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## Knowledge management and disaster management in tourism industry

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### Abstract

**Purpose** – This conceptual paper aims to present the results of the literature analysis devoted to the application of knowledge management and its processes in the situation of a crisis caused by a natural disaster. On the basis of the analysed papers, the theoretical model linking knowledge management and crisis management for the tourism industry has been proposed.

**Findings** - The proposed theoretical model presents the role of KM in disaster management and provides the KM-oriented activities at various stages before, during and after a disaster. Due to the severity of potential consequences of natural disasters, both whole regions and particular organisations need to be prepared in advance for their occurrence. This can be done with the help of knowledge management practices which can support tourism companies in developing effective tourism crisis strategies.

**Design/methodology/approach** – This study is based on the analysis of the literature related to natural disasters and the ways how knowledge management and organisational learning can be useful in case of their occurrence, as well as before and after.

**Originality/value** – The paper offers new insights for researchers dealing with the topic of knowledge management processes in the context of disaster management.

**Practical implications** – The practical contribution of this study lies in its potential to guide the tourism industry in leveraging knowledge management for effective crisis preparedness, response, and recovery in the context of natural disasters.

**Limitations** – At this stage of development, the proposed study is of theoretical character. This limitation will be overcome in the future research activities that involve a sample of tourism organisations from various countries and regions.

**Keywords** – KM, knowledge management, disaster management, tourism, natural disasters

**Paper type** – Academic Research Paper

## 1 Introduction

Knowledge management concept has been examined for several decades so far and it has been proven to be useful in many organisational contexts, bringing positive results to organisations of various sizes and types. Among the potential benefits of knowledge management there are for example: sustainable competitiveness (Egbu et al., 2005); innovations and performance (Vaccaro et al., 2010); value creation (Edvardsson & Oskarsson, 2011) or improving human capital (Palacios-Marques et al., 2011), just to name a few.

Knowledge management has also been examined in the context of disaster management in the tourism industry, however, those studies are quite scarce (Jia et al., 2012; Mistilis & Sheldon, 2006). In those studies, elements of knowledge management and learning have been presented with its usefulness for the crisis and its various stages. This conceptual paper aims to present the results of the literature analysis devoted to the application of knowledge management and its processes in the situation of a crisis caused by a natural disaster (e.g. earthquake, tsunami, volcano eruption, etc.). On the basis of the analysed papers related to such hazardous events and the application of knowledge management and learning in their context, the theoretical model linking knowledge management and crisis management for the tourism industry has been proposed.

This study is based on the review of the literature related to natural disasters and the ways how knowledge management and organisational learning can be useful in case of their occurrence, as well as before and after. The authors have searched for the papers related to this topic in two databases, namely Web of Science and Scopus, and analysed the results independently, comparing and integrating the outcomes afterwards.

The paper develops as follows. First, the role of knowledge in the context of a disaster is presented. Second, the model linking the two concepts is proposed. Finally, the paper ends with a discussion and conclusions section.

## 2 The role of knowledge management in the context of a disaster

### 2.1. *KM processes*

There are many classifications and typologies of knowledge management processes. Among them there are for example such processes as socialisation, internalisation, externalisation and combination by Nonaka and Takeuchi (1995) or knowledge creation,



gaining of knowledge, capturing knowledge, sharing knowledge and use of knowledge by Quintas et al. (1997). For the purpose of this paper, the typology proposed by Probst et al (2000) will be used. According to this author, there are the following knowledge-related processes in organisations:

- locating knowledge;
- knowledge acquisition;
- developing knowledge;
- knowledge application;
- knowledge sharing and dissemination;
- knowledge exploitation;
- preservation of knowledge (Probst et al, 2000).

Locating knowledge refers to the process of finding and accessing knowledge or understanding this knowledge within a particular domain or field. Knowledge acquisition refers to the obtaining of new knowledge from the sources outside organisations, such as for example: other firms, stakeholders, experts, or knowledge products. Knowledge development can be referred to as “all the management activities intended to produce new internal or external knowledge on both the individual and the collective level” (Probst, 1998, p.24). Knowledge application refers to the practical use and implementation of acquired and possessed knowledge to achieve specific organisational objectives, solve problems, make decisions, or improve organisational outcomes. It is worth highlighting here that possessing knowledge is not enough for organisations, what is crucial is its proper application. Knowledge sharing and dissemination is aimed at making the knowledge available everywhere it is needed in an organisation. Knowledge exploitation is about the strategic utilisation of existing knowledge assets to achieve broader organisational goals and objectives. Finally, preservation of knowledge is supposed to eliminate problems with losing knowledge in organisations, for example due to reorganisation. To avoid the loss of valuable knowledge, organisations must select the valuable knowledge for preservation, make sure to store it properly and integrate it with the organisational knowledge base. All in all, these processes are useful for organisations in managing knowledge in a complex and systematic way (Probst, 1998; Probst et al., 2000).

## **2.2. Disaster context**

Natural disasters can be defined as “events that are precipitated by the occurrence of natural extreme events” (Specht, 2006, p. 125). Following this approach, the following can be included in the category of natural disasters: earthquakes, floods, tsunamis, tornados, volcanic eruptions. Natural disasters are an important area to study from various perspectives, as they often cause severe damages regarding infrastructure and the general ecosystem which, on one hand, impacts individuals and households, and on the other hand, poses a challenge for governmental and public institutions (Berrebi et al, 2021).

## **2.3. Usefulness of KM in disaster situations**

Knowledge management can offer several benefits for the tourism industry such as: facilitating innovation and organisational learning, enhancing decision-making and promoting the exchange of the core competencies (Cooper, 2015). It also plays a crucial role in creating a competitive advantage over competitors within the industry (Bouncken & Pyo, 2002). While facing disaster situations, KM can serve as a valuable tool in supporting tourism companies, increasing their resiliency and defence mechanisms (Paraskevas et al, 2013). At the same time, knowledge management is a concept that is not an obvious one to apply in the disaster context, such as crisis management for example. Therefore, it is worth to examine in depth its usefulness and potential benefits in such context.

Orchiston & Higham (2016) argue that past crisis knowledge becomes a template for responding to the new disaster, which is essential in planning disaster mitigation strategies. Also for this preparatory phase, disaster preparation training (Badri & Kazemi, 2021) and a centralised knowledge repository (Racherla & Hu, 2009) can have a pivotal role in facilitating tourism companies to organise knowledge and prepare for future disasters.

KM can be useful during a disaster and immediately after such an event. According to Orchiston & Higham (2016) accurate communication and systematic updating of a tourism industry regarding the current status, along with the use of IT systems (i.e. web-portals) aimed at knowledge exchange, can support companies during the response phase. The same authors (Orchiston & Higham, 2016) claim that committees and formal networks can act as coordinators and play communication management roles, at the same time providing an assistance in acquisition of information and data.

During a recovery phase evaluating the activities taken so far is substantial and enhances the process of returning to normality (AlBattat & Som, 2013). Collaboration with



external stakeholders, taking benefits from their disaster management experience and acquiring disaster knowledge from them (Orchiston & Higham, 2016) fosters tourism recovery. Therefore, it would be potentially beneficial for tourism organisations to identify and analyse knowledge sources that can be important at various stages of the crisis to support its management and recovery (both short and long-term).

### **3 Proposal of the model**

Due to the severity of potential consequences of natural disasters, the tourism industry needs to be prepared in advance for their occurrence. This can be done with the help of knowledge management at different stages: before, during and after a disaster. By integrating the KM processes delivered by Probst et al (2000) with the KM-oriented activities extracted from the review of tourism literature, a conceptual model for managing knowledge in disaster (Figure 1) has been proposed. The model offers the possibility to analyse various stages of disasters from the perspective of knowledge management and to examine what kind of processes can be applied during those stages.

#### **3.1. Preparedness**

First of all, before the disaster, KM can be applied at the preparedness stage. This phase of disaster is characterised with the active process of the environmental scanning in order to prepare the organisation for the possible hazardous events. Locating knowledge within the company and its resources, and obtaining new knowledge from the external sources (Probst et al, 2000) are fundamental KM processes which shall be applied here. For this purpose, tourism organisations could check the knowledge related to crisis possessed by their cooperants, governmental bodies, NGOs, etc.

At this stage, the analysis should be conducted of similar events in the past (if they had appeared) in the particular region or in other regions with similar characteristics of the place and the disaster. Such knowledge can serve as a template for responding to the new crisis situations, enabling an immediate response (Orchiston & Higham, 2016) and improving the preparation and planning for the next disasters in the future (Ghaderi et al, 2022).

Other types of KM activities that can be done at the preparedness stage are trainings which can enhance the disaster response (Badri & Kazemi, 2021) and act as means for disaster knowledge exchange and "best practices" sharing in disaster planning (Bhaskara & Filimonau, 2021); as well as the creation of a knowledge base, which can take the role of a

centralised knowledge repository (Racherla & Hu, 2009). It is important to keep in mind that before the disaster, knowledge can be gathered without time pressure, in a systematic way, and serve as a support in the future crisis occurrences.

### ***3.2. During disaster and immediately after the event***

In the second stage, namely during the disaster and immediately after the event, there is a need to quickly collect, select and disseminate knowledge on important aspects such as: severity of the event and its potential consequences, protocol for actions, offered help, evacuation routes, picking-up points, etc. This can be done with the following processes and activities:

- ongoing communication that is aimed at updating the industry on daily and weekly basis in order to provide clear message and to avoid misinformation (Orchiston & Higham, 2016), enhancing at the same time information and data flow (Blake et al, 2019);
- strong industry network which can be built in the form of the institutional structures (groups or committees) with the active participation of industry representatives (Blake et al, 2019);
- IT systems integrating various information sources and allowing fast and accurate information transfer (Blake et al, 2019).

During this disaster stage developing new internal knowledge regarding own disaster management strategies, implementation of acquired knowledge (knowledge application) along with knowledge sharing and dissemination (Probst et al, 2000) are the most useful KM processes.

### ***3.3. Long-term recovery***

Finally, there is the last stage, which is the long-term recovery, where tourism organisations can reflect upon this past event and the ways of handling it. A useful tool here can be a third-party benchmark aimed at seeking external disaster recovery knowledge (Orchiston & Higham, 2016) and evaluation, where one analyses what went wrong, what went well, and what should be done better the next time. This after-action review can help the companies to effectively win through the event and return to normal operations (AlBattat & Som, 2013). After-action review originally was applied in the U.S Army and

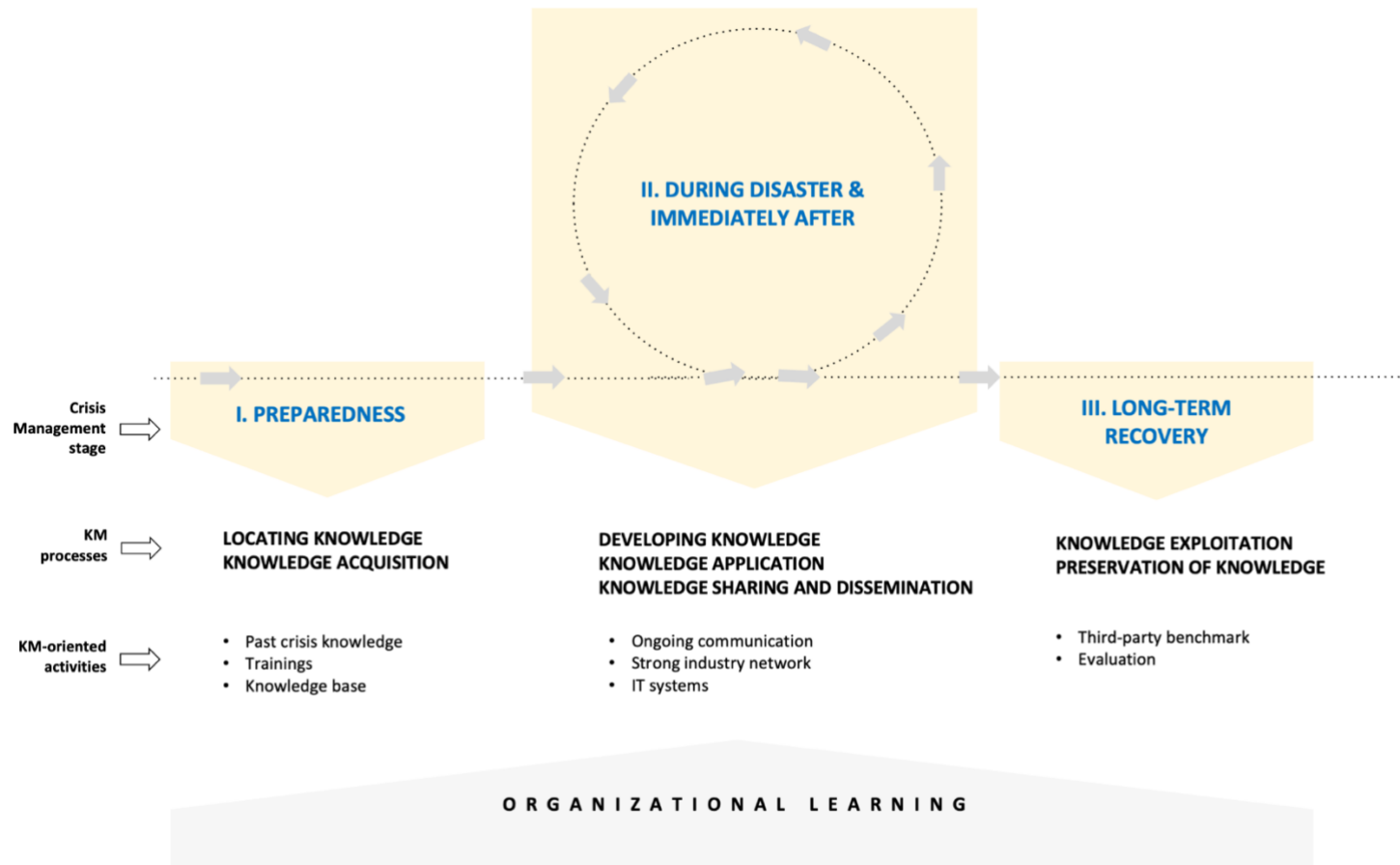


is a very beneficial technique for the analysis of the past missions and military actions, where each mistake can cost not only the loss of valuable equipment or position, but first of all, the lives of soldiers.

An essential in this phase is the active revision of the disaster course and mitigation-oriented actions taken by the company. Knowledge exploitation and preservation (Probst et al, 2000) aimed at keeping valuable knowledge inside the organisation and integrating it with the centralised knowledge base should be incorporated.

A key context of the entire model is the organisational learning, which is crucial for the development of effective tourism crisis strategies (Blackman & Ritchie, 2008) and can support tourism companies in tackling a disaster at every stage. In this model, organisational learning is perceived as a holistically present process, integrated with every stage of a disaster.





**Figure 1:** Model for managing knowledge in disaster.

Sources: Own elaboration based on Probst et al (2000), Orchiston & Higham (2016), Badri & Kazemi (2021), Bhaskara & Filimonau (2021), Racherla & Hu (2009), Blake et al (2019), AlBattat & Som (2013), Blackman & Ritchie (2008).



#### **4 Discussion and conclusions**

This conceptual paper is based on the literature devoted on KM and KM processes on one hand and on disasters in the tourism industry on the other hand. It integrates knowledge from these two areas into a conceptual model that presents the potential usefulness of KM processes at various stages of a disaster: before, during and after.

Tourism constitutes a network of industries and activities closely intertwined with the external environment which renders destinations highly vulnerable to the potential consequences arising from natural disasters (Chan et al, 2021). On the basis of the literature analysis, it can be concluded that the potential application and usefulness of various KM processes in disaster management in tourism is significant and should be examined to more extent. KM processes that can be applied at various stages are:

- locating knowledge and knowledge acquisition at the stage of preparedness for the crisis;
- developing knowledge; knowledge application; knowledge sharing and dissemination during the disaster and immediately after;
- knowledge exploitation; and preservation of knowledge for the long-term recovery.

The paper offers new insights for researchers dealing with the topic of knowledge management processes in the context of disaster management. The practical contribution of this study lies in its potential to guide the tourism industry managers in leveraging knowledge management for effective disaster preparedness, response, and recovery.

As with every paper, this one is also not free from limitations. At this stage of development, the proposed study is of theoretical character only. This limitation will be overcome in the future research activities that involve a sample of tourism organisations from various countries and regions. During the studies, the model and its usefulness will be examined and afterwards, adjusted on the basis of the results obtained.

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## References

- AlBattat, A. R., & Som, A. P. M. (2013). Emergency Preparedness for Disasters and Crises in the Hotel Industry. *SAGE Open*, 3(3). <https://doi.org/10.1177/2158244013505604>
- Badri, S. A., & Kazemi, N. (2021). How Does the Hotel Quality Rate Influence the Preparedness against the Effects of Disasters? *Journal of Quality Assurance in Hospitality and Tourism*, 22(5), 591–613. <https://doi.org/10.1080/1528008X.2020.1818357>
- Barney, J.B., (1991) “Firm Resources and Sustained Competitive Advantage”, *Journal of Management*, Vol. 17, No. 1, pp. 99-120.
- Berrebi, C., Karlinsky, A., & Yonah, H. (2021), Individual and community behavioral responses to natural disasters. *Natural Hazards*, 105(2), 1541–1569. <https://doi.org/10.1007/s11069-020-04365-2>
- Bhaskara, G. I., & Filimonau, V. (2021). The COVID-19 pandemic and organisational learning for disaster planning and management: A perspective of tourism businesses from a destination prone to consecutive disasters. *Journal of Hospitality and Tourism Management*, 46, 364–375. <https://doi.org/10.1016/j.jhtm.2021.01.011>
- Blackman, D., and Ritchie, B. W. (2008) Tourism Crisis Management and Organizational Learning. *Journal of Travel & Tourism Marketing*, 23(2–4), 45–57.
- Blake, D. M., Stevenson, J., Wotherspoon, L., Ivory, V., & Trotter, M. (2019). The role of data and information exchanges in transport system disaster recovery: A New Zealand case study. *International Journal of Disaster Risk Reduction*, 39. <https://doi.org/10.1016/j.ijdrr.2019.101124>
- Bouncken, R. B., & Pyo, S. (2002). Achieving Competitiveness Through Knowledge Management. *Journal of Quality Assurance in Hospitality & Tourism*, 3(3–4), 1–4.
- Chan, C. S., Nozu, K., & Zhou, Q. (2021). Building destination resilience in the tourism disaster management process from the past experiences: The case of the 2018 Hokkaido Eastern Ibari earthquake in Japan. *Tourism Recreation Research*. <https://doi.org/10.1080/02508281.2021.1881707>
- Cooper, C. (2015). Managing tourism knowledge. *Tourism Recreation Research*, 40(1), 107–119. <https://doi.org/10.1080/02508281.2015.1006418>
- Davenport, T. H. and Prusak, L., (1998) Working knowledge: How organizations manage what they know, Harvard Business School Press, Boston.
- Edvardsson, I. R., & Oskarsson, G. K. (2011). Knowledge management and value creation in service firms. *Measuring Business Excellence*, 15(4), 7–15. <https://doi.org/10.1108/13683041111184062>
- Egbu, C. O., Hari, S., & Renukappa, S. H. (2005). Knowledge management for sustainable competitiveness in small and medium surveying practices. *Structural Survey*, 23(1), 7–21. <https://doi.org/10.1108/02630800510586871>
- Ghaderi, Z., King, B., & Hall, C. M. (2022). Crisis preparedness of hospitality managers: evidence from Malaysia. *Journal of Hospitality and Tourism Insights*, 5(2), 292–310. <https://doi.org/10.1108/JHTI-10-2020-0199>
- Jia, Z., Shi, Y., Jia, Y., & Li, D. (2012). A framework of knowledge management systems for tourism crisis management. *Procedia Engineering*, 29, 138-143.
- Marr, B. and Schiuma, G., (2001), Measuring and Managing Intellectual Capital and Knowledge Assets in New Economy Organisations, in Handbook of Performance Measurement, ed. M. Bourne, Gee, London.
- Mistilis, N., & Sheldon, P. (2006). Knowledge management for tourism crises and disasters. *Tourism Review International*, 10(1-2), 39-46.
- Nonaka, I., & Takeuchi, H. (1995). *The Knowledge-creating Company: How Japanese Companies Create the Dynamics of Innovation*. Oxford University Press. <https://books.google.pl/books?id=B-qxrPaU1-MC>
- Orchiston, C., & Higham, J. E. S. (2016). Knowledge management and tourism recovery (de)marketing: the Christchurch earthquakes 2010–2011. *Current Issues in Tourism*, 19(1).
- Palacios-Marques, D., Gil-Pechuán, I., & Lim, S. (2011). Improving human capital through knowledge management practices in knowledge-intensive business services. *Service Business*,

- 5(2), 99–112. <https://doi.org/10.1007/s11628-011-0104-z>
- Paraskevas, A., Altinay, L., McLean, J., & Cooper, C. (2013). Crisis knowledge in tourism: Types, flows and governance. *Annals of Tourism Research*, 41, 130–152.
- Probst, G. J. B. (1998). Practical Knowledge Management: A Model That Works. *PRISM-CAMBRIDGE MASSACHUSETTS*, 17–29. <http://www.genevaknowledgeforum.ch/downloads/prismartikel.pdf>
- Probst, G., Romhardt, K., & Raub, S. (2000). *Managing knowledge: Building blocks for success*. J. Wiley.
- Quintas, P., Lefrere, P., & Jones, G. (1997). Knowledge management: a strategic agenda. *Long Range Planning*, 30(3), 385–391.
- Specht, A., (2006), Natural Disaster Management, In Wilks J., Pendergast D., Leggat P. (Eds.), *Tourism in Turbulent Times. Towards Safe Experiences for Visitors* (pp. 123-142), Routledge
- Racherla, P., & Hu, C. (2009). A framework for knowledge-based crisis management in the hospitality and tourism industry. *Cornell Hospitality Quarterly*, 50(4), 561–577. <https://doi.org/10.1177/1938965509341633>
- Vaccaro, A., Parente, R., & Veloso, F. M. (2010). Knowledge Management Tools, Inter-Organizational Relationships, Innovation and Firm Performance. *Technological Forecasting and Social Change*, 77(7), 1076–1089.

