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Crisis Knowledge in Tourism: Types, Flows and Governance

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Abstract: Driven by the rapidly growing number of crises that affect tourism, the study of crisis knowledge management is gaining an increased interest in the tourism field. Effective management of crisis knowledge enhances the resilience of tourism organizations and destinations in crisis situations, strengthens their defense mechanisms, limits potential damages and allows them to bounce back to normalcy faster. This paper uses critical incident interviews with 21 tourism executives in order to identify the types of crisis knowledge they employ in the advent of a crisis and to explore the crisis knowledge management processes and flows within their organizations. Drawing from extant generic literature and the informants' responses, the paper proposes a framework for the governance of crisis knowledge in tourism.

Keywords: knowledge management; knowledge governance; knowledge flows; codification; personalization; crisis

INTRODUCTION

The twenty first century business environment has entered a period of rapid and unexpected change, the like of which the corporate world has never witnessed before (Brinkley, 2008; Houghton & Sheehan, 2000). Hitt (1998, p. 299) suggests “*we are on the precipice of an epoch*” where knowledge, globalization, intense competition, environmental turbulence and uncertainty, rapid and ubiquitous change and both information and technological revolutions have carved a new competitive landscape (Barnes, 2002; Stonehouse & Pemberton, 1999). This knowledge economy era, or “*the age of intellect*” (Carroll & Tansey, 2000, p. 296) is an economy where knowledge is not only a key characteristic of post-industrial societies but also *the critical resource “and driver of economic development and success for nations, companies and individuals alike”* (Rylander, 2009, p. 1).

The survival of organizations is no longer dependent upon their tangible resources but rather in the management of intangible knowledge capital. Klein (2008) argues that in this new economy the only sustainable advantage is what an organization knows, how it can utilize what it knows and how fast it can learn something new. Weick (2001) goes further by stating that the way knowledge is managed within an organization is key to its resilience, i.e., its ability to withstand turbulence and bounce back from stresses and disruptions but also to develop new capabilities and even create new opportunities in light of adversity. He proposes an ‘attitude to wisdom’ and suggests that to be wise is not to know particular facts but to know without excessive confidence or excessive cautiousness. An investigation of the Global

Financial Crisis illustrates where the lack of such ‘attitude to wisdom’, overconfidence and ‘superior’ or ‘imperfect’ knowledge can lead organizations and, in effect, the global socioeconomic system (Clark, 2011).

The value of knowledge and the importance of knowledge management have also been acknowledged in the tourism management literature. For tourism organizations operating in a period of organizational adaptation, discontinuous change, more frequent crises and the need to be competitive, knowledge management provides a useful conceptual framework and set of approaches (Cooper, 2006). The generation and exploitation of knowledge is viewed as critical for the innovation and development of new tourism products (Hjalager, 2002; Weidenfeld, Williams & Butler, 2010); for the effective management of hotels (Bouncken & Sungsoo, 2002); for tourism destination management (Xiao & Smith, 2007); to understand how networks of tourism organizations interact to produce tourism services (Cooper, Baggio, & Scott, 2010) and also for effective tourism crisis management (Blackman, Kennedy & Ritchie, 2011).

In an environment, however, where the tourism industry is increasingly exposed to disruptions, stresses and crises, tourism academics have developed and presented a number of valuable frameworks for the management of disasters (Faulkner, 2001; Hystad & Keller, 2008; Paraskevas & Arendell, 2007; Ritchie 2004) although more emphasis was put on destination image recovery and recovery marketing (Armstrong & Ritchie, 2008; Beirman, 2003; Fall & Massey, 2006; Santana, 2004). Surprisingly, in an era when the industry is facing a series of prolonged crises such as climate change, global recession, widespread political instability, etc. with highly complex impacts and is in need of a framework for the development and governance of crisis knowledge, only few attempts were made by academics to explore the knowledge aspects of crises and disasters (Anderson, 2006; Blackman & Ritchie, 2008; Blackman et al., 2011; Mistilis & Sheldon, 2006).

The present paper aims at narrowing this gap in the extant literature by identifying the types of crisis knowledge tourism organizations employ in the advent of a crisis and by exploring the crisis knowledge management processes and flows within these organizations. It also explores the ways that organizational factors such as leadership, structure, culture and communication influence these processes and flows.

KNOWLEDGE MANAGEMENT AND CRISIS

Polanyi (1966) argues that there are two types of knowledge: tacit and explicit. Tacit knowledge is "*a non-linguistic, non-numerical form of knowledge that is highly personal and context specific and deeply rooted in individual experiences, ideas, values and emotions*" (Gourlay, 2002, p. 2). Gore and Gore (1999) suggest that tacit knowledge consists of two key components: technical tacit knowledge and cognitive tacit knowledge. First, technical tacit knowledge encapsulates information, expertise, knowledge and skills that are developed and utilized. Second, cognitive tacit knowledge encompasses implicit perceptions, beliefs, mental models and values so deeply ingrained in individuals that they become a natural part of what individuals are, think and do and, more often than not, is taken for granted (Ravetz, 1971). As tacit knowledge is acquired by an individual's internalized processes (such as experience, talent and reflection) it cannot be taught, managed, speedily migrated or transposed to competing organizations in the same way as explicit knowledge (Badaracco, 1991).

Explicit knowledge, or encoded knowledge (Blackler, 1995) is the knowledge that is made manifest through language, symbols, objects and artifacts (Choo, 1998). There are two types of explicit knowledge: a) object-based, which is manifest in the form of patents, technical drawings and blueprints, software code databases, statistical reports and business plans and b) rule-based, which is expressed as routines, rules and procedures (Choo, 1998). Elbanna (2008), McCall, Arnold and Sutton (2008) and Roberts (2000) advocate that explicit knowledge can be disseminated throughout the organization and be made available to large numbers of people more cost effectively than tacit knowledge. It is more manageable for organizations, insofar as it can be codified, stored in databases and retrieved and exploited on demand, aided by the support of fast and reliable information and communication technologies (Smith, 2001).

Organizations can maximize the benefits of tacit and explicit knowledge if they manage both types in a systematic manner (Hansen, Nohria & Tierney, 1999). They, therefore, have to develop appropriate strategies to not only manage knowledge flows, but also manage knowledge per se (Jasimuddin, Klein, & Connell, 2005; Schulz & Jobe, 2001). Two such strategies are codification, which places an emphasis on both the collection and organization of knowledge; and personalization, which focuses on human resources and communication processes. Johnson and Lundvall (2001, p.4) define codification as "*a process of transforming knowledge into a format that makes it possible for knowledge to be stored and transformed as information.*" In the case of a personalization strategy, "*knowledge is closely tied to the person who developed it and is shared primarily through direct person-to-person contact.*" (Hansen et al., 1999, p.107). Both definitions emphasize that knowledge is shared by contact with others, through for example, communities of practice, brainstorming sessions, exchange of dialogue between individuals and teams or via storytelling. Edvarsson (2008) and Stonehouse and Pemberton (1999) state that organizations need to reconfigure their knowledge management structures, in order to ensure that the right knowledge gets to the right people at the right time.

This is particularly relevant for organizations when a crisis occurs, as relevant knowledge needs to be identified and applied quickly to a particular situation. However, there is little research that has explicitly linked knowledge and crisis management. In part this is because the 'crisis management' field is a relatively new area of research. Nonetheless, it has received significant attention, especially in the 1980s and the early 1990s when, according to Rasmussen and Batstone (1989), the frequency and magnitude of organizational crises, and the subsequent impacts, increased at an alarming rate. A series of crises and accidents such as Bhopal, Chernobyl, Challenger, Hillsborough, and Lockerbie attracted the interest of researchers from several disciplines resulting in the emergence of a rich, but relatively fragmented, literature.

The main body of research concentrated more on crisis and post-crisis communication (Schultz & Seeger, 1991; Seeger, 1986; Sellnow, 1993), the interrelationships between both internal and external stakeholders (Kabak & Siomkos, 1990; Marcus & Goodman, 1991) and the social control of organizations (Bromiley & Marcus, 1989). Another stream of research proposed different models for the development of crises (Fink, 1986; Smith, 1990) and their management (Mitroff, Shrivastava, & Udwardia, 1987; Pauchant & Mitroff, 1992) by building on earlier work by Fink, Beak, and Taddeo (1971) and Turner (1976). Mitroff (1988), in particular, offered a more distinct framework, which distinguished five phases or "mechanisms" in crisis management: signal detection; preparation/prevention; containment (damage limitation); recovery; and learning. The majority of the crisis management studies

published in the 1990s focused on preparation/prevention, containment (damage limitation) and recovery, leaving the area of learning and the management of the resulting knowledge unexplored.

In this early period of crisis management research, two opposing views emerged in the literature known as Normal Accident Theory (La Porte, 1994; Perrow, 1994) and High Reliability Theory (Rochlin, 1993). Normal Accident Theory (NAT) purports that modern organizations are exceedingly complex and consist of a high number of tightly coupled technical and human systems. Normal Accident theorists suggest that crises and disasters are unintentional but also that inevitable failures, or normal accidents, caused by the complexity of these systems lead to potentially destructive situations rapidly escalating beyond control and proliferating throughout the organization before anyone can understand what is happening and be able to intervene. Any crisis learning and knowledge is handicapped by the technical uncertainties and political barriers inherent in the complexity of these organizations (Sagan, 1993).

In contrast, High Reliability Theory (HRT) advocates that organizations can proactively control and reduce the risks of technical operations and avoid failures even in environments rich in the potential for error (Rochlin, 1993; Weick, Sutcliffe & Obstfeld, 1999). It emphasizes good organizational design and management; safety as a priority; redundancy in both human and material resources; decentralized decision-making for proper and flexible responses to unexpected events; a 'culture of reliability' through continuous training and simulation; and the understanding of complex organizational systems by means of crisis knowledge management processes, including trial and error knowledge generation in the wake of near-miss events and accidents (Sagan, 1993). These two opposing views have given birth to a constructive dialogue that has brought the elements of organizational complexity, leadership, structure and culture as well as operational and learning processes to the epicenter of crisis management literature. However, the discussion of how to effectively manage the knowledge generated from a crisis either directly or 'vicariously' still remains limited (Nathan & Kovoov-Misra, 2002).

With the exception of airlines, hospitality and tourism organizations in general diverge substantially from being High Reliability Organizations (HROs). The industry overall is highly fragmented, consisting of a large number of often closely-coupled organizations and encompassing a myriad of subcultures which reflect its structural complexity and occupational differentiation. All too often, middle managers' and line employees' objectives and practices do not conform with senior management's commitment for safety and quality and some professional beliefs and norms clash with HRO norms (e.g., speedy service for higher customer satisfaction as opposed to double checking of processes to ensure safety).

When examining a crisis, it is useful to consider crisis knowledge from two points of view of the organization: the resource-based view (Grant, 1996; Kraaijenbrink, Spender & Groen, 2010; Von Krogh, 1998) and the knowledge-based view (Kogut & Zander, 1996; Nickerson & Zenger, 2004; Von Krogh, 1998). This is because from the resource-based perspective knowledge can be viewed as one of the many unique resources and capabilities that an organization needs acquire, deploy and control in order to increase its resilience to withstand turbulence, deal with crises and recover from them. Therefore the questions asked in a crisis investigation would revolve around whether the organization had these resources in place including the appropriately defined action, procedures and policies for knowledge creation and utilization which reflect the cognitivist approach to knowledge underpinning this

view (Von Krogh, 1998).

In contrast, the knowledge-based view focuses on knowledge as the organization's key strategic resource. The knowledge-based view portrays the organization as a set of competencies and repositories of knowledge which, when leveraged, transferred and subsequently exploited, enables them to effectively create and disseminate knowledge. Underpinned by the constructionist approach to knowledge (Von Krogh, 1998) which asserts that an organization cannot completely control knowledge but can merely facilitate a climate and infrastructure that enables knowledge resources to be managed, coordinated and utilized (Von Krogh, 1998), the crisis investigation would look for answers to a different set of questions revolving around organizational leadership, structure, crisis culture and communication (Stonehouse & Pemberton, 1999) as well as the levels of social interaction between the individuals in the organization (Wenger, McDermott & Snyder, 2002).

Organizational leadership is an important component in devising and maintaining a learning and knowledge culture, where leaders become "*designers, teachers and stewards*" (Senge, 1992, cited in Stonehouse & Pemberton, 1999, p. 137). Skyrme (2000) advocates that leaders should demonstrate 'knowledge leadership' by encouraging the flow of knowledge among organizational members and the challenge of status quo in organizations. Leaders need to be supportive of knowledge management initiatives, in order to embed a knowledge culture throughout the organization (Abdullah & Othman, 2005). Whilst recognizing the importance of creating an organization-wide knowledge culture, Mitroff (2004) also argued for 'crisis leadership', which not only reacts to the crisis but also encourages a more proactive culture towards crisis and both forecasts and effectively manages all stages of a crisis. Appropriate crisis leadership is the underlying mindset, vision and actions that will shape the infrastructure and the crisis strategies. These include flexible delegation of authority during crisis situations; constant training and review of crisis processes; systems of rewards for reporting and discovering errors; and non-resistance when it comes to changes with short- or long-term effects on organizational crisis preparedness (La Porte & Consolini, 1991; Rochlin, 1996).

Crisis management scholars view crisis culture as a subset of organizational culture dealing with the way people in an organization behave, communicate and perceive crises within their work settings (Marra, 2004; Pauchant & Mitroff, 1992). The crisis culture is partly inherent in the organization's members (shaped by their underlying values, beliefs and attitudes) but is also influenced by the organization's leadership. In their 'onion model' of crisis management, Pauchant and Mitroff (1992) place at its centre the 'individual', normally the organization's leader, and at the next layer crisis culture as a set of organizational beliefs and rationalizations, pretty much imposed by the individual or individuals in the centre onto the rest of the organization, complemented by the relevant infrastructure, crisis plans and mechanisms. The underlying assumptions in this view of crisis culture are first that this culture is an attribute of an organization that can be broken down and described - in terms of artifacts, symbols, values and unconscious archetypes (Schein, 1985); and second that management can design strategies and impose rules and norms that can shape behavior within the organization. Senge (1990), on the other hand, encourages organizations to develop an enabling culture by going through a process of metanoia, or organizational catharsis, by unearthing deeply entrenched views and beliefs and changing accustomed ways of viewing and experiencing the world around them. The empowerment of individuals is vital, in order to encourage experimentation with new approaches to how business is conducted and the development and utilization of knowledge and skills (Stonehouse & Pemberton, 1999).

Pedler, Burgoyne and Boydell (1991) attest that an organization's structure should also be designed and enabled for learning and knowledge. They view this structure as the arrangement of workflow and authority relationships within an organization, concerned with where decision-making power lies and how decisions are made. Flatter organizational structures tend to better assist the coordination and control of knowledge and are more appropriate to effective knowledge management as they aid communication and knowledge transfer (Stonehouse & Pemberton, 1999). This can present several challenges for the tourism industry which is characterized by high fragmentation, geographical dispersal and diversity of activities favoring hierarchical rather than flat structures. However, with the development of networks of inter-organizational relationships such as alliances, partnerships, clusters and communities of practice these challenges may be overcome (Cooper et al., 2010).

The way knowledge is stored and communicated is also central to the way an organization capitalizes upon its knowledge assets. Communication among different organizational stakeholder groups facilitates the flow of knowledge into decision-making and thus results in creative responses and generation of new knowledge and ideas (McGregor, 2001). It is enabled by checklists, decision guides and procedures, aimed at dealing with a crisis, limiting its potential adverse consequences to the organization's employees, customers, assets and constituencies and ensuring the continuity of its mission-critical functions (Fink, 1986; Quarantelli, 1988).

Given the importance of these dimensions of knowledge management in the effective response of tourism organizations and destinations to a crisis, this paper addresses the following questions: What are the types of knowledge that are utilized in responding to a tourism crisis? What are the appropriate knowledge management strategies and processes that are applied to respond to a tourism crisis? And how do organizational factors (leadership, culture, structure and communication systems) influence the management of crisis knowledge?

RESEARCH DESIGN

Since there is no clear framework on how crisis knowledge should be managed within an organization, this study adopted a social constructivist approach that explores multiple realities shaped by tangible and intangible mental constructions of executives who have experienced crises in their organizations and were able to discuss and propose ways for handling the 'lessons learned' from these crises. Guba and Lincoln (1998) argue that it is through these constructions that the participants experience the world and their actions are derived from the basis that these constructions form.

We approached 32 tourism executives using a criterion sampling technique (Altınay & Paraskevas, 2007) with three criteria (corporate level tourism professionals; being in charge or directly involved with decisions related to risk/crisis management; and having experienced at least one crisis incident in their organizations). A total of 21 executives from this sample agreed to participate in the study (Table 1).

The informants from the hotel industry were accessed when one of the researchers was appointed as advisor to the Global Council on Safety, Security and Crisis Management of the International Hotel and Restaurant Association (IH&RA) in 2006. The interviews with this part of the sample were conducted between 2006 and 2009. The informants from destination

management organizations and the airline industry were approached and agreed to participate in the study during seminars on crisis/risk management led by one of the researchers in 2010 and 2011 at an international travel and tourism fair in London, UK.

The study used the Critical Incident Technique (CIT) (Flanagan, 1954) asking the participants to recall and describe a crisis they experienced in their organizations and then for their insights on what was learnt from the crisis. The Critical Incident Technique interview

Table 1 – Study Informants

Title	Type of Business	Scope of Business	Gender	Experience in the Field
Chief Executive Officer	Hotel Group	South Europe North Africa	M	36 years
Chief Executive Officer	Hotel Group	Central Europe	F	13 years
Chief Executive Officer	Hotel Group	South Europe	M	10 years
Chief Information Officer	Hotel Group	Europe South America	M	6 years
Corporate Director of Security	Hotel Group	North America	M	14 years
Director of Business Resilience	Airline	Global	F	3 years
Director of Communications	DMO	Asia Pacific	M	8 years
Director of Communications	DMO	North Africa	M	4 years
Director of Corporate Affairs	DMO	Europe	F	7 years
Director of Security	Hotel Group	North America	M	16 years
Director Safety & Security	Airline	Global	M	8 years
Global Director of Loss Prevention	Hotel Group	Asia Pacific	M	7 years
Risk Management Director	Hotel Group	Asia Pacific	M	15 years
Vice President Business Continuity	Hotel Group	Global	F	7 years
Vice President Corporate Security	Hotel Group	EMEA	M	23 years
Vice President Corporate Security & Safety	Hotel Group	Asia Pacific	M	10 years
Vice President Global Asset Management	Hotel Group	Global	M	13 years

Vice President Loss Prevention	Theme Park	Global	M	16 years
Vice President Risk Management	Hotel Group	Global	M	18 years
Vice President Risk Management	Hotel Group	Global	M	28 years
Vice President Risk Management	Hotel Group	North America	M	24 years

was chosen for the following reasons: it allows participants to express their personal views of the described incident (Stauss & Weinlich, 1997); it is inductive by nature – especially when the topic being investigated has not been well researched (Grove & Fisk 1997); it yields a rich data set (Zeithaml & Bitner, 2003); and it is culturally neutral, insofar as it invites participants to offer their own perceptions on an issue, rather than indicate their perceptions to researcher-initiated questions (De Ruyter, Perkins & Wetzels, 1995).

The interviews lasted between 50 and 130 minutes, were transcribed verbatim and the transcripts were sent back to the informants for ‘member checking’ (verification of content and interpretation), in order to assure both an internal check for authenticity and the external validity (or transferability) of the overall study (Guba & Lincoln, 1998). The verified interview transcripts were coded and analyzed via N-Vivo 7 using generally accepted principles of critical discourse analysis (Van Dijk, 1993) in order to (1) edit the transcript; (2) identify and summarize keyword(s) or key phrases; (3) make inferences; and (4) group inferences under common theme(s) and categorization into sub-themes.

Although the replicability of the study cannot be guaranteed, every effort was made that the “trustworthiness” of the findings were secured (Guba & Lincoln, 1998). Therefore, the credibility of the study was ensured through the selection and use of a sample that can be considered as well-informed, relevant to the study and authoritative and by asking the informants to corroborate the findings through the use of ‘member checking’. Transferability was ensured by asking the informants to provide elaborate descriptions of their experiences of the critical incident they recalled and to provide a full description of the context and setting of this incident. Dependability was ensured by providing a clear description of the research design used and the direct quotations from the data as an audit trail. Finally, confirmability was ensured by holding all theories, assumptions, and prior knowledge aside during the data collection process and by trying to understand and interpret what was occurring and why it had occurred during the data analysis.

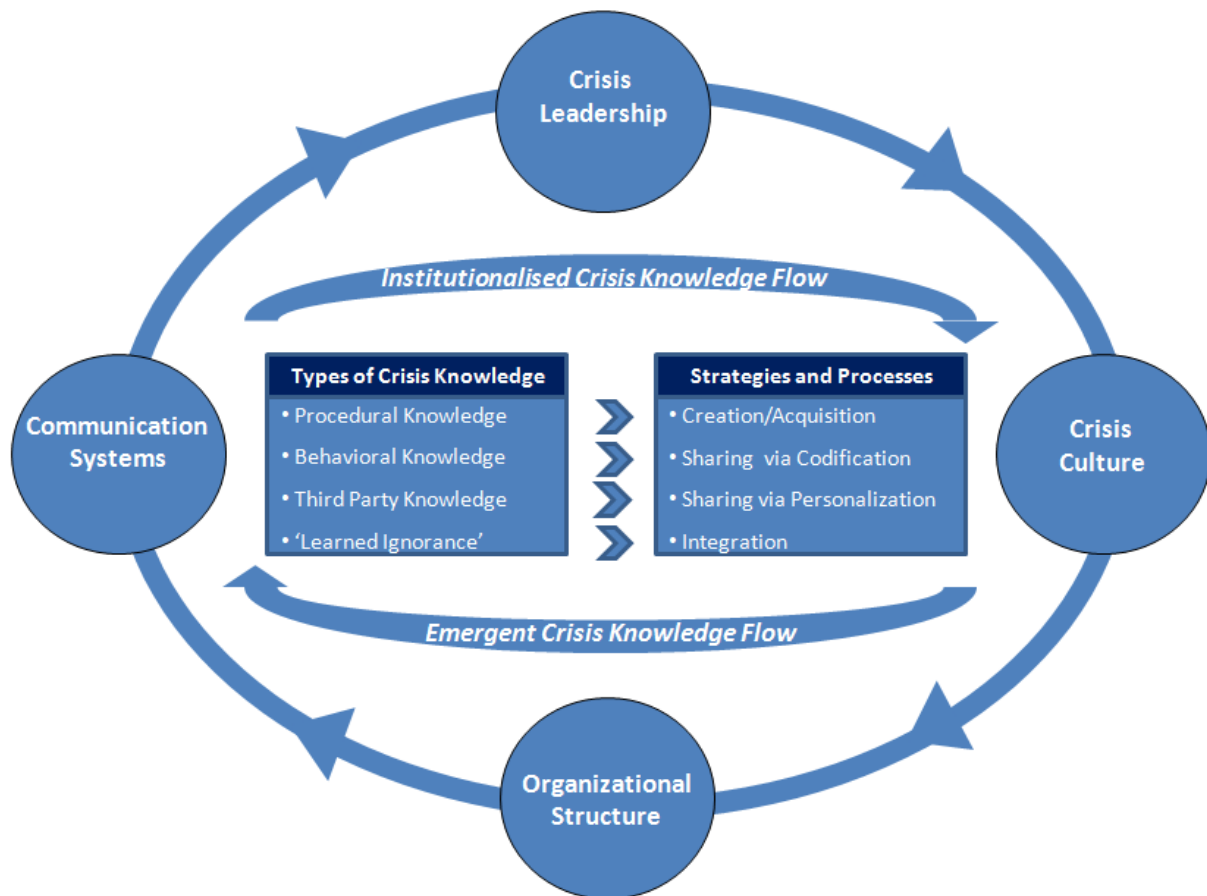
FINDINGS AND DISCUSSION

Following the ‘critical incident’ approach, informants were asked to recall the ‘one’ crisis that was so significant for them in (shaping their view of crisis management), that they had to think it over and over again many times in their lives with all its details. Informants identified different forms of crises, including terrorist attacks, food poisonings and extreme weather phenomena.

Informants also made an evaluation of their ‘crisis management knowledge’ at the time when the crisis hit their organizations as well as of the ways that they had acquired this knowledge. The informants gave examples of different forms of knowledge creation at every single stage of crisis management as a result of not only social interaction but also from

testing existing knowledge in tabletop exercises and simulations (in the signal detection and prevention/preparedness stages) and interaction with the dynamic environment of the crisis (containment and recovery stages). The framework illustrated in Figure 1 is developed based on the analysis and the discussion of the findings that illustrate the types of crisis knowledge, knowledge management strategies and processes and the organizational factors that influence the overall governance of crisis knowledge.

Figure 1 – A Framework for Crisis Knowledge Governance



Types of Crisis Knowledge

In the center of our framework in Figure 1 lie four types of crisis knowledge revealed by the analysis of the extracts relevant to knowledge possessed at the time of the crisis. These crisis knowledge types were labeled as: procedural, behavioral, third party and “learned ignorance”.

Procedural knowledge was possessed and displayed by respondents in organizations with clearly articulated crisis management plans which were also specific to the crisis they were facing. This knowledge involves steps on ‘how to’ respond to a particular crisis with clearly articulated tasks regarding the crisis itself the operational continuity during the crisis and the media communication. In Choo’s (1998) terms this is explicit knowledge that is

primarily rule-based, including crisis management routines, rules and procedures, but can also be object-based including reports, and readings of gauges indicating deviations from acceptable standards. Normally procedural knowledge is also rehearsed in exercises undertaken to ensure alignment with the standards of response. This type of knowledge was favored by organizations in our sample who took a HRT approach to crisis knowledge management, i.e., some hotel groups but more particularly the airlines.

Contrary to the common belief (Hedlund & Nonaka, 1993) that explicit knowledge is a major source of competitive advantage, in crisis situations, procedural knowledge alone and strict adherence to standards as prescribed by the crisis management plan may become problematic. In the case of a simultaneous food poisoning in 13 properties of a hotel group due to contamination by the bacterium ‘vibrio parahaemolyticus’ tiger prawns served raw in the hotels’ sushi buffet, a well planned and exercised response failed because, by following “religiously” every step of the procedure, the respondents were too slow in responding to the varying levels of crisis in different properties.

Procedural knowledge alone therefore runs the risk of becoming inflexible and may lead to the inappropriate level of crisis response altogether. Commenting on ‘lessons learnt’ from this crisis, the respondent actually indicated a second type of knowledge required in any crisis situation.

“If there is one lesson to be learned from this crisis, is that we should spend more time in training our managers on how to respond to a crisis, set some general rules and then trust their judgment, let them do what they think is appropriate. They should be more than capable to deal with situations like this and, if they need support, we will be there for them” (Hotel Group, Chief Executive Officer, Excerpt 1, Stanza 9).

Behavioral knowledge, therefore, is a second type of crisis knowledge shaped both formally through the knowledge of organizational crisis management standards, procedures and mechanisms and informally through social interactions with peers, customers, suppliers and partners. Several advocates of behavioral knowledge among the respondents emphasized its superiority over the procedural and often used the term “simple rules” in their discourse.

“You cannot say to the members of your staff ‘this is what we want you to do or not do’. You have to say ‘this is how we want you to be’. If you give them a solid foundation with a few simple rules, it will be easier to assimilate them into the culture you want to create” (Destination Management Organization, Director of Communications, Excerpt 2, Stanza 2).

Some went a step further advising that sophisticated training aiming at procedural knowledge may not be effective:

“We expect the General Manager to be able to resolve the situation by themselves, in collaboration with the authorities and we provide support and guidance only if requested. Our main role is to provide them with tools that will help them make the right decision. We are trying to give them some simple guidelines and tools to deal with this complex issue. We are not looking for sophisticated training: a line employee or a general manager cannot become a terrorism expert. With the turnover in our industry this would never be effective” (Hotel Group, Vice President Corporate Safety

and Security, Excerpt 3, Stanza 3).

This is a much more complex form of knowledge in that a part of it may be shared by many in the organization but another part is individual, determined by factors such as the individual's psychology, personal judgment, risk attitude and, belief system. These factors contribute to differences in behavioral knowledge and lead to the individuality of behavior during a crisis. In that sense it can be both explicit knowledge - codified, according to Johnson & Lundvall (2001), in policies and training about how one should behave in a crisis situation - and tacit (by shaping and replicating 'role model' behavior or by filtering model behaviors through a personalization process as suggested by Hansen et al.(1999).

“We train staff in crisis management following the ‘One-Two-Three cycle’. Step One of the cycle is ‘report anything you feel suspicious, abnormal or presenting a risk for the hotel and its people’ to the next level of command. Step Two is ‘minimize the risk’, by evacuating the premises, restricting access to the risk, etc. Step Three is ‘solve the problem’ which also involves making sure that the situation is resolved. Resolution will vary depending on the individual but we know that there is not only one correct way” (Hotel Group, Vice President Corporate Safety and Security, Excerpt 3, Stanza 2).

Learned Ignorance (from the work of the catholic cardinal Nicolaus Cusanus ‘De Docta Ignorantia’) is a third type of knowledge that emerges in crisis situations. This is the ‘knowledge of no-knowledge’, i.e., the realization that the individual does not possess the knowledge needed to define the crisis or to deal with it. This condition of “knowing what you do not know” correlates with the externalization of the individual's uncertainty from what a respondent described as “known unknowns” and “unknown unknowns”. This distinction of uncertainty is akin to what risk scholars call stochastic uncertainty and structural uncertainty (see Helton, 1994; Rowe, 1994). In the former the probabilities for a range of response outcomes are known, whereas in the latter they are ambiguous. Consequently, learned ignorance evokes two types of action.

The first is an understanding of both what knowledge exists and what knowledge is needed to fill the gap so that the crisis - a “known unknown” - can swiftly be reframed and dealt with. The search for such knowledge can be undertaken within or outside the organization. Several proponents of crisis knowledge repositories emphasized the usefulness of such databases in situations of ‘learned ignorance’ as they would also offer a repertoire of responses for a particular time and thus make crisis response faster.

“The threat was downplayed in this meeting. Nevertheless, we decided to inform our Internet service provider (ISP) and the police cybercrime unit about it and two members of the team were assigned with the task to explore some off-the-shelf solutions that had recently been developed specifically to fight DoS [Denial of Service] attacks and buy the best one. We felt confident that these steps would protect us” (Hotel Group, Chief Information Officer, Excerpt 5, Stanza 5).

The second is speculative action and experimentation due to lack of comprehension of the crisis (reasoning from a position of ignorance facing an “unknown unknown”):

“We realized that this is not an ordinary crisis when the pilot said that all four engines had failed leaving only critical systems on backup electrical power. This is

something we had never encountered before and we had to make decisions in the dark. We did not know how the ash cloud could have affected the systems and had to try two or three different things while the aircraft was losing altitude. Several attempts to restart the engines was one of them” (Airline, Director of Business Resilience, Excerpt 4, Stanza 6).

‘*Third party*’ knowledge reflected in expert knowledge that exists outside the organization is a fourth type of crisis knowledge resulting from identified ‘learned ignorance’. This type of knowledge may be available for internalization or could remain external and just be used for the resolution of a crisis.

“When we realized that this attack was beyond our capabilities we turned to an IT security specialist. [...] The security specialist had a plan on how to build our defense but our infrastructure was not enough for this plan to be executed. In order to protect ourselves from this threat we had to have an infrastructure which was at least equal with the attackers’. For that, we had to involve our ISP and all of us together were able to build a defense network against the attackers” (Hotel Group, Chief Information Officer, Excerpt 5, Stanza 7).

It should be pointed out, however that these four types of crisis knowledge do not have clearly delineated boundaries, since knowledge that may seem procedural may also have behavioral aspects or contain information about ‘third party’ knowledge and vice versa. Some will perceive only the procedural aspects of this bundle and others more or all aspects of it.

Crisis Knowledge Management Flows, Strategies and Processes

Moving to the second box of the framework in Figure 1, we listed the ways that respondents indicated that crisis knowledge ‘enters’ their organizations, the ways it is transferred or shared between constituents and stakeholders and the way that it is assimilated and becomes part of the organization’s identity and existence. The analysis of the responses further showed that there are mainly two flows of knowledge within the organization: the first is the flow of *institutionalized crisis knowledge* and the second is the flow of *emergent crisis knowledge*.

Most informants brought examples of how prior knowledge (or lack of it) influenced their decision making during the critical incidents they experienced. They therefore found it imperative that explicit knowledge was created from crises that the organization has experienced itself, knowledge gained from crises that other organizations went through (Nathan & Kooor-Misra, 2002) and knowledge acquired from expert third parties should be properly documented and stored in the organization’s knowledge repositories. The flow of institutionalized crisis knowledge begins from these repositories and is all about the sharing and integration of this knowledge. Most informants associated this flow of knowledge with terms such as “scripts”, “frames”, “standard operating procedures”, “posters”, “courses”, “ten-minute-trainers”, “pocket memos”, i.e., what Schulz and Jobe (1998) call codified knowledge being disseminated throughout the organization. However, this codification is appropriate only for certain types of knowledge that can be explicitly described (Johnson & Lundvall, 2001).

When it came to tacit knowledge it became apparent that personalization strategies were favored by informants who talked more about the provision of conditions that enable such

dissemination through “molecular structures”, “enhancement of social networks” and, “scenario planning retreats”. These informants emphasized the role of human “knowledge carriers” (confirming Hansen et al., 1999) in both sharing and integration processes, particularly of behavioral knowledge. The Vice President Business Continuity of a hotel group, for example, noted that they created and shared crisis knowledge through the adoption of a “molecular” structure in crisis response. They pull together people with a cross-section of skills from various regions in which the group operates and form a team that would deal with a specific crisis. Once adequate levels of interaction and knowledge creation within this structure are achieved, the individuals are transferred to new areas, thus “cross-pollinating the organization with the newly created knowledge” (Excerpt 6, Stanza 8).

The role of social interaction (Wenger et al., 2002) becomes even more important in the second flow of knowledge within the organization, that of emergent crisis knowledge. Such knowledge is created under conditions of real uncertainty (e.g., an actual crisis situation) or a simulated one (e.g., scenario planning or crisis plan testing). Here, ‘learned ignorance’ evokes the shift from “know what and know how” to “know who has the knowledge” (Hotel Group, Vice President Business Continuity, Excerpt 6, Stanza 10). Clearly, this flow is about creation and acquisition of new knowledge. The knowledge that emerges is a result of a collective effort to reduce uncertainty through rationalization (for “known unknowns”) or improvisation and experimentation (for “unknown unknowns”).

“It is all about bringing all the ‘right’ people together to create something new from what is already there. They will draw together existing ideas in a unique way, a novel unexpected idea will emerge through conversation between them and they will try it until they find the answer” (Destination Management Organization, Director of Corporate Affairs, Excerpt 11, Stanza 11).

The knowledge created in this flow will enter the institutionalized flow, be codified and personalized in order to complement or replace knowledge that already exists in the organization and will continue to be disseminated throughout the organization until new emergent knowledge is institutionalized and makes the existing one obsolete.

Influence of Organizational Factors on the Management of Crisis Knowledge

Surrounding the types and flows of crisis knowledge and the strategies by which they are acquired, shared and embedded in the organization are the four inter-related factors identified by Stonehouse and Pemberton (1999) as the antecedents of knowledge management in organizational renewal (Figure 1).

The informants felt that leadership should play a key role in creating and sustaining an organizational environment within which crisis knowledge is “proactively” (emphasized by the majority of them) created, integrated, shared and applied. In line with the arguments of Senge (1992), leaders have to make sure that they provide all the ‘means’ so that the ‘lessons learnt’ (i.e., acquired and codified knowledge) from a crisis are accessed, assimilated and disseminated throughout the organization. This proactive approach is strongly advocated by Mitroff (2005) when he talks about ‘crisis leadership’ and is a core premise of HRT which seeks to improve reliability in high risk settings as opposed to the NAT which stresses awareness of unavoidable crises due to the tightly structured and complex nature of the industry.

When elaborated further to explore the specifics of the role, it was found that leadership should have a facilitating and coordinating role through the provision of the right amount of training, knowledge, resources and support of the regional and local managers and employees by teaching them “*how to fish*” rather than simply giving them fish. Skyrme (2000) professes that an ‘ideal’ style to engender this practice is ‘knowledge leadership’, as it involves the constant development and innovation of knowledge and individual skills. More importantly, however, leadership has the responsibility to create a blame-free “*test-and-learn*” environment, a condition also identified by Edvarsson (2008) who argues that organizations need to provide opportunities for individuals to take informed risks. Leaders should not blame a crisis on particular individuals, but instead use the acquired knowledge to redesign improved crisis management mechanisms.

“Provided that the unsuccessful response is not due to negligence, lack of forethought or irresponsible risk taking, there is no reason to start looking for culprits and scapegoats. Instead we give adequate time for our people to reflect about what went wrong and what should be done or not done next time in order to prevent the crisis or minimize its damage. By not penalizing action, we do not only encourage initiative but we also set staff expectations” (Destination Management Organization, Director of Corporate Affairs, Excerpt 11, Stanza 12).

Both HRT and NAT stress the importance of knowledge creation from errors and near misses. However, the proponents of the two perspectives have different views on how feasible this knowledge creation is. The overall goal of these leadership activities is to embed a crisis culture, which would enhance the organization’s ability to detect early crisis signals and enable their prevention, improve crisis response and accelerate crisis recovery. Informants described such a culture as one of *openness* and *participation* that encourages free two-way communication and *sharing* of responsibility for decision making and action. These findings are in line with the arguments of HRT advocates such as La Porte and Consolini (1991) and Rochlin (1996) on an enabling crisis culture. The informants did not seem to share NAT scholars (Perrow, 1994; Sagan, 1993) concerns who, although they recognize that organizations can develop crisis knowledge from their failures, tend to be pessimistic about the creation of the required blame-free culture.

These findings also appear to refute Pauchant and Mitroff’s (1992) assumption that crisis culture can be imposed by senior management. Rather, they show that crisis culture is an emergent property arising from the continuing negotiations about values, meanings and priorities between the organizational members and the environment within which they operate.

Some informants warned that an organization-wide crisis culture that demands action ‘strictly by the book’, based upon procedural knowledge, with consequences (*reprimand*) for people who deviate, should also be avoided. As an informant affirmed, such a culture may make the organization inflexible and its crisis response ineffective:

“We were so pre-occupied with reports and compliance that we, unwillingly, created a culture of fear and not a culture of safety awareness. We should concentrate more on why a mistake was made rather than on who did it. We drowned in papers when we should be responding to a mega-crisis” (Hotel Group, Vice President Loss Prevention, Excerpt 4, Stanza 3)

Several informants shared the view that a tight, control-oriented management style often leads to an organization's 'inward looking-ness' and *isolation* from its environment and also to an illusion of '*invulnerability*'. Excessive focus on standards and processes in order to achieve performance levels of an HRO often comes to the detriment of crisis response. They, therefore, favored non-hierarchical organizational structures and proposed "molecular" or matrix / network structures, as they provide flexibility and allow 'cross-pollination'. This finding corroborates Stonehouse & Pemberton's (1999) views who argue that effective knowledge management requires an enabling decentralized structure that empowers employees to learn from previous crises, gives them the flexibility to disseminate knowledge throughout the organization and the authority to play an active role to help the organization institutionalize learning from crisis situations. Flexible structures also imply loose-coupling (reduction of inevitable crises according to the NAT) and offer the organization 'slack', i.e., buffers or redundancies that may mitigate negative impact of a crisis.

The way knowledge is codified, stored and shared is central to the way an organization capitalizes upon its knowledge assets (Stonehouse & Pemberton, 1999). Communication was also identified as an important aspect central to the management of crisis knowledge. The advent of information and communication technologies has paved the way for the encoding, manipulation and transmission of knowledge throughout the organization. The informants considered this highly important and crucial in response to crisis. The Vice President Loss Prevention, of a hotel group commented that "it would be ideal to have 'abundant and redundant' communication platforms to increase our effectiveness" (Excerpt 6, Stanza 2). Other informants stated that these platforms should facilitate the sharing of crisis-related information within, as well as across, the organization's boundaries with the rest of its stakeholders (including competitors).

When elaborated further to identify the communication platforms, the informants pointed out the development of crisis knowledge repositories storing standards, training material and best practices and of "yellow-pages-like" crisis knowledge directories, with information on "who is an expert in what and how they can be contacted" within the organization (Airline, Director of Business Resilience, Excerpt 4, Stanza 15). Some informants also noted that web-technologies have facilitated the development of company intranets and extranets as well as the design of specialized crisis sites and online learning centers (a step up from repositories). One informant (Hotel Group, Senior Vice President Global Risk Management, Excerpt 9, Stanza 8) stated that they are using social media (namely Facebook and Twitter) in order to engage their staff in the various training modes offered by their Risk and Crisis Learning Centre, thus facilitating the process of crisis knowledge sharing.

CONCLUSION

Recognizing the importance of knowledge in tourism crisis management (Blackman & Ritchie, 2008; Blackman et al., 2011) our study aimed to identify the types of knowledge and different knowledge management strategies that are being employed by tourism organizations in order to respond to crises they are facing. Informed by the resource- and knowledge-based views of knowledge management, our research identified four types of 'crisis specific knowledge': procedural, behavioral, third party knowledge and 'learned ignorance'. This categorization of crisis knowledge goes beyond the generally accepted typology of tacit and explicit knowledge (Polanyi, 1966; Choo, 1988) and enables crisis managers develop specific knowledge exploitation strategies (creation, acquisition, sharing and integration) for each one

of them. A key finding of the study was that procedural knowledge alone, although favored among organizations with a more resource-based view of knowledge management, can become problematic in crisis situations as it does not allow flexibility and may lead to sub-optimal or inappropriate response. It should always be complemented by behavioral knowledge which can be both tacit and explicit and was found by the informants, contrary to the common belief (Hedlund & Nonaka, 1993), as superior to the procedural knowledge, when it comes to crisis situations.

The paper draws upon the literature to identify knowledge management strategies and processes for crisis management by providing empirical evidence on how tourism organizations manage knowledge and knowledge flows in order to develop effective responses to crisis situations. HRT and NAT raise some issues surrounding the creation and management of crisis knowledge as each theory considers some organizational aspects affecting crisis knowledge management and overlooks others. The study showed that they can be used as points of reference rather than as roadmaps since both approaches have strengths and can make a valuable contribution to crisis knowledge management by assessing the trade-offs associated with the creation of crisis knowledge and by identifying contexts in which this knowledge creation is more likely to be effective.

The paper goes further however, by identifying two distinct flows of crisis knowledge in organizations: institutionalized and emergent. The institutionalized knowledge flow involves the movement of knowledge both within and outside of the organization. Codification and personalization strategies enable the sharing and integration of the different types of crisis knowledge through the institutionalized knowledge flow, embedding it into the organization's crisis response system. The emergent knowledge flow is normally triggered by unexpected crisis situations where the institutionalized knowledge proves inadequate for an effective response, i.e., by what we have identified as 'learned ignorance'. In this knowledge flow, organizations usually create, (and sometimes acquire, 'third party') knowledge through enhanced social interaction of individuals from within and outside the organization (Wenger et al., 2002), enabling cross-fertilization, experimentation, and generation of the new knowledge which, in turn, will become institutionalized and be disseminated and integrated until it becomes obsolete. Another important enabling condition for this knowledge flow was found to be a 'blame-free' environment which is consistent with Mitroff's (2005) assertions on crisis leadership.

Further, the study has shown that four distinct organizational factors, namely organizational leadership and structure, crisis culture and communication interact with, and impact upon each other influencing the organization's ability to manage crisis knowledge. Crisis leadership plays an important role in the implementation of codification and personalization knowledge management strategies through their explicit support to the crisis management plans and the exploitation of their visionary and proactive leadership skills. However, codification, personalization, creation, integration and sharing of knowledge would not be possible unless the tourism organization creates a crisis aware, 'enabling culture' that represents key values including openness, sharing and participation, in line with HRT theorists (Rochlin, 1996; Weick et al., 1999). These values can be embedded, and thus the knowledge strategies and processes (creation, sharing through codification and personalization and integration) can be facilitated by adopting a decentralized structure and creating abundant and redundant communication platforms.

The proposed framework of crisis knowledge types, flows and strategies can help

practitioners in the tourism industry better understand the elements, processes and organizational conditions required for the development of crisis knowledge policies and strategies that will enhance the resilience of their organizations, strengthen their defense mechanisms, limit potential damages and allow them to recover bounce from a crisis situation back to normalcy faster. It can also be used as a basis for further research regarding the governance of this crisis knowledge management system. One direction for research would be the development of an appropriate performance measurement methodology for the organization's crisis knowledge management system with a series of appropriate metrics and controls. Another would be to actually measure crisis leadership and culture and its influence on knowledge management and/or crisis preparedness.

The findings of this study, however, need also to be viewed taking into consideration certain research design limitations which do not allow broad generalizations. One of the limitations is that the sample of the study was not representative of the tourism industry since a significant part of the informants (15/21) came from hotel groups and certain sectors were not represented. This requires some caution in any generalization of the findings. A further limitation related to the selected sample was that it included only executives. By having a wider range of stakeholders the study would produce multiple perspectives on crisis knowledge management, leading to perhaps richer and more robust findings. Finally, one further limitation of the research design was that the CIT encouraged the informants to focus on large scale crises, ignoring this way the more common types of day-to-day crisis management that involve knowledge resources. A focus on the latter would perhaps demonstrate how the intensity, scope and duration of a crisis impact the entire knowledge management process.

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