	-0.10	0.15	-0.04	0.17	0.07	0.11	0.47	0.03	0.07	0.00	-0.01
Shrivastava P	0.13	-0.06	0.51	0.34	0.50	0.47	0.68	0.76	0.89	-0.11	0.23	0.07	0.65	0.53	0.78	0.10	0.16	0.29	0.68	0.29
Smart C	0.28	0.03	0.31	0.19	0.20	0.05	0.27	0.46	0.36	-0.10	0.28	0.07	0.32	0.18	0.27	0.13	-0.05	-0.02	0.18	0.20
Smith D	0.05	0.13	0.19	0.16	0.00	0.03	0.46	0.35	0.12	0.01	0.37	0.14	0.03	0.05	0.18	0.57	0.01	0.05	0.07	-0.04
Smith DR	-0.17	-0.10	-0.05	-0.01	-0.12	-0.10	0.29	0.10	-0.05	-0.10	0.17	0.02	-0.11	-0.03	-0.03	0.55	-0.06	-0.05	-0.02	-0.26
Starbuck WH	0.26	0.02	0.65	0.28	0.28	0.39	0.54	0.92	0.77	-0.09	0.10	0.00	0.42	0.47	0.79	0.06	0.11	0.23	0.71	0.28
Staw BM	0.27	0.05	0.76	0.33	0.20	0.35	0.59	0.83	0.67	-0.10	0.05	-0.01	0.33	0.52	0.71	0.05	0.10	0.22	0.72	0.29
Sundelius B	0.78	0.82	0.51	0.09	0.01	-0.05	-0.13	-0.04	-0.03	-0.08	-0.03	-0.05	-0.12	-0.15	-0.04	-0.04	-0.06	-0.06	-0.04	0.67
Sutcliffe K	0.07	-0.04	0.51	0.19	0.21	0.52	0.52	0.69	0.55	-0.08	0.03	-0.02	0.15	0.36	0.78	0.01	0.28	0.39	0.84	0.17
Sutton R	0.22	0.01	0.70	0.29	0.18	0.33	0.60	0.78	0.61	-0.08	0.02	-0.04	0.28	0.52	0.68	0.06	0.09	0.19	0.69	0.22
Toft B	-0.10	-0.12	0.15	0.20	0.35	0.53	0.24	0.18	0.23	-0.07	0.19	0.17	0.21	0.04	0.55	-0.05	0.62	0.59	0.43	0.26
Turner BA	0.11	-0.06	0.50	0.44	0.56	0.70	0.55	0.64	0.68	-0.14	0.32	0.24	0.51	0.38	0.93	-0.02	0.44	0.54	0.78	0.39
Vertinsky I	0.36	0.08	0.48	0.22	0.22	0.11	0.39	0.58	0.52	-0.12	0.07	-0.02	0.42	0.32	0.37	0.10	-0.02	0.05	0.32	0.27
Weick KE	0.13	-0.05	0.47	0.31	0.34	0.44	0.46	0.62	0.46	-0.11	0.20	0.10	0.54	0.31	0.57	0.05	0.21	0.28	0.50	0.28
Zimmerman R	0.31	0.49	0.27	0.01	-0.05	-0.06	0.19	0.15	-0.04	-0.04	0.10	0.01	-0.05	-0.07	-0.02	0.50	-0.03	-0.06	-0.08	0.11

Table 27. Correlation matrix (continued)

	Schwartz HS	Sethi P	Shrivastava P	Smart C	Smith D	Smith DR	Starbuck WH	Staw BM	Sundelius B	Sutcliffe K	Sutton R	Toft B	Turner BA	Vertinsky I	Weick KE	Zimmerman R
Schwartz HS	1.00															
Sethi P	0.05	1.00														
Shrivastava P	0.67	0.27	1.00													
Smart C	0.29	0.05	0.35	1.00												
Smith D	0.10	0.42	0.19	0.16	1.00											
Smith DR	-0.02	0.42	-0.02	-0.01	0.71	1.00										
Starbuck WH	0.72	0.15	0.80	0.45	0.16	-0.03	1.00									
Staw BM	0.72	0.14	0.68	0.40	0.16	-0.02	0.87	1.00								
Sundelius B	-0.03	-0.01	-0.09	0.02	0.06	-0.14	-0.01	0.07	1.00							
Sutcliffe K	0.57	-0.01	0.64	0.17	0.10	-0.02	0.73	0.71	-0.08	1.00						
Sutton R	0.69	0.20	0.64	0.35	0.13	0.01	0.81	0.96	0.04	0.69	1.00					
Toft B	0.28	0.01	0.37	0.03	0.05	-0.06	0.23	0.19	-0.07	0.35	0.19	1.00				
Turner BA	0.67	0.08	0.80	0.35	0.12	-0.07	0.74	0.65	-0.06	0.68	0.62	0.71	1.00			
Vertinsky I	0.43	0.10	0.49	0.77	0.03	-0.09	0.61	0.58	0.05	0.30	0.53	0.04	0.44	1.00		
Weick KE	0.45	0.22	0.56	0.30	0.10	-0.08	0.63	0.66	0.01	0.41	0.60	0.30	0.61	0.44	1.00	
Zimmerman R	-0.06	0.37	0.00	0.03	0.62	0.48	0.01	-0.01	0.33	-0.04	-0.01	-0.06	-0.06	-0.01	-0.01	1.00

The next step was to run a multivariate analysis on the correlation matrix to make sense out of the data. Although the correlation matrix shows which authors can be grouped together, it is not as easy to discern. Running factor analysis, cluster analysis, and multidimensional scaling on this data presents a more user friendly representation of the data that is easier to interpret (McCain, 1990).

Factor Analysis

SPSS was used to analyze the data through data reduction, specifically factor analysis. The method of factor analysis was done in accordance with Conway & Huffcut (2003), McCain (1990), Culnan (1986), and White & Griffith (1981). The actual specific analysis in SPSS was done in accordance with the guidance as outlined by Field (2005) and Garson (2007). All factors, or authors, were selected. Univariate descriptives, an initial solution, and all options for the correlation matrix were selected. The correlation matrix was analyzed in such a way as to extract all eigenvalues over 1, allow for a maximum of 25 iterations for convergence, and to

display both an unrotated factor solution and a scree plot. For the varimax rotation, 30 iterations were allowed to reach convergence, and both the rotated solution and loading plots were shown. The variables were shown as Anderson-Rubin and the factor score coefficient matrix was displayed. Listwise cases were excluded and the coefficients were displayed sorted by size, while suppressing those with an absolute value *r* of less than .4. Research had shown that is permissible to use a value of .4 or .5; however, in order to see the more conservative result at first, .4 was used (White & Griffith, 1981; Pilkingon et al., 1999; McCain, 1990). Using these parameters, SPSS provided the rotated component matrix shown in Figure 10.

Rotated Component Matrix[a]

	Component										
	1	2	3	4	5	6	7	8	9	10	11
Staw BM	.940										
Sutton R	.919										
Starbuck WH	.882										
Miller D	.850										
D'Aveni R	.819										
Sutcliffe K	.813										
Roberts KH	.776										
Perrow C	.737					.487					
Schwartz HS	.724										
Barker JR	.718										
Shrivastava P	.681			.473							
Gephart R	.680										
Janis I	.666	.628									
Mitroff II	.642			.537							
Turner BA	.630					.544					
Weick KE	.577									.466	
Marcus A	.573								.442		
Hermann M		.942									
George A		.920									
Hermann CF		.914									
Brecher M		.887									
Sundelius B		.867									
Dror Y		.671									
Rosenthal U		.667					.536				
Smith D			.877								
Smith DR			.869								
Elliott D			.847								
Zimmerman R		.449	.677								
Foster P			.673								.420
Davidson W	.516		.535								
Barton L				.829							
Fink S				.818							
Pauchant TC				.758							
Pearson CM	.461			.747							
Clair JA				.746							
Bowonder B				.536	.518						
Otway H					.939						
Nelkin D					.871						
Kunreuther H					.820						
Beck U					.690						
Lagadec P				.401	.609						
Rasmussen J						.887					
Reason J						.845					
Toft B						.779					
LaPorte T						.623					
Fortune J						.565					.482
Comfort L							.864				
Boin A							.771				
Dynes R					.456		.631				
Smart C								.823			
Vertinsky I	.466							.723			
Davis KJ									.768		
Cronin K									.767		
Peters G			.618						.620		
Sethi P			.494							.560	
Murray WB											.913

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 8 iterations.

Figure 10. Initial SPSS Rotated Component for Factor Analysis

The rotated component matrix showed how SPSS initially grouped the authors together as factors in accordance with their *r* values. The next step was to evaluate the above factor analysis in order to determine if the correct number of representative factors was shown. In order to do this, the researcher looks from the last factor out. Beginning with factor 11, there are three authors that load onto that factor. To determine if this is a valid factor, the researcher looked at the *r* value for each of these three authors. If there is high correlation (*r*) for an author other than with those shown in the factor, than this is becomes an invalid factor (Conway & Huffcut, 2003; McCain, 1990; Culnan, 1986; White & Griffith, 1981). For factor 11, this required the researcher to evaluate the correlation coefficients for Foster, Fortune and Murray. Statistically speaking anything above .3-.5 shows that the factors are significantly correlated (White & Griffith, 1981; Pilkingon et al., 1999; McCain, 1990). Because Fortune has a .44 correlation with Beck, and Foster has a .39 correlation with Davis, this factor was removed. Now that it was determined that factor 11 is invalid, the number of factors must be recalculated to see which author is loaded onto which factor(s). This process was repeated to extract 10 factors. The rotated component matrix for 10 factors is provided as reference in Appendix H.

This same process was continued, until it appeared that 7 factors would be a feasible solution for all authors. The resulting rotated component matrix can be seen in Appendix I. However, with 7 factors, Boin had an *r* =.55 with Comfort and no other significant correlation to any other authors. However, this resulted in only 2 authors being loaded onto a factor. Therefore, the same analysis was again run in SPSS, reducing the number of factors to 6 to determine if the results would significantly change or if the results would be more representative of the data. The rotated component matrix in Figure 11 shows that 6 factors collectively represent the data.

Rotated Component Matrix[a]

	Component					
	1	2	3	4	5	6
Staw BM	.935					
Sutton R	.904					
Starbuck WH	.901					
Miller D	.876					
D'Aveni R	.850					
Sutcliffe K	.758			.426		
Roberts KH	.711			.541		
Schwartz HS	.706					
Perrow C	.694			.594		
Shrivastava P	.682					.464
Gephart R	.662					
Barker JR	.646					
Janis I	.645	.625				
Mitroff II	.642					.521
Turner BA	.621			.584		
Vertinsky I	.616					
Weick KE	.605					
Marcus A	.587		.516			
Davidson W	.553		.525			
Smart C	.445					
Hermann M		.924				
George A		.910				
Hermann CF		.904				
Sundelius B		.882				
Brecher M		.865				
Rosenthal U		.736				
Dror Y		.705				
Smith D			.849			
Smith DR			.811			
Peters G			.808			
Elliott D			.745			
Foster P			.736			
Zimmerman R		.435	.706			
Sethi P			.573			
Davis KJ			.484			
Cronin K						
Reason J				.763		
Toft B				.744		
Rasmussen J				.735		
LaPorte T				.691		
Fortune J				.661		
Comfort L						
Boin A						
Otway H					.855	
Nelkin D					.836	
Kunreuther H					.766	
Beck U					.741	
Dynes R					.651	
Lagadec P					.636	
Murray WB						
Fink S						.829
Barton L						.816
Pauchant TC						.793
Pearson CM	.423					.739
Clair JA						.724
Bowonder B					.516	.560

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 7 iterations.

Figure 11. Final SPSS Rotated Component for Factor Analysis

Originally an *r* = .4 was used in order to provide a more conservative outlook. However, the rotated component matrix in Figure 11 showed several authors loaded onto more than one factor. In a few cases the loading onto one factor was significantly higher than on the other factor. In order to reduce insignificant overlap, those authors that have an *r* of less than .5 were removed (White & Griffith, 1981; McCain, 1990; Pilkington et al., 1999). When put into a table, the authors load onto the six factors shown in Table 28. Those authors highlighted in gray fell into two factors. For example, Sutcliffe aligned with both Factor 1 and Factor 4. Table 29 shows a reduction by removing authors with an *r* of less than .5.

Table 28. Initial Factor Loading

1		2		3		4		5		6	
Staw BM	0.935	Hermann M	0.924	Smith D	0.849	Reason J	0.763	Otway H	0.855	Fink S	0.829
Sutton R	0.904	George A	0.91	Smith DR	0.811	Toft B	0.744	Nelkin D	0.836	Barton L	0.816
Starbuck WH	0.901	Hermann CF	0.904	Elliott D	0.808	Rasmussen J	0.735	Kunreuther H	0.766	Pauchant TC	0.793
Miller D	0.876	Sundelius B	0.882	Peters G	0.745	LaPorte T	0.691	Beck U	0.741	**Pearson CM**	**0.739**
D'Aveni R	0.85	Brecher M	0.865	Foster P	0.736	Fortune J	0.661	Dynes R	0.651	Clair JA	0.724
Sutcliffe K	**0.758**	Rosenthal U	0.736	**Zimmerman R**	**0.706**	**Perrow C**	**0.594**	Lagadec P	0.636	**Bowonder B**	**0.56**
Roberts KH	**0.711**	Dror Y	0.705	Davis KJ	0.573	**Turner BA**	**0.584**	**Bowonder B**	**0.516**	**Mitroff II**	**0.521**
Schwartz HS	0.706	**Janis I**	**0.625**	**Davidson W**	**0.525**	**Roberts KH**	**0.541**			**Shrivastava P**	**0.464**
Perrow C	**0.694**	**Zimmerman R**	**0.435**	**Marcus A**	**0.516**	**Sutcliffe K**	**0.426**				
Shrivastava P	**0.682**			Sethi P	0.484						
Gephart R	0.662										
Barker JR	0.646										
Janis I	**0.645**										
Mitroff II	**0.642**										
Turner BA	**0.621**										
Vertinsky I	0.616										
Weick KE	0.605										
Marcus A	**0.587**										
Davidson W	**0.553**										
Smart C	0.445										
Pearson CM	**0.423**										

Table 29. Final Factor Loading

1		2		3		4		5		6	
Staw BM	0.935	Hermann M	0.924	Smith D	0.849	Reason J	0.763	Otway H	0.855	Fink S	0.829
Sutton R	0.904	George A	0.91	Smith DR	0.811	Toft B	0.744	Nelkin D	0.836	Barton L	0.816
Starbuck WH	0.901	Hermann CF	0.904	Elliott D	0.808	Rasmussen J	0.735	Kunreuther H	0.766	Pauchant TC	0.793
Miller D	0.876	Sundelius B	0.882	Peters G	0.745	LaPorte T	0.691	Beck U	0.741	Pearson CM	0.739
D'Aveni R	0.85	Brecher M	0.865	Foster P	0.736	Fortune J	0.661	Dynes R	0.651	Clair JA	0.724
Sutcliffe K	0.758	Rosenthal U	0.736	Zimmerman R	0.706	**Perrow C**	**0.594**	Lagadec P	0.636	**Bowonder B**	**0.56**
Roberts KH	**0.711**	Dyor Y	0.705	Davis KJ	0.573	**Turner BA**	**0.584**	**Bowonder B**	**0.516**	**Mitroff II**	**0.521**
Schwartz HS	0.706	**Janis I**	**0.625**	**Davidson W**	**0.525**	**Roberts KH**	**0.541**				
Perrow C	**0.694**			**Marcus A**	**0.516**						
Shrivastava P	0.682										
Gephart R	0.662										
Barker JR	0.646										
Janis I	**0.645**										
Mitroff II	**0.642**										
Turner BA	**0.621**										
Vertinsky I	0.616										
Weick KE	0.605										
Marcus A	**0.587**										
Davidson W	**0.553**										

In order to label each factor, all works contained in SPSS were analyzed and those related to applicable crisis management related subject areas were selected for further review. It is important to note that the articles, when analyzed in SPSS, did not all neatly fall into the "management" category. Table 30 represents a list of top 10 subject areas pulled for each author, which all factors fell into.

Table 30. ACA Subject Matter Breakdown

Subject Areas	
Area Studies	Medicine, General and Internal
Behavioral Sciences	Neurosciences
Business	Nuclear Science and Technology
Business, Finance	Nursing
Clinical Neurology	Oncology
Communication	Operations Research and Management Science
Computer Science, Cybernetics	Pediatrics
Computer Science, Information Systems	Pharmacology and Pharmacy
Criminology and Penology	Planning and Development
Economics	Political Science
Education and Educational Research	Psychiatry
Education, Special	Psychology
Engineering, Industrial	Psychology, Applied
Engineering, Multidisciplinary	Psychology, Clinical
Environmental Sciences	Psychology, Experimental
Environmental Studies	Psychology, Developmental
Ergonomics	Psychology, Social
Ethics	Psychology, Multidisciplinary
Family Studies	Public Administration
Geriatrics and Gerontology	Public, Environmental and Occupational health
Gerontology	Rehabilitation
Geography	Religion
Health Care Sciences and Services	Social Sciences, Biomedical
Health Policy and Services	Social Sciences, Interdisciplinary
History and Philosophy of Science	Social Sciences, Mathematical Methods
Humanities, multidisciplinary	Social Issues
Information Science and Library Science	Social Work
International Relations	Sociology
Law	Sport Science
Linguistics	Substance Abuse
Management	Toxicology
Mathematics, Interdisciplinary Applications	Transportation

In order to name the factors, all articles related to crisis management written by each author were placed under a specific factor. For example, all articles by Staw, Sutton, Starbuck, Miller, D'Aveni, Sutcliffe, Roberts, Schwartz, Perrow, Shrivastava, Gephart, Barker, Janis, Mitroff, Turner, Vertinsky, Weick, Marcus, and Davidson, were placed in one factor to be reviewed in order to determine a common theme. Before analyzing the articles the information was scanned to make sure there were no exact duplicates. However, there was a problem with

using this methodology due to examining the numbers of articles per factor. There were 15,345 articles assigned to Factor 1; 1,237 articles assigned to Factor 2; 2,003 articles assigned to Factor 3; 2,652 articles assigned to Factor 4; 544 articles assigned to Factor 5; and 1,019 articles assigned to Factor 6. The shear volume of articles per factor posed several problems: the time limitation, and the ability to confidently determine an accurate intersection within the literature, per factor, for all authors under that factor.

Culnan (1986) outlined that the factors themselves could then be named by the researcher based on general assessment. This can be accomplished by doing a word frequency analysis on the titles and/or abstracts of each of the cocited papers for each factor (Culnan, 1986). SPSS was again used. However, this time, the top "x" authors per factor were selected, where "x" is a management number of authors to review. The determination to use a top "x" number of authors as opposed to establishing a cutoff based on *r* value, because no one *r* value could feasibly be determined across all factors. In order to determine the appropriate "x," the researcher combined the author's oeuvres in SPSS using the "or" Boolean function. Subsequently, all works by "x" authors in that factor were combined in SPSS using the "and" Boolean function. This process was started for each factor with "x" authors as the top 3 authors, meaning those with the highest *r*, or correlation. It was repeated in SPSS, adding, removing, or combining, one author at a time, until the number of articles was, *if possible*, between 10 and 20. It is important to note that reaching 10 to 20 articles per factor was not possible for some of the factors. This process can be seen in Table 31.

Table 31. Factoring Process

Factor 1					
		No. Management Articles			
		Iterations			
Author	r	1	2	3	4
Staw BM	0.935	60	35	15	1
Sutton R	0.904				
Starbuck WH	0.901				
Miller D	0.876				
D'Aveni R	0.85				
Sutcliffe K	0.758				

Factor 2					
		No. Management Articles			
		Iterations			
Author	r	1	2	3	4
Hermann M	0.924	2	2		
George A	0.91				
Hermann CF	0.904				

Factor 3					
		No. Management Articles			
		Iterations			
Author	r	1	2	3	4
Smith D	0.849	0	0	3	
Smith DR	0.811				
Elliott D	0.808			"	

Factor 4					
		No. Management Articles			
		Iterations			
Author	r	1	2	3	4
Reason J	0.763	1	5	64	
Toft B	0.744				
Rasmussen J	0.735			"	

Factor 5					
		No. Management Articles			
		Iterations			
Author	r	1	2	3	4
Otway H	0.855	2	3	5	
Nelkin D	0.836				
Kunreuther H	0.766			"	

Factor 6					
		No. Management Articles			
		Iterations			
Author	r	1	2	3	4
Fink S	0.829	4	7	7	
Barton L	0.816				
Pauchant TC	0.793			"	

Looking at Factor 1, Straw, Sutton and Starbuck, having the three highest *r* values, were examined in iteration 1. Their resultant intersection for ACA showed 60 articles. Because this was above the goal of 10 to 20 articles, another author was added. The resultant search for Straw, Sutton, Starbuck, and Miller showed 35 articles. Again, this number was above the goal; therefore, D'Aventi was added. The search for these 5 authors revealed an intersection of 15 articles. In order to verify this was the best number of articles to thoroughly examine, another author was added. However, only 1 article was found. Therefore, the resultant works of the 5authors were selected for further analysis. Tables 32-33 cite each of the articles reviewed for each factor.

Table 32. Articles used for factor 1

Factor	Articles Used
1	Barker, V. L., & Duhaime, I. M. (1997). Strategic change in the turnaround process: Theory and empirical evidence. *Strategic Management Journal, 18* (1), 13-38.
	Barker, V. L., & Mone, M. A. (1998). The mechanistic structure shift and strategic reorientation in declining firms attempting turnarounds. *Human Relations, 51* (10), 1227-1258.
	Daily, C. M. (1994). Bankruptcy in strategic studies - past and promise. *Journal of Management, 20* (2), 263-295.
	Eggleston, K. K., & Bhagat, R. S. (1993). Organizational contexts and contingent leadership roles - a theoretical exploration. *Human Relations, 46* (10), 1177-1192.
	Feldman, D. C. (1995). The impact of downsizing on organizational career development activities and employee career development opportunities. *Human Resource Management Review, 5* (3), 189-221.
	Hambrick, D. C., & Daveni, R. A. (1992). Top team deterioration as part of the downward spiral of large corporate bankruptcies. *Management Science, 38* (10), 1445-1466.
	Hambrick, D. C., Finkelstein, S., & Mooney, A. C. (2005). Executive job demands: New insights for explaining strategic decisions and leader behaviors. *Academy of Management Review, 30* (3), 472-491.
	Hayward, M. L. A., & Hambrick, D. C. (1997). Explaining the premiums paid for large acquisitions: Evidence of CEO hubris. *Administrative Science Quarterly, 42* (1), 103-127.
	Kovoor-Misra, S., Clair, J. A., & Bettenhausen, K. L. (2001). Clarifying the attributes of organizational crises. *Technological Forecasting and Social Change, 67* (1), 77-91.
	Lindsley, D. H., Brass, D. J., & Thomas, J. B. (1995). Efficacy-performance spirals - a multilevel perspective. *Academy of Management Review, 20* (3), 645-678.
	Lohrke, F. T., Bedeian, A. G., & Palmer, T. B. (2004). The role of top management teams in formulating and implementing turnaround strategies: A review and research agenda. *International Journal of Management Reviews, 5-6* (2), 63-90.
	Mellahi, K., & Wilkinson, A. (2004). Organizational failure: A critique of recent research and a proposed integrative framework. *International Journal of Management Reviews, 5-6* (1), 21-41.
	Mone, M. A., McKinley, W., & Barker, V. L. (1998). Organizational decline and innovation: A contingency framework. *Academy of Management Review, 23* (1), 115-132.
	Ocasio, W. (1995). The enactment of economic adversity - a reconciliation of theories of failure-induced change and threat-rigidity. *Research in Organizational Behavior: an Annual Series of Analytical Essays and Critical Reviews, Vol 17, 1995, 17*, 287-331.
	Weitzel, W., & Jonsson, E. (1989). Decline in organizations - a literature integration and extension. *Administrative Science Quarterly, 34* (1), 91-109.

Table 33. Articles used for factors 2 through 6

Factor	Articles Used
2	Kaarbo, J., & Hermann, M. G. (1998). Leadership styles of prime ministers: How individual differences affect the foreign policymaking process. *Leadership Quarterly, 9* (3), 243-263.
	't Hart, P. (1998). Preventing groupthink revisited: Evaluating and reforming groups in government. *Organizational behavior and human decision processes, 73* (2-3), 306-326.
3	Busby, J. S. (2006). Failure to mobilize in reliability-seeking organizations: Two cases from the UK railway. *Journal of Management Studies, 43* (6), 1375-1393.
	Elliott, D., & Smith, D. (2006). Cultural readjustment after crisis: Regulation and learning from crisis within the UK soccer industry. *Journal of Management Studies, 43* (2), 289-317.
	Herbane, B., Elliott, D., & Swartz, E. M. (2004). Business continuity management: Time for a strategic role? *Long range planning, 37* (5), 435-457.
4	Busby, J. S. (2006). Failure to mobilize in reliability-seeking organizations: Two cases from the UK railway. *Journal of Management Studies, 43* (6), 1375-1393.
	Elliott, D., & Smith, D. (2006). Cultural readjustment after crisis: Regulation and learning from crisis within the UK soccer industry. *Journal of Management Studies, 43* (2), 289-317.
	Glendon, A. I., & Stanton, N. A. (2000). Perspectives on safety culture. *Safety Science, 34* (1-3), 193-214.
	Pidgeon, N., & O'Leary, M. (2000). Man-made disasters: Why technology and organizations (sometimes) fail. *Safety Science, 34* (1-3), 15-30.
	Wallace, B., Ross, A., & Davies, J. B. (2003). Applied hermeneutics and qualitative safety data: The CIRAS project. *Human Relations, 56* (5), 587-607.
5	Cross, F. B. (1998). Facts and values in risk assessment. *Reliability Engineering & System Safety, 59* (1), 27-40.
	Fischhoff, B. (1984). Setting standards - a systematic-approach to managing public-health and safety risks. *Management Science, 30* (7), 823-843.
	Kunreuther, H., Linnerooth, J., & Vaupel, J. W. (1984). A decision-process perspective on risk and policy analysis. *Management Science, 30* (4), 475-485.
	Renn, O. (1998). The role of risk perception for risk management. *Reliability Engineering & System Safety, 59* (1), 49-62.
	Sherif, Y. S. (1991). On risk and risk analysis. *Reliability Engineering & System Safety, 31* (2), 155-178.
	Slovic, P. (1998). The risk game. *Reliability Engineering & System Safety, 59* (1), 73-77.
6	Dubrovski, D. (2004). Peculiarities of managing a company in crisis. *Total Quality Management & Business Excellence, 15* (9-10), 1199-1207.
	Greening, D. W., & Johnson, R. A. (1996). Do managers and strategies matter? A study in crisis. *Journal of Management Studies, 33* (1), 25-51.
	Henderson, J. C. (2003). Communicating in a crisis: Flight SQ 006. *Tourism Management, 24* (3), 279-287.
	Mainiero, L. A., & Gibosn, D. E. (2003). Managing employee trauma: Dealing with the emotional fallout from 9-11. *Academy of Management Executive, 17* (3), 130-143.
	Pearson, C. M., & Clair, J. A. (1998). Reframing crisis management. *Academy of Management Review, 23* (1), 59-76.
	Ritchie, B. W. (2004). Chaos, crises and disasters: A strategic approach to crisis management in the tourism industry. *Tourism Management, 25* (6), 669-683.
	Sheaffer, Z., & Mano-Negrin, R. (2003). Executives' orientations as indicators of crisis management policies and practices. *Journal of Management Studies, 40* (2), 573-606.

A solid review of the title, abstract, and key words associated with each article for each author was performed in order to more accurately determine the commonality, or theme, in order to name each factor. For each factor, major themes and an overarching explanation of that factor were determined. As shown in Table 34, the six factors were: (1) causes of crisis, (2) leadership behavior, (3) crisis response, (4) organizational failure, (5) managing risk, and (6) effective crisis management.

Table 34. Identification and naming of factors

Factor	Causes of Crisis	Leadership behavior	Crisis Response	Organizational Failure	Managing Risk	Effective crisis management
Key themes	Executive management leadership	Strategic policy making	Organizational culture and dynamics	Managing catastrophic failure risks	Defining risk	Depicts crisis as inevitable, highly interactive, tightly coupled, high-risk potential, catastrophic events that cross multiple disciplines.
	Declining organizational performance and turn-around	Psychology	Crisis and collapse response	Organizational culture and climate	Constructivist, contextualist, and realist perspectives on risk	Importance of a strategic and holistic framework for all stages of a crisis
	Modeling causal attributions for failure and organizational behavior	Leadership	Sensemaking/ grounded theory	Organizational crises, disasters, and accidents	Public's perception of acceptable risk	Composition and practices of an effective crisis management organization
	Strategic complex decision making	Model and case study analysis	Risk Management	Organizational learning and understanding	Institutional, procedural, and societal processes	Need for effective communication to address all aspects of crises to include emotional concerns
Explanation	**Modeling causal attributions to organizational failure, declining performance and behavior, to aid executive leadership in making complex, strategic decisions for turn-around.**	**Examining the psychology of leadership on making strategic policy decisions**	**Examination of organizational response to, and readjustment after, crisis and collapse**	**Examining failure of organizations to crises, disasters and accidents due to organizational culture and climate.**	**Examines the varying decision process perspectives used, and needed, for the effective assessment and analysis of both risk and organizational policy**	**Examines the total impact of organizational crisis, assessing the extent to which companies are crisis prone or prepared.**
Authors	Staw BM	Hermann M	Smith D	Reason J	Otway H	Fink S
	Sutton R	George A	Smith DR	Toft B	Nelkin D	Barton L
	Starbuck WH	Hermann CF	Elliott D	Rasmussen J	Kunreuther H	Pauchant TC
	Miller D	Sundelius B	Peters G	LaPorte T	Beck U	Pearson CM
	D'Aveni R	Brecher M	Foster P	Fortune J	Dynes R	Clair JA
	Sutcliffe K	Rosenthal U	Zimmerman R	**Perrow C**	Lagadec P	**Bowonder B**
	Roberts KH	Dyor Y	Davis KJ	**Turner BA**	**Bowonder B**	**Mitroff II**
	Schwartz HS	**Janis I**	**Davidson W**	**Roberts KH**		
	Perrow C		**Marcus A**			
	Shrivastava P					
	Gephart R					
	Barker JR					
	Janis I					
	Mitroff II					
	Turner BA					
	Vertinsky I					
	Weick KE					
	Marcus A					
	Davidson W					

Agglomerative Hierarchical Cluster Analysis

In addition to factor analysis, SPSS can analyze the data in order to classify it as hierarchical clusters. The method of agglomerative hierarchical cluster analysis was done in accordance with McCain (1990). Specifically, analysis in SPSS was done in accordance with the guidance as outlined by Field (2005) and Garson (2007). In order to do this, each author's name was selected as variables for analysis. The variables, or authors, were clustered and both the statistics and plots were displayed. The agglomeration schedule and proximity matrix were selected, and it was annotated that the range of solutions should have a single solution of 6 clusters as determined above in EFA. A dendrogram and a horizontal icicle plot of all clusters were produced. The between-groups linkage method was used, measuring the intervals between clusters using Pearson correlation. Since a negative value can also show great correlation the measures were transformed for their absolute values.

Table 35 provides a listing of the authors according to how they were clustered in SPSS. This table shows the number of times each author was used in order to effectively cluster them with like authors based on their *r* values. The lower the number next to the case, or author's name, depicts how easily SPSS was able to cluster the authors. In other words, the lower the number, the more closely correlated the authors were.

Table 35. SPSS determined Cluster Membership

Cluster Membership

Case	6 Clusters
Barker JR	1
Barton L	1
Beck U	2
Boin A	3
Bowonder B	2
Brecher M	4
Clair JA	1
Comfort L	3
Cronin K	5
D'Aveni R	1
Davidson W	5
Davis KJ	5
Dror Y	4
Dynes R	3
Elliott D	5
Fink S	1
Fortune J	1
Foster P	5
George A	4
Gephart R	1
Hermann CF	4
Hermann M	4
Janis I	4
Kunreuther H	2
Lagadec P	2
LaPorte T	1
Marcus A	5
Miller D	1
Mitroff II	1
Murray WB	6
Nelkin D	2
Otway H	2
Pauchant TC	1
Pearson CM	1
Perrow C	1
Peters G	5
Rasmussen J	1
Reason J	1
Roberts KH	1
Rosenthal U	4
Schwartz HS	1
Sethi P	5
Shrivastava P	1
Smart C	1
Smith D	5
Smith DR	5
Starbuck WH	1
Staw BM	1
Sundelius B	4
Sutcliffe K	1
Sutton R	1
Toft B	1
Turner BA	1
Vertinsky I	1
Weick KE	1
Zimmerman R	5

Perhaps the most user friendly tool SPSS produced was a dendrogram. This provided a visual representation of how SPSS clustered each of the authors. Figure 12 is a display of the dendrogram produced by SPSS. The line running down the length of the dendrogram shows the point at which SPSS determined all authors to fall under 6 factors. The individual boxes can be read as lines. When the length of two lines for two authors is the same, and is joined at the end with a vertical line, this shows the point at which SPSS determined these authors should be clustered.

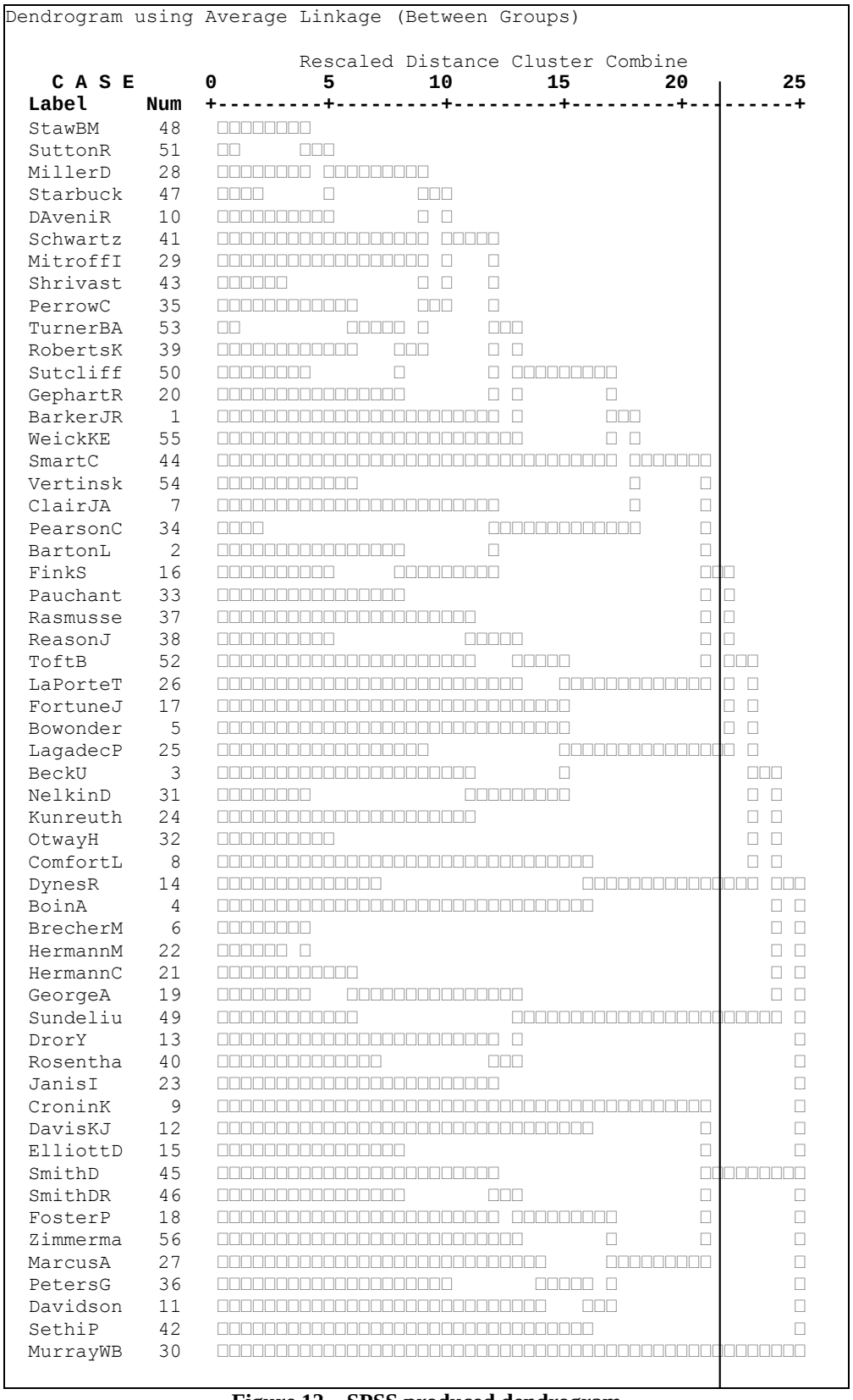


Figure 12. SPSS produced dendrogram

Multidimensional Scaling

Multidimensional scaling (MDS) provides a graphical representation of the clustering and factors. The information ascertained through factor analysis and cluster analysis is combined to show a 2-D view. The method of multidimensional scaling was done in accordance with McCain (1990) and White & Griffith (1981). Specifically, analysis in SPSS was done in accordance with the guidance as outlined by Field (2005) and Garson (2007). In order to do this in SPSS, the data was analyzed using scale, specifically multidimensional scaling (ALSCAL). The author names were selected as the variables to be analyzed. A square matrix was selected where the model used interval measurement and matrix conditionality. Lastly, because only one matrix was used, the scaling model is Euclidean distance. The resultant MDS is shown in Figure 13.

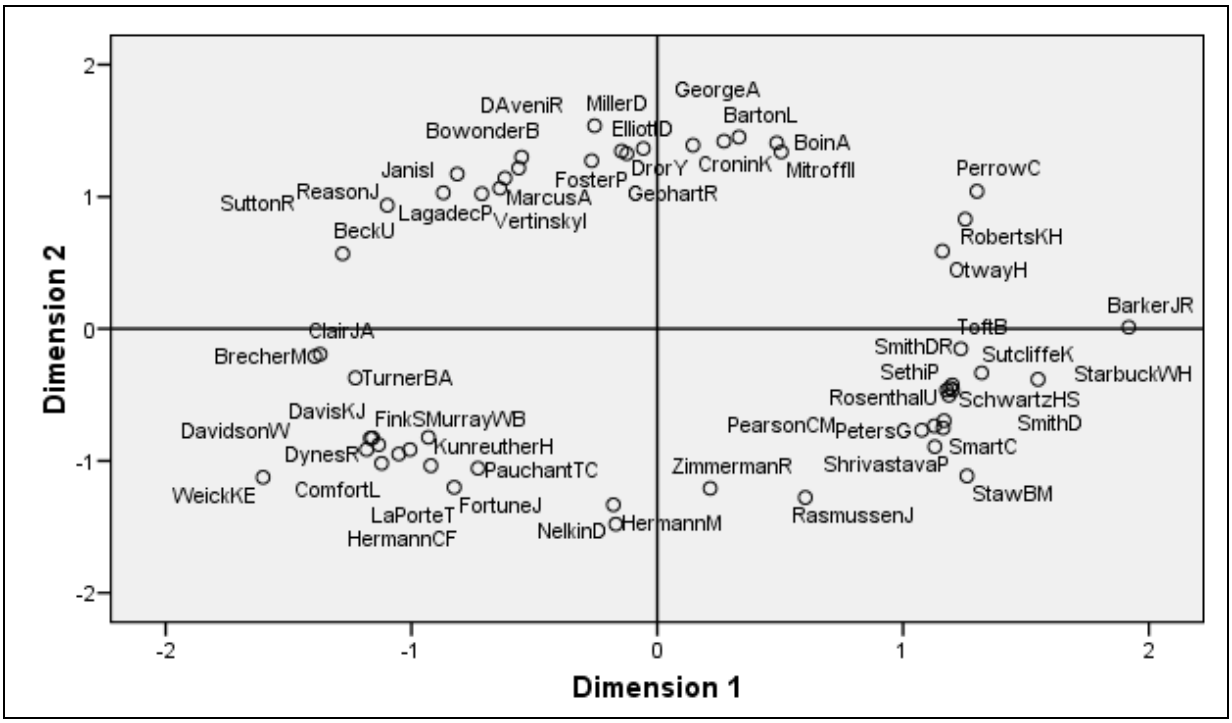


Figure 13. SPSS Produced Euclidean distance MDS

In order to show the "goodness of fit" for the above MDS representation of data, the scatterplot in Figure 14 shows the linear fit. It is important to view the scatterplot of linear fit as well as the multidimensional scaling diagram as it shows how well SPSS was able to represent the data (Garson, 2007). Each circle on the scatterplot shown in Figure 14 is a pair of cocited authors. In other words for every *r* value listing in the correlation matrix there is a corresponding graphical representation. Therefore, the fewer number of disparities the better because the scatterplot shows how accurately the MDS in Figure 13 represents the data. An easy way to determine the goodness of fit is through the pencil test: if the majority of the data points are covered by a pencil, the representation is OK; if not, the rest of the data points, also known as outliers or disparities should fall within two standard deviations (Garson, 2007; Stephens, 2006; McClave, Benson, & Sincich, 2005). The diagram in Figure 14 does not necessarily confirm that this is the case.

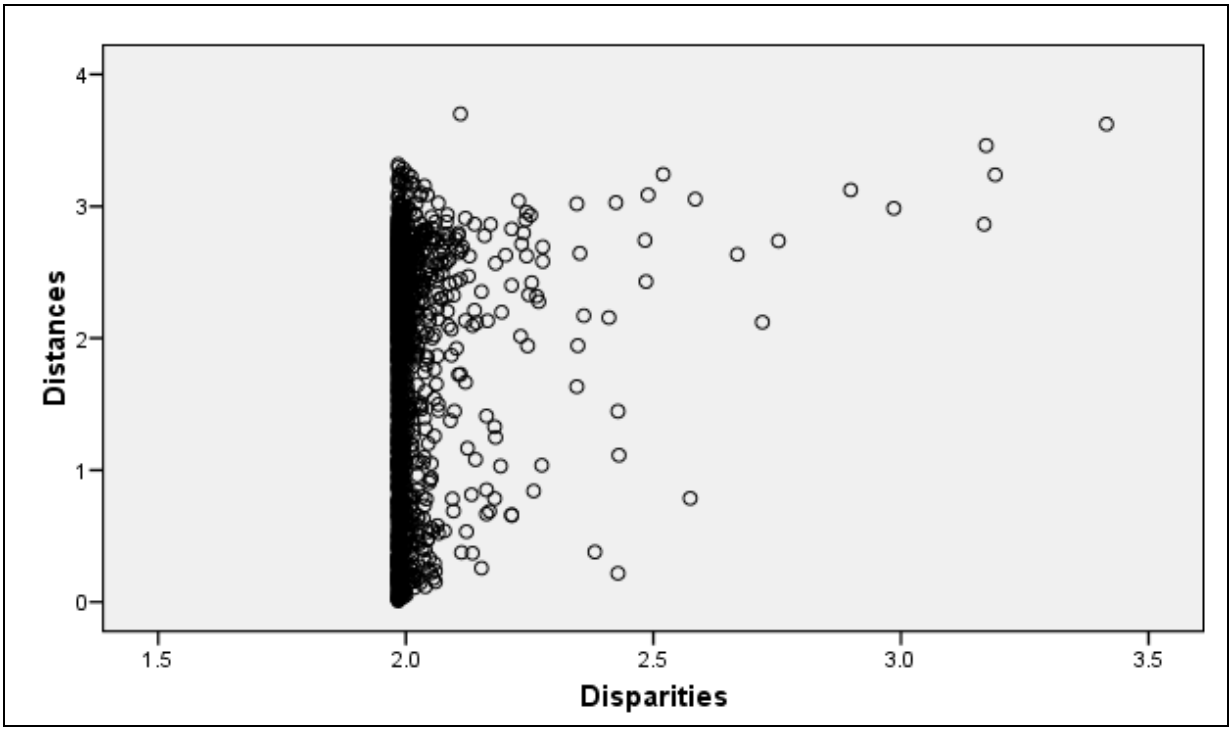


Figure 14. SPSS Produced Scatterplot of Linear Fit

Clustering among relatively like groups of authors was displayed by graphing the highly cocited authors as points in space (White & Griffith, 1981; McCain, 1984; McCain, 1990). In accordance with Garson (2007) and McCain (1990), in addition to displaying the authors according to Euclidean distances, it can be useful to see the authors clustered in MDS using a stress measure. In order to do this in SPSS, the data was again scale analyzed according to ALSCAL. The author's names were again selected as variables; however, the distances were created based on the chi-squared measured counts between variables. The model used interval measurement and matrix conditionality, and again because only one matrix was used the scaling model was Euclidean distance. The resultant MDS is shown in Figure 15.

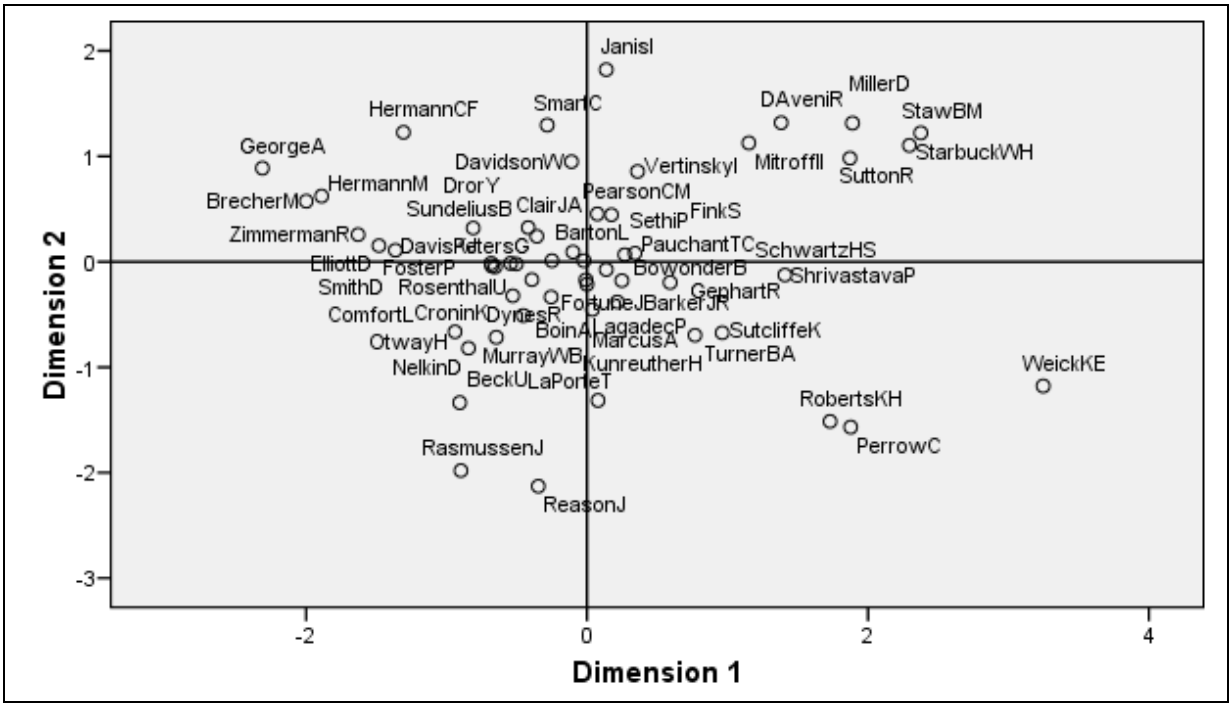


Figure 15. SPSS Produced Chi-Squared distance MDS

As shown with Figures 13 and 14, it is important to review the scatterplot of linear fit in order to show how accurately the MDS in Figure 15 represents the data (Garson, 2007; Stephens, 2006; McClave, Benson, & Sincich, 2005). The diagram in Figure 15 is a more accurate representation

of the data; however, there are still a number of outliers. The axes are labeled, and authors circled to annotated factor association upon determination of resultant labels for each factor. This information is presented in Ch 5: Conclusions.

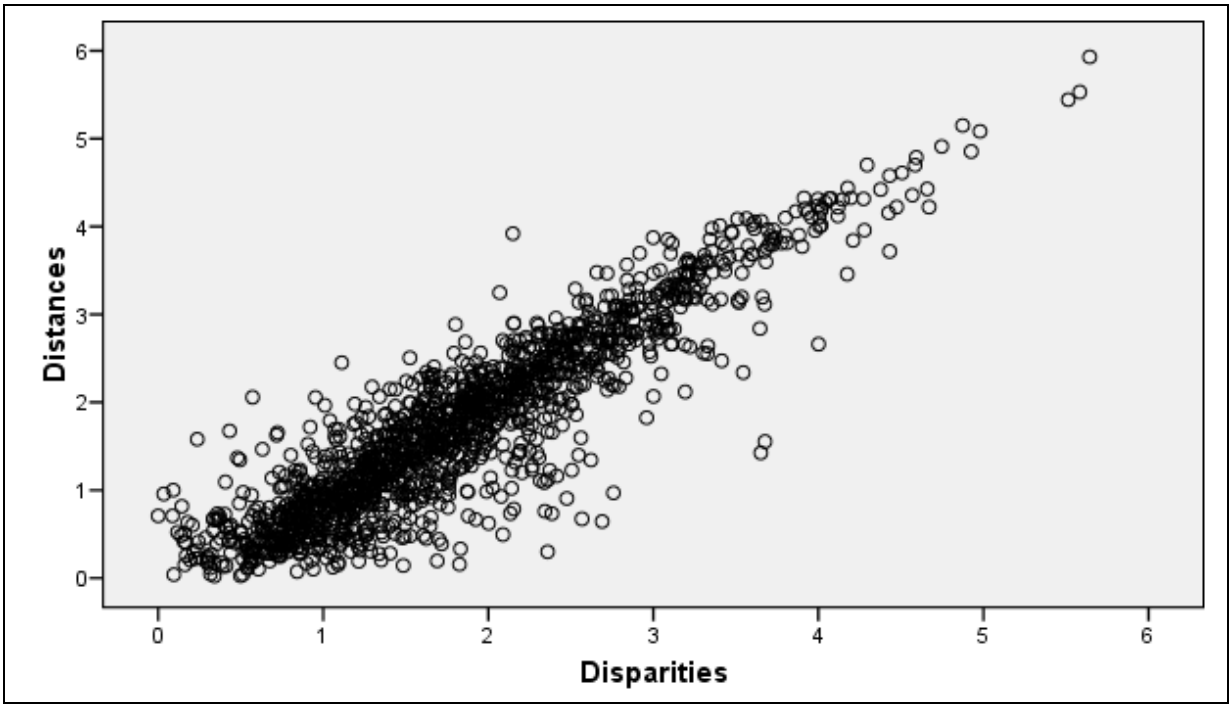


Figure 16. SPSS Produced Scatterplot of Linear Fit

V. Conclusions

The purpose of this section is to conclude by answering all proposed research questions, as well as to illuminate any areas recommended for further future research.

Answering the Research Questions

The goal of this thesis was to answer six research questions. Each of these questions is listed below as a separate heading with the answer following.

Determine seminal authors within of crisis management

For purposes of this thesis, seminal authors are those authors that have contributed extensively to the field of crisis management. The seminal authors were determined through both a literature review and contact in the field. The literature review provided an initial review of those authors and works shown as seminal. However, it was important to study the largest, relative, sample size (Culnan, 1986; McCain, 1990). In order to identify and select a representative sample size, contact was made within the field. The information provided was compiled to provide a peer evaluated and objective list (Bayer et al., 1990). In order to avoid personal judgment, all author names identified through contact with the field and those identified in the literature review were used (White & Griffith, 1981; McCain, 1990). Table 36 lists those authors deemed seminal within the field of crisis management.

Table 36: Seminal Authors

Seminal Authors						
't Hart P	Comfort L	Fortune J	Lagadec P	Pauchant TC	Rosenthal U	Staw BM
Barker JR	Cronin K	Foster P	LaPorte T	Pearson CM	Roux-Dufort C	Sundelius B
Barton L	D'Aveni R	George A	Marcus A	Perrow C	Schwartz HS	Sutcliffe K
Beck U	Davidson W	Gephart R	McKinney EH	Peters G	Sethi P	Sutton R
Boin A	Davis KJ	Hermann CF	Miglani A	Quarantelli H	Shrivastava P	ten Berge D
Bowonder B	Douville R	Hermann M	Miller D	Radell W	Siomkos G	Toft B
Brecher M	Dror Y	Ivine RB	Mitroff II	Rasmussen J	Smart C	Turner BA
Cannell W	Dynes R	Janis I	Murray WB	Reason J	Smith D	Vertinsky I
Catino M	Elliott D	Kovoor-Misra S	Nelkin D	Regester M	Smith DR	Weick KE
Clair JA	Fink S	Kunreuther H	Otway H	Roberts KH	Starbuck WH	Zimmerman R

Determine influential manuscripts, journals, books and book series

The second research goal was to determine influential manuscripts, journals, books, and book series, where for this thesis, influential works were those works that have aided in the further development of the field. As with determining seminal authors, the influential works were determined both through literature review and contact in the field. The literature review provided the initial step in identifying those influential works that was later verified and bounded by contact with the field and through the ACA. Table 37 lists those journals identified as influential within the field of crisis management.

In addition to influential journals, some influential books were identified. This was done, in part, through the extensive literature review. A compilation of works was identify in four ways: (1) through individual reading and research, (2) identified by authors within readings done in the literature review, (3) those identified in an independent study, and (4) through contact within the field. Table 37 lists four of the leading books on crisis management literature as identified in the literature review and through contact with the field. Some helpful resources were also provided through contact with the field and research. These are also listed in Table 37.

Table 37. Influential Journals

INFLUENTIAL WORKS	
Journals	
Academy of Management Perspectives	Journal of Management Studies
Academy of Management Journal	Journal of Marketing
Academy of Management Review	Journal of Medical Education
Administravie Science Quarterly	Journal of Organizational Change Management
California Management Review	Journal of Public Administration Research and Theory
Canadian Journal of Anesthesia	Journal of Risk and Insurance
Chief Executive	Journal of Travel Research
Journal of World Business	JSTOR
Cornell Hotel and Restaurant Administration Quarterly	Leadership
Decision Support Systems (Netherlands)	Long Range Planning (U.K.)
Disaster Prevention and Management	Management Communication Quarterly
Environment	Management Decision
Forum for Applied Research and Public Policy	Management Learning
Futures (U.K.)	Management Science
Geneva Papers on Risk and Insurance	Nation's Business
Industrial Engineering	Organization & Environment
Institute of Crisis Management	Organizational Dynamics
International Journal Mass Emergencies and Disasters	Organizational Science
International Journal of Cross-cultural Management	Preventiqué (France)
International Journal of Project Management	Public Relations Quarterly
International Journal of Service Industry Management	Review of Business
Journal of Business Ethics	SAGE Journals online
Journal of Business Strategy (Canada)	Security Management
Journal of Clinical Anesthesia	Sloan Management Review
Journal of Contingencies and Crisis Management	Strategic Management Journal
Journal of European Public Policy	Technological Forecasting and Social Change
Journal of Management	The Journal of Finance
Books and Book Series	
Fink, S. (2002). Crisis Management: Planning for the Inevitable. Lincoln, NE: iUniverse, Inc.	
Mitroff, I. I. (2001). Managing Crises Before They Happen: What Every Executive and Manager Needs to Know About Crisis Management. New York: AMACOM American Management Association.	
Smith, D., & Elliott, S. (Eds.). (2006). Key Readings in Crisis Management: Systems and Structures for Prevention	
Weick, K., & Sutcliffe, K. (2001). Managing the Unexpected: Assuring High Performance in an Age of	
Websites	
http://www.jstor.org/about/alpha.content.html	Currently Available Journals - Complete Detailed List
http://www.crisisexperts.com/index.html	Founded in 1989, provides focus on crisis communications, uses a research-based approach to crisis consulting, and provides proven communicatoins planning techniques

Identify key areas of crisis management literature

The literature review exposed key, reoccurring commonalities within the literature; however, a classification of these commonalities into themes proved difficult (Smith & Elliot, 2006; Pauchant & Douville, 1992). The synthesis of literature initially mirrored the themes provided by Smith and Elliott. Further review allowed for the extraction of key statements repeatedly proposed by different seminal authors. Additional analysis of these statements allowed for the identification and grouping of five major themes: (1) no structure with crisis management literature for taxonomy, (2) defining crisis and its management, (3) modeling the crisis management process, (4) the causes of crisis, and (5) keys to successful management.

The key areas of crisis management literature as identified through the intensive literature review are each outlined in Tables 38-42.

Table 38. Key Area 1

Theme	Statement	Citations	Authors	Understanding crisis management	Modeling the crisis management process	The crisis of management	Crisis management in practice
No structure with crisis management literature for taxonomy	Crisis management is a relatively new field of study and is still in its infancy.	Pauchant & Douville, 1992, p. 58	Pauchant & Douville				
		Pearson & Clair, 1998, p. 73	Pearson & Clair				
		Smith & Elliott, 2006, p. 70, 72, 75, 84-5, 160, 175, 369, 371	Mitroff, Pauchant, Shrivastava				
			Miller				
			Smith				
			Roberts				
			Elliott and Smith	x	x		x
	Crisis/Crisis management extends across multiple disciplines and efforts across all have not been synethesized	Hermann, 1963, p. 62	Hermann				
		Lalonde, 2007, p. 95, 96	Lalonde				
		Pauchant & Douville, 1992, p. 59	Pauchant & Douville				
		Pearson & Clair, 1998, p. 59, 61, 67, 73	Pearson & Clair				
		Smith & Elliott, 2006, p. 70, 101-2, 149, 160, 302, 371	Mitroff, Pauchant, Shrivastava				
			Smith				
			Roberts				
			Elliott and Smith	x	x	x	x

Table 39. Key Area 2

Theme	Statement	Citations	Authors	Understanding crisis management	Modeling the crisis management process	The crisis of management	Crisis management in practice
Defining crisis and its management	Crises are complex, with tightly coupled events	Lalonde, 2007, p. 95	Lalonde				
		Mitroff, 2001, p. 23-4	Mitroff				
		Smith & Elliott, 2006, p. 2, 3, 6, 15, 21, 115, 136, 163, 249, 274-5, 301, 321, 386	Smith				
			Perrow				
			Turner				
			Pauchant and Mitroff				
			Roberts				
			Reason				
			Weick				
			Smart and Vertinsky				
			Elliott	x	x	x	x
	Crises are strategic in nature	Fink, 2002, p. 141	Fink				
		Smith & Elliott, 2006, p. 16, 21, 26, 29, 62-3, 77-81, 100, 103, 152-3, 163, 222, 249, 274-5, 371, 373, 394	Perrow				
			Shrivastava, Mitroff, Miller, Miglani				
			Mitroff, Pauchant, Shrivastava				
			Miller				
			Smith				
			Roberts				
			Barton				
			Reason				
			Weick				
			Elliott and Smith				
			Elliott				
		Weick and Sutcliffe, 2001, p. 8-9	Weick and Sutcliffe	x	x	x	x
	Organizations hold to a belief that they are vulnerable to crises, as crises are inevitable, and human-caused crises have increased in frequency	Fink, 2002, p. 67	Fink				
		Hermann, 1963, p. 63	Hermann				
		Lalonde, 2007, p. 95	Lalonde				
		Mitroff, 2001, p. 3, 9, 22-3	Mitroff				
		Smith & Elliott, 2006, p. 15, 21, 48, 137-8, 147-8, 246, 321	Perrow				
			Mitroff, Pauchant, Shrivastava				
			Pauchant and Mitroff				
			Smith				
			Reason				
			Smart and Vertinsky	x	x	x	x
	Various fields view "crisis" differently	Hermann, 1963, p. 63	Hermann				
		Pauchant & Douville, 1992, p. 44-	Pauchant & Douville				
		Pearson & Clair, 1998, p. 62-5	Pearson & Clair				
		Smith and Elliot, 2006, p. 101-2, 148-9, 302	Smith	x	x		
	Each field has established a "working definition" of (industrial, organizational) crisis and/or (effective) crisis management: As a whole crisis is poorly defined	Fink, 2002, p. 15	Fink				
		Hermann, 1963, p. 64	Hermann				
		Mitroff, 2001, 6, p. 34-5	Mitroff				
		Lalonde, 2007, p. 96	Lalonde				
		Pauchant & Douville, 1992, p. 45-	Pauchant & Douville				
		Pearson & Clair, 1998, p. 66	Pearson & Clair				
		Roux-Dufort, 2007, p. 107	Roux-Dufort				
		Smith & Elliott, 2006, p. 7, 31, 48, 76, 86, 148-9	Smith				
			Shrivastava, Mitroff, Miller, Miglani				
			Mitroff, Pauchant, Shrivastava				
			Miller				
			Boin	x	x		
	The terms crisis, disaster, risk, etc are not interchangeable	Lalonde, 2007, p. 96	Lalonde				
		Mitroff, 2001, p. 6	Mitroff				
		Pauchant & Douville, 1992, p. 44	Pauchant & Douville				
		Smith & Elliott, 2006, p. 1, 85	Smith				
			Boin	x			

Table 40. Key Area 3

Theme	Statement	Citations	Authors	Understanding crisis management	Modeling the crisis management process	The crisis of management	Crisis management in practice
Modeling the crisis management process	There are themes within crisis management literature and types of crises with certain characteristics	Mitroff, 2001, p. 34-5	Mitroff				
		Pauchant & Douville, 1992, p. 49	Pauchant & Douville				
		Smith & Elliott, 2006, p. 31-6, 191	Shrivastava, Mitroff, Miller, Miglani				
			Turner and Toft				
		Weick and Sutcliffe, 2001, p. 22-3	Weick and Sutcliffe	x	x		
	There is a relationship between crisis and organizational variables	Hermann, 1963, p. 66	Hermann				
		Mitroff, 2001, p. 42-7	Mitroff				
		Pearson & Clair, 1998, p. 61-2	Pearson & Clair				
	Crises should be studied systematically, holistically.	Hermann, 1963, p. 63	Hermann				
		Mitroff, 2001, p. 140, 153	Mitroff				
		Smith & Elliott, 2006, p. 67, 99, 176, 180-90, 301-2	Mitroff, Pauchant, Shrivastava				
			Smith				
			Roberts				
			Fortune and Peters	x	x	x	
	Crisis are dynamic and can result in a chain reaction or ripple effect	Fink, 2002, p. 34, 80, 81	Fink				
		Mitroff, 2001, p. 38	Mitroff				
		Smith & Elliott, 2006, p. 21, 110, 174	Perrow				
			Smith				
			Roberts	x	x		
	A crisis has stages or phases.	Fink, 2002, p. 10-25, 73	Fink				
		Smith & Elliott, 2006, p. 2, 6, 15, 21, 99, 149, 151, 154-6, 384-9	Smith				
			Perrow				
			Elliott and Smith	x	x		x
	Crises cannot be addressed by a checklist, but can be handled by following certain steps as outlined by a framework or model	Fink, 2002, p. 34-36, 73	Fink				
		Lalonde, 2007, p. 97	Lalonde				
		Mitroff, 2001, p. 140, 143	Mitoff				
		Pearson & Clair, 1998, p. 66	Pearson & Clair				
		Smith and Elliot, 2006, p. 101, 110, 115, 149-55, 193, 198-203, 406-9	Smith				
			Turner				
			Turner and Toft				
			Elliott		x	x	
Causes of Crisis	A crisis can be caused by different factors	Mitroff, 2001, p. 24, 50, 55	Mitroff				
		Pearson & Clair, 1998, p. 62-5	Pearson & Clair				
		Roux-Dufort, 2007, p. 108	Roux-Dufort				
		Smith & Elliott, 2006, p. 31	Shrivastava, Mitroff, Miller, Miglani	x			
	Crises give off warning signs and signal detection is important.	Fink, 2002, p. 180	Fink				
		Mitroff, 2001, p. 40, 102, 107-112	Mitroff				
		Roux-Dufort, 2007, p. 108-10	Roux-Dufort				
		Smith & Elliott, 2006, p. 3, 70	Smith				
			Mitroff, Pauchant, Shrivastava	x			

Table 41. Key Area 4

Theme	Statement	Citations	Authors	Understanding crisis management	Modeling the crisis management process	The crisis of management	Crisis management in practice
Keys to successful crisis management	A key to successful crisis management is in being proactive and having a crisis management plan	Fink, 2002, p. 34-36, 47-8, 54, 55, 67, 70, 109, 114, 180-1	Fink				
		Mitroff, 2001, p. 8-9, 40, 42-8	Mitroff				
		Pauchant & Douville, 1992, p. 58-9	Pauchant & Douville				
		Smith & Elliott, 2006, p. 69, 143, 153-4, 249	Mitroff, Pauchant, Shrivastava				
			Smith				
			Reason	x	x	x	
	A cardinal rule for crisis management is that no crisis occurs exactly as predicted: Organizations must plan and be prepared for the unexpected, and be able to answer "what if" questions.	Fink, 2002, p. 36, 55, 57-8	Fink				
		Hermann, 1963, p. 64	Hermann				
		Mitroff, 2001, p. 14	Mitroff				
		Murray, 2000, p. 634	Murray				
		Smith & Elliott, 2006, p. 15, 21, 26, 70	Perrow				
			Mitroff, Pauchant, Shrivastava				
		Weick and Sutcliffe, 2001, p. 3, 8-9, 49-50, 83, 159	Weick and Sutcliffe	x			
	Successful crisis management requires central management.	Mitroff, 2001, p. 121	Mitoff				
		Roux-Dufort, 2007, p. 112	Roux-Dufort				
		Smith & Elliott, 2006, p. 18-9, 103	Perrow				
			Smith	x	x		
	Commitment in a crisis is good (generates meaning) and bad (blind spots): It's important to ensure the organization is continually solving the correct problem.	Mitroff, 2001, p. 124	Mitoff				
		Roux-Dufort, 2007, p. 111	Roux-Dufort				
		Smith & Elliott, 2006, p. 125, 193-4, 210	Turner				
			Turner and Toft				
			Weick		x		
	Organizational culture and an appropriate mindset is important to successful crisis management.	Fink, 2002, p. 83, 134	Fink				
		Mitroff, 2001, p. xii, 42-3	Mitoff				
		Smith & Elliott, 2006, p. 103, 110, 115, 148, 150, 152, 156, 220-3, 271, 343, 348, 360, 372-3, 384-9, 399	Smith				
			Turner				
			Barton				
			Weick				
			Weick and Roberts				
			Elliott				
		Weick and Sutcliffe, 2001, p. 3, 10, 42, 46, 49-50, 114, 115, 119, 147	Weick and Sutcliffe		x	x	x
	Organizational learning is important to successful crisis management	Fink, 2002, p. 151, 153-218	Fink				
		Mitroff, 2001, p. 87-8, 90, 94, 98, 104, 115, 120-1, 124, 126, 127, 153	Mitoff				
		Smith & Elliott, 2006, p. 15, 70, 103, 389	Perrow				
			Mitroff, Pauchant, Shrivastava				
			Smith				
			Smith & Elliott	x	x		x
	Organizational denial is a key barrier for organizations to overcome in order to effectively manage crises.	Mitroff, 2001, p. 8-9, 47-8, 90	Mitoff				
		Smith & Elliott, 2006, p. 67, 100, 140, 302	Mitroff, Pauchant, Shrivastava				
			Smith				
			Pauchant and Mitroff	x	x	x	

Table 42: Key Area 5

Theme	Statement	Citations	Authors	Understanding crisis management	Modeling the crisis management process	The crisis of management	Crisis management in practice
Keys to successful crisis management	Crisis communications are important	Fink, 2002, p. 88, 89, 92, 93, 99-100, 105, 180	Fink				
		Lalonde, 2007, p. 95	Lalonde				
		Mitroff, 2001, p. 61, 62, 68	Mitroff				
		Smith & Elliott, 2006, p. 120, 151-2, 156, 192, 379-80, 384-9, 404-6	Turner				
			Smith				
			Turner and Toft				
			Elliott and Smith				
			Elliott		x		x
	Stakeholders can have an affect in organizational success in crises.	Fink, 2002, p. 125	Fink				
		Mitroff, 2001, p. 50, 124	Mitroff				
		Pearson & Clair, 1998, p. 66	Pearson & Clair				
		Smith & Elliott, 2006, p. 29, 31-6, 75, 107, 139-41, 143, 398-9, 404-6	Shrivastava, Mitroff, Miller, Miglani				
			Miller				
			Smith				
			Pauchant and Mitroff				
			Elliott				
		Weick & Suttcliffe, 2001, p. 1-224	Weick and Sutcliffe	x	x		x
	The human (socio-) element with a crisis results in crises having an emotional effect that must be weighed, considered, and appropriately addressed.	Fink, 2002, p. 197	Fink				
		Lalonde, 2007, p. 97	Lalonde				
		Mitroff, 2001, p. 88, 98, 120-1, 127	Mitroff				
		Pearson & Clair, 1998, p. 66	Pearson & Clair				
		Smith & Elliott, 2006, p. 58, 140-3, 192, 196, 209, 387	Mitroff, Pauchant, Shrivastava				
			Pauchant and Mitroff				
			Weick				
			Elliott and Smith	x	x		x

Identify and classify key fields of study within crisis management literature

The key fields of study were determined by performing a factor analysis on the results of the author cocitation study done in SSCI. Table 43 highlights the results of this analysis. The results of the factor analysis provided 6 main clusters: (1) causes of crisis, (2) leadership behavior, (3) crisis response, (4) organizational failure, (5) managing risk, and (6) effective crisis management). This are very closely related to the five major themes identified in the literature review: (1) no structure with crisis management literature for taxonomy, (2) defining crisis and its management, (3) modeling the crisis management process, (4) the causes of crisis, and (5) keys to successful management. In fact, many of the key themes from the factor analysis and statements from the literature review are identical. The most revealing of the factors was factor 2, leadership behavior. Although touched on in the literature review, its high relative importance to the other clusters was not effectually realized until the completion of the factor analysis.

Table 43: Classification of key fields of study

Factor	Causes of Crisis	Leadership behavior	Crisis Response	Organizational Failure	Managing Risk	Effective crisis management
Key themes	Executive management leadership	Strategic policy making	Organizational culture and dynamics	Managing catastrophic failure risks	Defining risk	Depicts crisis as inevitable, highly interactive, tightly coupled, high-risk potential, catastrophic events that cross multiple disciplines.
	Declining organizational performance and turn-around	Psychology	Crisis and collapse response	Organizational culture and climate	Constructivist, contextualist, and realist perspectives on risk	Importance of a strategic and holistic framework for all stages of a crisis
	Modeling causal attributions for failure and organizational behavior	Leadership	Sensemaking/ grounded theory	Organizational crises, disasters, and accidents	Public's perception of acceptable risk	Composition and practices of an effective crisis management organization
	Strategic complex decision making	Model and case study analysis	Risk Management	Organizational learning and understanding	Institutional, procedural, and societal processes	Need for effective communication to address all aspects of crises to include emotional concerns
Explanation	**Modeling causal attributions to organizational failure, declining performance and behavior, to aid executive leadership in making complex, strategic decisions for turn-around.**	**Examining the psychology of leadership on making strategic policy decisions**	**Examination of organizational response to, and readjustment after, crisis and collapse**	**Examining failure of organizations to crises, disasters and accidents due to organizational culture and climate.**	**Examines the varying decision process perspectives used, and needed, for the effective assessment and analysis of both risk and organizational policy**	**Examines the total impact of organizational crisis, assessing the extent to which companies are crisis prone or prepared.**
Authors	Staw BM	Hermann M	Smith D	Reason J	Otway H	Fink S
	Sutton R	George A	Smith DR	Toft B	Nelkin D	Barton L
	Starbuck WH	Hermann CF	Elliott D	Rasmussen J	Kunreuther H	Pauchant TC
	Miller D	Sundelius B	Peters G	LaPorte T	Beck U	Pearson CM
	D'Aveni R	Brecher M	Foster P	Fortune J	Dynes R	Clair JA
	Sutcliffe K	Rosenthal U	Zimmerman R	**Perrow C**	Lagadec P	**Bowonder B**
	Roberts KH	Dyor Y	Davis KJ	**Turner BA**	**Bowonder B**	**Mitroff II**
	Schwartz HS	**Janis I**	**Davidson W**	**Roberts KH**		
	Perrow C		**Marcus A**			
	Shrivastava P					
	Gephart R					
	Barker JR					
	Janis I					
	Mitroff II					
	Turner BA					
	Vertinsky I					
	Weick KE					
	Marcus A					
	Davidson W					

Provide a mapping tool

The purpose of Phase 3 was to provide a mapping tool to display seminal authors with respect to their specific field of study within crisis management. In order to do this, the multidimensional scaling tool and factor analysis created in Phase 2 were combined. The Euclidean distance MDS output was used because it is the standard agreed upon by researchers (Garson, 2007). The Figures 17-19 display three different factor labeled multidimensional scaling tools: The first depicts the authors as points, the second as total clusters, and the third as clusters along axes.

In accordance with Field (2005) and researcher opinion, in all MDS figures the x-axis is labeled in terms of Factor 1, or causes of crisis, and the y-axis is labeled in terms of Factor 2, or leadership behavior. The authors are graphed according to their r values and the distance between authors is their Euclidean distance (Field, 2005; Garson, 2007). The fact that all clusters overlap further illustrates how ill defined and structured the field of crisis management is currently.

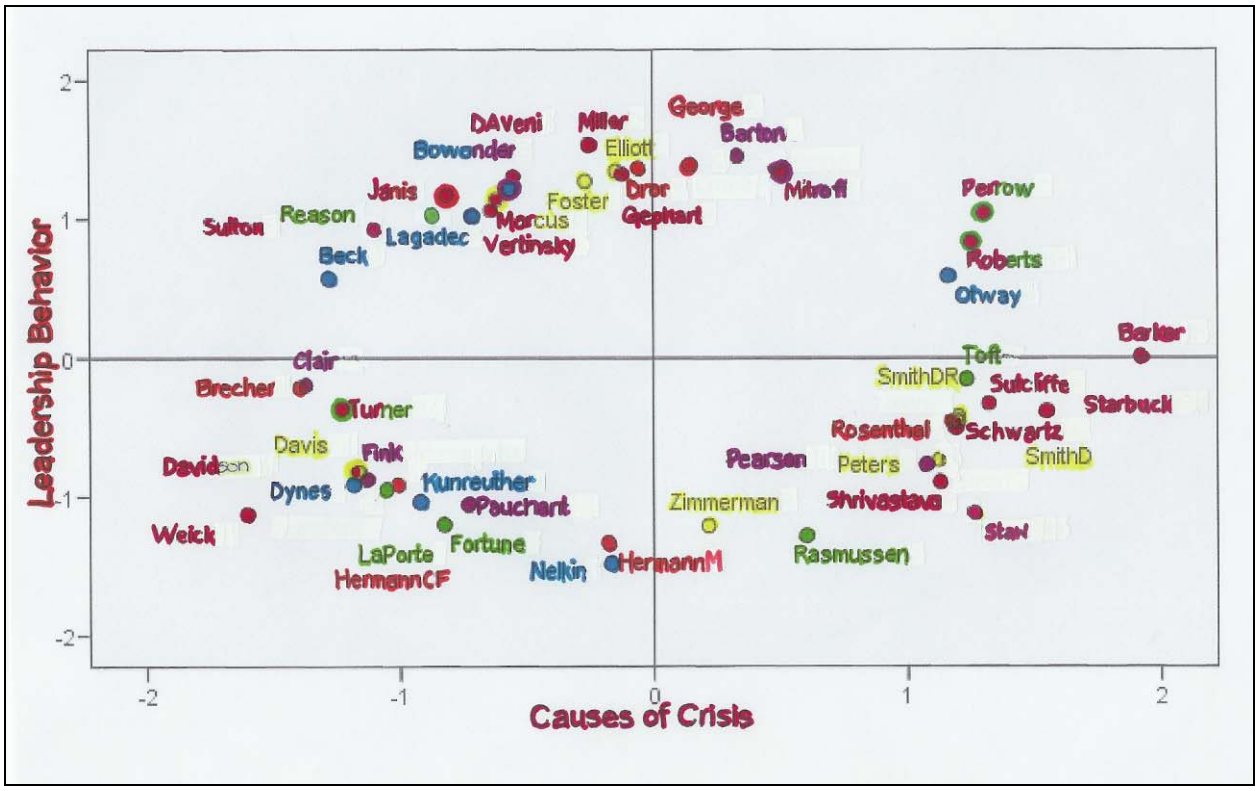


Figure 17: MDS with authors as points

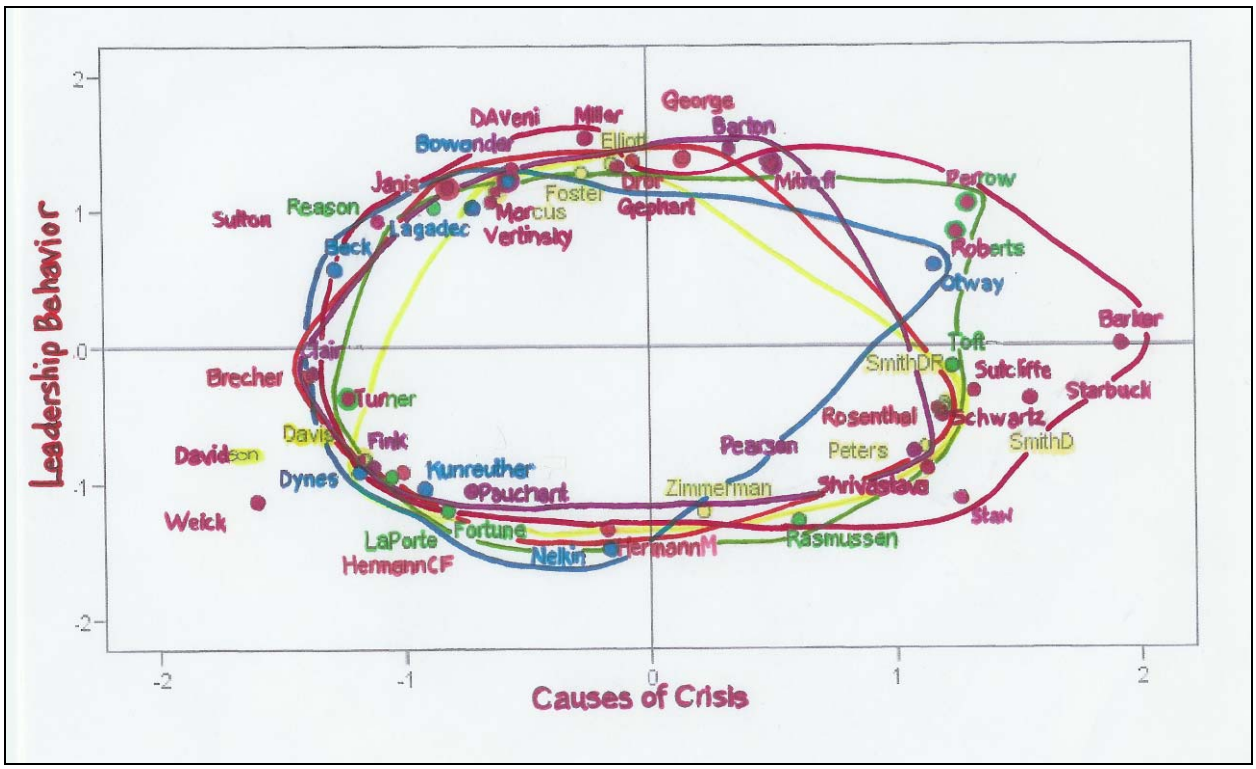


Figure 18: Clustered MDS

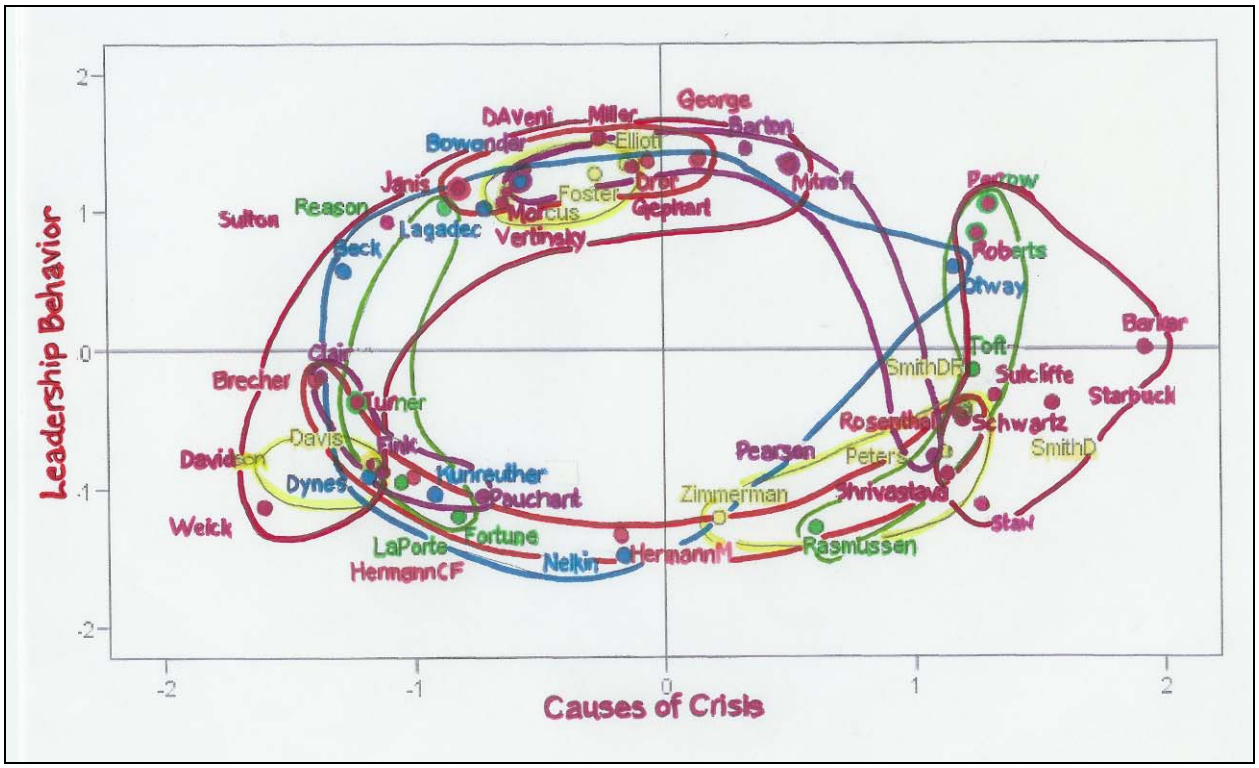


Figure 19: Clustered by axes MDS

Provide an all accessible, user-friendly interface

The intent of this interface is to make the information presented in this thesis available to researchers and individuals interested in crisis management literature. The intent is to make this tool available on the Air Force Institute of Technology website. Additionally, a copy of this thesis will be provided to those seminal authors and works that requested feedback. The information then has the potential to be shared to the larger academic community through conferences and through publication in a peer-reviewed journal.

Limiting Factors

It is important to outline the limitations of this thesis for a few reasons. It is vital that readers understand the process as a whole. Limiting factors are simply that: They have the potential to skew the research data, and in so doing hey also serve as a caution. However, identifying limiting factors also proposes areas for further research.

There first limiting factor was a matter of scope. A review of the literature confirmed that crisis management is an emerging and multidisciplinary field that lacks definition and structure. The crisis management literature as it now exists is both anecdotal and case study based, and lacks in generalizability to contexts outside those of the specific cases studied. Additionally, the multidisciplinary nature of the field posed a further problem. Due to time constraints the crisis management literature was examined as a whole, and not broken down into time segments to show progress through the field. Additionally, the only authors thoroughly examined fell under the management field. This was due to the focus of the researcher's literature review, as well as the replies from contact made with the field. It has been shown that crisis management touches disciplines from medicine to economics to business; however, because of scope and response this was limited.

The second limiting factor is with the methodology. The event-data problems of citation analysis as cited by MacRoberts and MacRoberts (1989) were highlighted in Chapter 3. Some of the more prevalent are author selection and the use of the SSCI. The only author names used were those from the *a priori* list. However, these names had the potential for bias as they are primarily associated with the management discipline. This was due to the focus of the researcher's literature review, as well as the replies from contact made with the field. It has been shown that crisis management touches disciplines from medicine to economics to business; however, because of scope and response this was limited. The second limiting factor within the methodology lies within the SSCI itself. The SSCI is only guaranteed accurate from 1980 to the present. Additionally, the index is set up in such a way as that one can only search by what you know. Because of this, the index's results for a specific author may or may not be 100% accurate. In other words, the results for SmithJ* may not in fact be for the SmithJ that applies to

one's research. Although this probability of error is greatly reduced through the ACA, as by very definition, it looks at the intersections of like authors, there is still a chance of error.

The last limiting factor proved ironic. The literature review exposed key, reoccurring commonalities within the literature; however, a classification of these commonalities into themes proved difficult. Smith and Elliott illustrated this key concern in stating: "The analysis of crises does not fall neatly within any particular analytical or theoretical paradigm in the literature….the practice of crisis management is beginning to challenge many of the core assumptions…held within some disciplines" (Smith & Elliot, 2006, 6). This proved to still remain the case. The field of crisis management, as shown by the MDS outputs, factor analysis, clustering, and dendogram, authors load onto more than one factor, and span the spectrum of factors. This proves that although there has been development and contribution within the field, it is not yet at a point for clear and useful taxonimization.

Future Research

While working through the outlined methodology in an effort to successfully meet the research goals and close the gap in literature, several ideas and needs for further research surfaced. Each of these was either outside the scope, time table for completion, or resources available. However, the researcher feels as though their completion would be of great value to the field of crisis management.

The first suggestion for future research would be to repeat the methodology; however, to provide a timeline approach. By evaluating author oeuvres in 3-5 year intervals, one would be able to track the progression of the field from inception until today. This would show any development, mark areas of stagnation, as well as show areas of significant and peaked growth.

This would add value to the field as it would show academics areas of improvement and further study.

The following suggestion for further research may prove the most influential to the growth of the crisis management. As the multidimensional scaling outputs illustrate, the grouping and overlapping clusters of the authors in each factor show how interconnected the field remains. Additionally, as shown in the factor analysis, there are several authors that cross into, or load onto, more than one factor. Further, these issues presented themselves by looking at strictly management related articles. The literature has shown crisis management to be a multidisciplinary field. The researcher strongly recommends repeating this procedure for the other major crisis related fields such as medicine, economics, business, etc. Additionally, after completing a cocitation analysis on crisis management literature for each of these fields, an overall cocitation analysis could be done on all crisis management literature, in all fields, as call for by Pearson (1998).

Finally, as outlined by Chen et al. (2001), domain visualization builds upon the statistical analysis and provides a user friendly depiction of the data. Chen et al. (2001) argues that while cocitation analysis and EFA are important first steps, domain visualization "augments traditional domain analysis and the understanding of scientific disciplines, but also produces a persistent and shared knowledge space for researchers to keep track of the development and knowledge more effectively" (Chen et al., 2001, p. 315, 317). Chen et al. compare citation analysis to today's web, stating that scientific literature is comparable to a jigsaw puzzle. Citation indexing exposes an underlying, inherent structure of scientific knowledge. This allows researches to identify and evaluate the nature of important articles. Author cocitation analysis in particular uses the authors, not the articles, as data points and units of analysis in literature. The addition of

information visualizing to ACA strengthens the role of ACA (Chen et al., 2001). Although good in intent, ACA can prove difficult to interpret because the relationship between authors is accomplished through multi-dimensional scaling (MDS) (Chen et al., 2001).

Chen et al. outline 12 steps for the domain visualization analysis process:

(1) Obtain bibliographic data from the SCI,

(2) Identify bibliographic records corresponding to a set of source journals,

(3) Select the most representative author population above a citation threshold,

(4) Compute author cocitation counts,

(5) Generate author cocitation matrices,

(6) Identify essential structure of the subject domain using factor analysis,

(7) Preserve the strongest semantic relations using Pathfinder network scaling,

(8) Superimpose high-dimensional features of author cocitation networks through animation,

(9) Map semantic models to spatial models,

(10) Incorporate citation history of individuals into the spatial-semantic model using color mapping,

(11) Present the spatial-semantic model as information landscape, and

(12) Enable multi-user access to the domain through information landscape.

The factors selected in steps 6 and 7 should be based in part on having eigenvalues greater than 1. Each of the factors selected should have a corresponding variance. This breakdown will verify why each factor was selected (Chen et al., 2001; Conway & Huffcutt, 2003). Latent Semantic Indexing (LSI) and PFNET are used to model the semantic map (step 9). Each of the

factors is color coded (step 10) to depict its frequency: glowing areas depict a specialty (Chen et al., 2001; Rousseau, 2004).

The most impressive piece of domain visualization being used in conjunction with ACA is the creating of a landscape model (step 10): “The landscape model provides a semantic-rich and multifaceted representation of the knowledge domain….The three dimensional landscape invites users to explore trends and peaks of citations, clusters of authors, or shortest paths connecting two different areas” (Chen et al., 2001). This all encompassing way to visualize the data would make it easier for users to interpret and therefore apply the data.

Final Conclusions

The purpose of this thesis was to address the need for a structured mapping of academic literature relating to crisis management. An overview of current crisis management literature was provided, paying specific attention on the predominant themes identified in previous taxonomy oriented reviews, as well as those extracted from other influential works. The need for organization within the literature was presented and clearly outlined. A well purposed methodology was provided and followed, the results from which proved extremely helpful, although not such a way as anticipated. The resultant MDS and factor analysis, although well depicted of the field, further showed the inability of the crisis management field, as it now is, to be well taxonomized.

Appendix A. Responses from literature review identified seminal authors

First	Last	Email	Contact	Reply	Notes
Laurence	Barton	larry@larrybarton.com	Y	N	
Arjen	Boin	boin@fsw.leidenuniv.nl	Y	Y	Dear Elizabeth, Many thanks for your mail. In response to your question, I will list only the people that I feel have made the most important contributions to the study of crisis management (in no particular order): Paul 't Hart, Irving Janis, Henry Quarantelli, Russell Dynes, Bengt Sundelius, Charles Perrow, Todd LaPorte, Patrick Lagadec, Karl Weick, Alexander George, Peg (Margaret) Hermann, Louise Comfort, Michael Brecher, Barry Turner, Yehezkel Dror. The references would be too many to list here. I hope this helps. If you have any questions, do not hesitate to contact me. Yours sincerely, Arjen Boin
B	Bowonder	bowonder@asci.org.in	Y	N	
William	Cannell	william.cannell@cec.eu.int	Y	N	
Judith	Clair	clairju@bc.edu	Y	N	
Richard	D'Aveni	richard.a.d'aveni@tuck.dartmouth.edu	Y	N	
Wallaces	Davidson	davidson@cba.siu.edu	Y	Y	I am not involved in crisis research. My research focus is corporate governance. Sorry for the confusions. Wallace N. Davidson
Roseline	Douville	Unavailable	NA	NA	
Dominic	Elliott	D.Elliott@liverpool.ac.uk	Y	Y	Hi elizabeth a quick response to your key question, wil mail others as I think of them good luck and interested to hear how you get one warm regards dominic 2. Determine seminal authors within of crisis management * Barry Turner, ASQ 1976, Charles Perrow, 1983/4, Paul Shrivastava 1987/92 etc. Ian Mitroff, * also people like Larry Barton, Denis Smith, Thierry Pauchant, Christine Pearson, Judith Clair, * in related areas Karl Weick on sensemaking 2. Identify and classify key fields of study within crisis management literature * see Pauchant and douville 1993 for one lit review, Pearson and Clair 1998 for another and Smith and Elliott key readings in CM for yet another
Steven	Fink	information@lexiconcorp.com	Y	N	
Joyce	Fortune	j.fortune@open.ac.uk	Y	N	
Patrick	Foster	Unavailable	NA	NA	
Robert	Gephart	rgephart@ualberta.ca	NA	NA	undeliverable
Charles	Hermann	chermann@bushschool.tamu.edu	Y	N	
Howard	Kunreuther	kunreuther@wharton.upenn.edu	Y	N	

Appendix B. Responses from literature review identified seminal authors

First	Last	Email	Contact	Reply	Notes
Patrick	Lagadec	contact@patricklagadec.net	Y	Y	Dear Elizabeth, My idea would be to split two worlds 1. Crisis management in the 1980-90 : you will find the key authors in my book Preventing Chaos in a Crisis. some of them : - Rosenthal, Uriel, Michael T. Charles, Paul 'T Hart (Ed.) : Coping with crises. The Management of Disasters, Riots and Terrorism, Charles C. Thomas Publisher, Springfield, Illinois, 1989. - Mitroff, Ian and Thierry Pauchant : We're So Big And Powerful Nothing Bad Can Happen To Us - An investigation of America's Crisis- Prone Corporations, Carol Publishing Group, New York, 1990. - Pauchant Thierry and Ian Mitroff : Transforming the Crisis-Prone Organization, The Jossey-Bass publishers, San Francisco, 1992. - ten Berge, Dieudonnée : The First 24 Hours. A comprehensive guide to successful crisis communications, Basil Blackwell, Oxford, 1990. - Fink, Steven : Crisis management. Planning for the Inevitable, Amacom, American Management Association, 1986. - Regester, Michael : Crisis Management. What to do when the unthinkable Happens, Hutchinson Business, Londo - Irvine, R. B. : When you are the Headline - Managing a major News Story, Dow Jones-Irwin, 1987. 2. Emerging Crises and Chaotic Environment You could have a look at my website. http://www.patricklagadec.net This is the vital domain now. Do not hesitate to go on my website, and to come back to me if useful, Best wishes, Patrick
Alfred	Marcus	amarcus@umn.edu	Y	N	
Anil	Miglani	amiglani@ami-partners.com	Y	N	
Danny	Miller	Danny.Miller@hec.ca	Y	N	
Ian	Mitroff	ian@mitroff.net.	Y	N	
W	Murray	walter@leland.stanford.edu	Y	N	
Dorothy	Nelkin	Unavailable	NA	NA	Passed away: 28 May 2003
Harry	Otway	Unavailable	NA	NA	
Thierry	Pauchant	Thierry.Pauchant@hec.ca	Y	N	
Christine	Pearson	christine.pearson@thunderbird.edu	Y	Y	These folks would be top of the list for me: Ian Mitroff Karl Weick Karlene Roberts Christophe Roux-Dufort (France) Dennis Smith (Great Britain) Robert Gephart Dominic Elliott (France) Ulrich Beck (Germany) Judith Clair Sarah Kovoor-Misra Thierry Pauchant (Canada) You can find their citations via google.scholar, I'm sure. Cheers, Chris Pearson
Charles	Perrow	charles.perrow@yale.edu	Y	N	
Goeff	Peters	Unavailable	NA	NA	

Appendix C. Responses from literature review identified seminal authors

First	Last	Email	Contact	Reply	Notes
Willard	Radell	Willard.Radell@iup.edu ciboney@iup.edu	Y		Dear Capt. Yesue, You have an interesting Masters thesis topic. I can give you a few names (not an exhaustive list), but you should also consult "Web of Science." Web of Science is an expensive data base of linked citations. With that you can take a few names in a field and see who is cited, where, and how many times by various other authors. If AFIT doesn't subscribe to Web of Science, it should be available at either the Air Force Academy or Library of Congress. As an officer and student you should have access to it somewhere. From the Web of Science listings you should be able develop numbers and links that could be the raw data to drive the mapping tool you plan to develop. Names (no specific order): Charles Perrow, Karl Weick, Paul Shrivastava, Barry Turner, Dominic Elliott, Denis Smith, Ian Mitroff, Terry Pauchant, B. M. Staw, W. H. Starbuck, Maurizio Catino, Jens Rasmussen, ... This is not a complete list by any means. These are just a few names that came to mind at the moment. Your study may also shed light on why the non-classified "fog of war" literature from military sources hasn't been integrated into the general discussion of crisis management. In battle, all officers become crisis managers on some level (some more deeply than others). Military history is full of examples of effective and ineffective crisis management in combat situations. We civilians pretty much ignore that aspect of crisis management, but there is no better laboratory for crisis management than war. I think that's what made Admiral Grace Hopper so good at crisis management in the areas of information processing and technology implementation. So as you complete your study, you may develop insights into why civilians like myself have not looked more closely at the military experience for insights into the nature of effective crisis management. Good luck with your thesis. I hope I've been helpful. Will
Jens	Rasmussen	jera@dpu.dk	Y	N	
James	Reason	reason@psy.man.ac.uk	NA	NA	undeliverable
Karlene	Roberts	karlene@haas.berkeley.edu	Y	N	
Howard	Schwartz	Schwartz@Oakland.edu	Y	N	
Prakash	Sethi	Prakash_Sethi@baruch.cuny.edu	Y	N	
Paul	Shrivastava	shrivast@bucknell.edu	Y	N	
George	Siomkos	gsiomkos@aueb.gr	Y	N	
Carolyne	Smart	smart@sfu.ca	Y	N	
Denis	Smith	denis.smith@lbss.gla.ac.uk denis.smith@mac.com	Y	Y	Hi Elizabeth You might want to start with the papers that are included in the Book Key readings in crisis management (edited by Smith, D. and Elliott, D.) Routledge. In addition, the following are important contributors to the field: Barry Turner Arjen Boin Iain Mitroff Thierry Pauchant James Reason Carl Weick Christine Pearson Uriel Rosenthal Larry Barton Paul Shrivastava Charles Perrow Regards Denis

Appendix D. Responses from literature review identified seminal authors

First	Last	Email	Contact	Reply	Notes
Kathleen	Sutcliffe	ksutclif@umich.edu	Y	N	
Robert	Sutton	bobsut@stanford.edu	Y	N	
Brian	Toft	Brian.Toft@ntlworld.com	Y	N	
Barry	Turner	Unavailable	NA	NA	Passed away
Ilan	Vertinsky	ilan.vertinsky@commerce.ubc.ca	Y	N	
Karl	Weick	karlw@umich.edu	Y	N	
Rae	Zimmerman	rae.zimmerman@nyu.edu	Y	N	

Appendix E. Response from editors of literature identified seminal works

Journal Name	Editor	Email	Contact	Reply	NOTES
Academy of Management Perspectives	Peter Cappelli	cappelli@wharton.upenn.edu	Y	N	As of February, 2006, the *Academy of Management Executive* changed its title to the *Academy of Management Perspectives*.
Academy of Management Journal	Sara L Rynes	sara-rynes@uiowa.edu	Y	N	
Academy of Management Review	Martin Kilduff	amr@mailaom.pace.edu	Y	Y	We are not able to help you with this task.
Administravie Science Quarterly	Donald A. Palmer	Dapalmer@ucdavis.edu	Y	N	
California Management Review	David Vogel	cmr@haas.berkeley.edu	Y	N	
Canadian Journal of Anesthesia	Donald R. Miller	cja@cas.ca	Y	N	
Chief Executive	Francis Adams	editorial@chiefexecutive.net	Y	N	
Journal of World Business	F. Luthans	fluthans1@unl.edu	Y	N	Formerly known as *Columbia Journal of World Business*
Cornell Hotel and Restaurant Administration Quarterly	Soon Ang	asang@ntu.edu.sg	Y	N	
Decision Support Systems (Netherlands)	Andrew B. Whinston	abw@emx.cc.utexas.edu	NA	NA	undeliverable

Appendix F. Response from editors of literature identified seminal works

Journal Name	Editor	Email	Contact	Reply	NOTES
Disaster Prevention and Management	Harry C. Wilson	DPMeditor@netscape.net	Y	Y	Good afternoon Elizabeth Many thanks for your e-mail. I have been editor of the Disaster Prevention and Management an International) Journal for the past 17 years in which time the Journal must have published in excess of 600 articles from I would guess 300-400 different authors world-wide ranging from doctoral research students through to eminent professors to emergency management practitioners. While I appreciate what you are trying to do, and I believe it to be a worthwhile task, to comply with your request will take some time for me to accomplish - so, what is the immediacy of your request. If you are working within a time scale of a few weeks - then I can only give you pointers, but if the time-scale is longer, then I can dig into my records a bit more and give you names, papers, and my professional judgement on whether or not these authors have been influential and in which fields. The DPM is probably the major academic publication within the field of civil emergency management - it is certainly the most established, and most cited. As an indicator of popularity with authors is the fact that papers being currently being accepted will not be published until mid-late 2009 at the earliest. The DPM is also available in electronic format and currently there are over 1000 download purchases of individual papers every month from the publisher's website. Please let me know what the timescale is and I will do my best to be of assistance Kind regards Harry Dr Harry Wilson Editor - DPM (an International Journal) Publisher - EmeraldInsight e-mail: DPMeditor@netscape.net Please use this e-mail address for all correspondence
Environment	Jim Motavalli	jimm@emagazine.com	Y	N	
Forum for Applied Research and Public Policy	Dennis McCarthy	dmmccarthy@utk.edu	Y	N	
Futures (U.K.)	Z. Sardar	futures@ziasardar.com	NA	NA	undeliverable
Geneva Papers on Risk and Insurance	Henri de Castries	secretariat@genevaassociatio	Y	N	
Industrial Engineering	Monica Elliott	melliott@iienet.org	NA	NA	undeliverable
Institute of Crisis Management	Larry Smith	larrysmith@crisisexperts.com	Y	N	
International Journal Mass Emergencies and Disasters	Ronald W. Perry	ron.perry@asu.edu	Y	N	
International Journal of Cross-cultural Management	Terence Jackson	T.Jackson@mdx.ac.uk	Y	N	
International Journal of Project Management	J. Rodney Turner	rodneyturner@europrojex.co.u	Y	N	
International Journal of Service Industry Management	Bo Edvardsson	Bo.Edvardsson@kau.se	Y	N	
Journal of Business Ethics	Alex C. Michalos	michalos@unbc.ca	Y	N	
Journal of Business Strategy (Canada)	Rick Goossen	marcom@web2mba.com	Y	N	

Appendix G. Response from editors of literature identified seminal works

Journal Name	Editor	Email	Contact	Reply	NOTES
Journal of Clinical Anesthesia	Robert R. Gaiser, MD	gaiserr@uphs.upenn.edu	NA	NA	undeliverable
Journal of Contingencies and Crisis Management	Ira Helsloot	jccm@fsw.vu.nl	Y	N	
Journal of European Public Policy	Jeremy Richardson	jeremy.richardson@fsa.gov.ul	NA	NA	undeliverable
Journal of Management	Russell Cropanzano	russell@eller.arizona.edu	Y	N	
Journal of Management Studies	Timothy Clark	timothy.clark@durham.ac.uk	Y	N	
Journal of Marketing	Roland T. Rust	rrust@rhsmith.umd.edu	Y	N	
Journal of Medical Education	John McLachlan	med@mededuc.com	NA	NA	undeliverable
Journal of Organizational Change Management	Slawomir Magala	jocm.magala@fbk.eur.nl	Y	N	
Journal of Public Administration Research and Theory	H. George Frederickson	gfred@ku.edu	Y	N	
Journal of Risk and Insurance	Georges Dionne	georges.dionne@hec.ca	Y	N	
Journal of Travel Research	Richard R. Perdue	Rick.Perdue@vt.edu	Y	N	
JSTOR	Gerard Aurigemma	Gerard.Aurigemma@jstor.org	Y	N	
Leadership	Unavailable	Unavailable	NA	NA	
Long Range Planning (U.K.)	Charles Baden-Fuller	C.Baden-Fuller@city.ac.uk	Y	N	
Management Communication Quarterly	James Barker	jbarker@waikato.ac.nz	Y	Y	Earl McKinney, James R. Barker, Daryl Smith, and Kevin J. Davis, "Swift Starting Teams Get Off the Ground: What Airline Flight Crews can Tell Us about Communication." Management Communication Quarterly. Volume 19, Number 2 (November, 2004), pp. 198-237. I would suggest contacting Professor Earl McKinney in Management Systems at Bowling Green State Universtiy. He has much more expertise in this area than I do. You may also want to contact Karen Cronin at Victoria University in Wellington NZ: Karen.Cronin@vuw.ac.nz Thanks, Jim
Management Decision	John Peters	jpeters@emeraldinsight.com	Y	N	
Management Learning	James Barker	jbarker@waikato.ac.nz	Y	N	
Management Science	Wallace J. Hopp	whopp@umich.edu	Y	N	
Nation's Business	Brent Green	brent@bgassociates.com	Y	N	
Organization & Environment	John M. Jermier	jjermier@coba.usf.edu	Y	N	Used to be called *Industrial & Environmental Crisis Quarterly* and *Industrial Crisis Quarterly*
Organizational Dynamics	F. Luthans	fluthans1@unl.edu	Y	N	
Organizational Science	Linda Argote	argote@cmu.edu	Y	N	
Preventiqué (France)	Paul Amyotte	Paul.amyotte@dal.ca	Y	N	
Public Relations Quarterly	Unavailable	Unavailable	NA	NA	
Review of Business	Unavailable	Unavailable	NA	NA	
SAGE Journals online	Bob Howard	bob.howard@sagepub.com	Y	N	
Security Management	Sherry Harowitz	sharowitz@asisonline.org	Y	N	
Sloan Management Review	Susan Petrie	spetrie@caplink.org	Y	N	AKA *Management Review* and *MIT Sloan Management Review*
Strategic Management Journal	Lois Gast	lgast@wiley.com	Y	N	
Technological Forecasting and Social Change	Harold A. Linstone	linstoneh@aol.com	Y	Y	I suggest you search the writings of Ian I. Mitroff on crisis management. His address is ianmitroff@earthlink.net. He has done extensive work in this area and headed an institute on this subject at USC. Regards, Hal Linstone
The Journal of Finance	Campbell R. Harvey	cam.harvey@duke.edu	Y	N	

Appendix H. 2nd SPSS Rotated Component for Factor Analysis

Rotated Component Matrix[a]

	Component									
	1	2	3	4	5	6	7	8	9	10
Staw BM	.936									
Sutton R	.915									
Starbuck WH	.877									
Miller D	.842									
Sutcliffe K	.821									
D'Aveni R	.810									
Roberts KH	.786									
Perrow C	.744					.473				
Barker JR	.731									
Schwartz HS	.726									
Gephart R	.686									
Shrivastava P	.677			.487						
Janis I	.664	.630								
Mitroff II	.638			.548						
Turner BA	.636					.532				
Marcus A	.567		.400						.457	
Weick KE	.564									
Hermann M		.941								
George A		.919								
Hermann CF		.913								
Brecher M		.884								
Sundelius B		.868								
Dror Y		.677								
Rosenthal U		.673					.517			
Smith D			.877							
Smith DR			.854							
Elliott D			.850							
Zimmerman R		.447	.684							
Foster P			.663							.439
Peters G			.643						.622	
Davidson W	.501		.574							
Sethi P			.547							
Barton L				.820						
Fink S				.819						
Pauchant TC				.781						
Pearson CM	.460			.743						
Clair JA				.737						
Bowonder B				.553	.512					
Otway H					.939					
Nelkin D					.874					
Kunreuther H					.817					
Beck U					.698					
Lagadec P				.411	.606					
Rasmussen J						.884				
Reason J						.839				
Toft B						.766				
LaPorte T						.622				
Fortune J						.587				.414
Comfort L							.848			
Boin A							.786			
Dynes R					.460		.611			
Smart C								.767		
Vertinsky I	.458							.709		
Cronin K									.771	
Davis KJ									.736	
Murray WB										.788

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 7 iterations.

Appendix I. 3rd SPSS Rotated Component for Factor Analysis

Rotated Component Matrix[a]

	Component						
	1	2	3	4	5	6	7
Staw BM	.938						
Sutton R	.906						
Starbuck WH	.904						
Miller D	.877						
D'Aveni R	.847						
Sutcliffe K	.771						
Roberts KH	.727					.423	
Perrow C	.712					.512	
Schwartz HS	.710						
Shrivastava P	.690				.467		
Gephart R	.672						
Barker JR	.655						
Janis I	.649	.624					
Mitroff II	.645				.531		
Turner BA	.638					.543	
Weick KE	.611						
Vertinsky I	.609						
Marcus A	.596		.506				
Davidson W	.550		.492				
Smart C	.437						
Hermann M		.928					
Hermann CF		.917					
George A		.913					
Sundelius B		.874					
Brecher M		.874					
Rosenthal U		.714					
Dror Y		.688					
Smith D			.854				
Smith DR			.843				
Peters G			.801				
Foster P			.761				
Elliott D			.730				
Zimmerman R		.436	.706				
Sethi P			.550				
Davis KJ			.509				
Cronin K							
Otway H				.852			
Nelkin D				.838			
Kunreuther H				.765			
Beck U				.745			
Dynes R				.638			
Lagadec P				.637			
Murray WB							
Barton L					.824		
Fink S					.819		
Pauchant TC					.770		
Pearson CM	.424				.756		
Clair JA					.743		
Bowonder B				.529	.541		
Rasmussen J						.874	
Reason J						.842	
Toft B						.760	
LaPorte T						.649	
Fortune J						.634	
Boin A							.683
Comfort L							.651

Extraction Method: Principal Component Analysis.

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Vita

Captain Elizabeth A. Yesué graduated from York High School in York, Maine. She entered undergraduate studies at the United States Air Force Academy, Colorado where she graduated with a Bachelor of Science degree in Civil Engineering in May 2001. She was commissioned through the United States Air Force Academy.

Her first assignment was to the 510th Civil Engineer Squadron, USAFA, Colorado where she served as Design Engineer and Project Manager. In June 2002, she was assigned to the 21st Civil Engineer Squadron, Peterson AFB, Colorado where she served as an Environmental Compliance and Assessment Management Program Manager and managed Clear AFS, in Alaska. In June 2003, she was assigned to the 3rd Civil Engineer Squadron, Elmendorf AFB, Alaska. During her assignment she served as the Deputy Chief of Base Development, Engineering Officer in Charge, Maintenance Engineering Officer in Charge, Section Commander and Squadron Executive Officer. While stationed at Elmendorf, she deployed overseas in August 2004 to spend five months at the Baghdad International Airport, in Baghdad, Iraq as an Environmental Flight Chief and Unit Deployment Monitor. In September 2006, she entered the Graduate School of Engineering and Management, Air Force Institute of Technology. Upon graduation she will be forward deployed or serving in a staff position.

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14. ABSTRACT

This thesis addresses the need for a structured mapping of academic literature relating to crisis management. An overview of current crisis management literature is provided, highlighting the gap and concentrating on predominant themes that have been identified in previous reviews, as well as those extracted from influential works. A review of bibliometric methodology is highlighted to address the gap. Research goals are named and the phased methodology necessary to meet those goals is outlined and followed. Results are covered in detail: The resultant factor analysis and multidimensional scaling confirm previous efforts to taxonomize the literature, further reinforcing the call to mature the field of crisis management literature.

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