Knowledge Risk Management in Organizations

Susanne Durst*

School of Business
University of Skövde
Högskolevägen, 541 28 Skövde
Sweden

Malgorzata Zieba

Department of Management
Gdansk University of Technology
80-233 Gdansk, ul. Narutowicza 11/12
Poland

Helio Aisenberg Ferenhof

Federal University of Santa Catarina (UFSC)
Post-Graduation Program in Information and Communication
Technologies
Rua Pedro João Pereira, 150 Mato Alto – Araranguá SC, Brazil.
Zip Code: 88905-120.

Corresponding author

Structured Abstract

Purpose – Shorter product life cycles, greater demands from consumers for sustainable and eco-friendly products and services, and thus the need for constant market observation make today's business environment a rather complex one, the one that is characterized not only by a number of opportunities but also by a number of risks. These risks are increasingly related to knowledge which, in turn, underlines the need for an updated approach to risk management, i.e. one that covers knowledge risks as well. Although the role of knowledge in organizational performance is generally acknowledged and has been explored vastly, the study of risks related to knowledge or knowledge risk management is still in its infancy. Indeed, we lack an in-depth understanding of how organizations perceive and manage the possible downsides of knowledge. Therefore, the aim of this paper is to empirically investigate knowledge risk management in organizations.

Design/methodology/approach – An international sample of organizations is surveyed to understand how knowledge risks are managed, what knowledge risks are managed and what tools and methods are used to manage these knowledge risks.

Originality/value – To the best of the authors' knowledge, no quantitative study on knowledge risk management in organizations has been conducted and published in academic journals. Moreover, it is the first complex study dealing with a large number of potential knowledge risks, previous studies have tended to deal with one or two knowledge risks only (e.g. knowledge hiding, knowledge loss or knowledge spillover).

Practical implications – The results of the study provide insights into the risk management of knowledge as well as knowledge risks that are managed by organizations of different size and from different sectors. Additionally, an overview of methods used to manage knowledge risks is made available. Based on the findings, managers and company owners can develop actions in order to improve their approach to knowledge risk management.

Keywords – Knowledge Risk Management, Knowledge Risks, Knowledge Management

Paper Type: Academic Research Paper

1 Introduction

Shorter product life cycles, greater demands from consumers for sustainable and eco-friendly products and services, and thus the need for constant market observation make today's business environment a rather complex one; one that is characterized not only by a number of opportunities but also by a number of threats. These threats are increasingly related to knowledge which, in turn, underlines the need for an updated approach to risk management, i.e. one that covers knowledge risks as well. Although the role of knowledge in organizational performance is generally acknowledged and has been explored vastly, the study of risks related to knowledge or knowledge risk management is still in its infancy. Recently, researchers have started to examine various types of knowledge risks, such as risk of knowledge loss (e.g. Treleaven & Sykes 2005; Durst & Wilhelm 2011; Martins & Martins 2011; Joe et al. 2013), knowledge leakage (Mohamed et al. 2007; Parker 2012; Ahmad et al. 2014, or knowledge hiding (Connelly et al. 2012; Connelly & Zweig 2014; Cerne et al. 2014). This development is to be welcomed; these studies, however, have addressed very specific issues and thus, produced only fragmented insights of the topic. Indeed, we lack an in-depth understanding of how organizations perceive and manage the possible downsides of knowledge. Therefore, the aim of this paper is to empirically investigate knowledge risk management in organizations.

2 Theoretical Background

Knowledge risks constitute a wide category of threats related to knowledge that an organization might face. There are not many definitions of knowledge risks in the literature; one of the exceptions is the one proposed by Zieba and Durst (2018), who defined knowledge risk as "*a measure of the probability and severity of adverse effects of any activities engaging or related somehow to knowledge that can affect the functioning of an organization on any level*" (p. 256). What is an important aspect of this definition is the indication that knowledge risks may have an adverse influence on the organization and therefore, they should be identified *a priori* and then eliminated or reduced.

Among the many types of knowledge risks that have been identified and described in the literature, one may list:

- Knowledge loss;
- Knowledge leakage;
- Knowledge spillover;
- Knowledge outsourcing risks;
- Knowledge waste;
- Knowledge hiding;
- Knowledge hoarding;
- Risks related to unlearning;
- Risks related to forgetting.

Knowledge loss is any kind of knowledge deficit that appears either as a direct consequence of not possessing knowledge anymore (e.g. due to a computer system failure) or an indirect one (e.g. an employee leaving a company or being 'stolen' by a competitor). Knowledge leakage (which is a sub form of knowledge loss) can be defined as "*the deliberate or accidental loss of knowledge to unauthorized personnel within or outside of an organisational boundary*" (Annansingh 2012, p. 269). Knowledge spillover happens when valuable knowledge spills out of an organization for the benefit of its competitors (Zieba & Durst, 2018). As far as knowledge outsourcing risks are concerned, they relate to a situation when as a result of transferring a business activity to an external contractor, the organization might lose its skills and capacities to perform valid functions itself (Agndal and Nordin, 2009). Among other described knowledge risks, one can find knowledge waste, knowledge hiding, and knowledge hoarding. The first one relates to a situation when an organization does not make an use of the available and useful knowledge in possession (Durst and Zieba, 2017). It may manifest itself in the form of reinvention, lack of system discipline or scatter (Ferenhof, Durst and Selig, 2015). Knowledge hiding and knowledge hoarding are related in the sense that they are acts of knowledge withholding, but the difference is that knowledge hiding is the case when an

employee intentionally does not share the knowledge he or she were asked for, while knowledge hoarding is when the knowledge has not been directly requested (Webster *et al.*, 2008).

The last two mentioned risks, related to unlearning and forgetting are connected with losing knowledge either as a deliberate or accidental process. Unlearning can be necessary to make room for new knowledge, but can result in lack of important knowledge (Cegarra-Navarro *et al.*, 2013). Forgetting can be accidental (e.g. memory loss) or deliberate (e.g. purposively forgetting traditional methods and approaches to learn new ones).

Apart from these risks that are presented in the literature in various forms, there is a group of risks that are not so well defined. They are connected to applying knowledge in an improper way or using unreliable knowledge. There is also a new group of knowledge risks originating from the development of the Internet and new information and communication technologies. These new developments can bring about not only opportunities but also threats to organizations. Examples are:

- Risk of using disinformation or unreliable information;
- Risk of improperly applying knowledge;
- Risks related to social media;
- Risks related to cyber-crime;
- Risks related to digitalization.

3 Method

The data for our study were collected between September 2017 and January 2018. The collection method was in the form of an online questionnaire, using the software QuestionPro. The questionnaire consisted of 23 mainly closed-ended questions and was divided into four sections. As the topic in focus has to the researchers' knowledge not previously been addressed, it was not possible to rely on existing questionnaires. Thus, own items needed to be developed or existing ones from similar areas (such as risk management) needed to be amended. Additionally, to the sections related to knowledge risks and their management, supplementary demographic data were collected, such as the year of organization foundation, type of organization, location, as well as number of employees.

After the questionnaire had been constructed, it was pre-tested in order to check the order of questions, its comprehensibility and appropriateness to be answered in a certain period (max. 30 minutes). The pre-test also described a means to moderate the weaknesses of self-administered surveys (Saunders, Lewis & Thornhill, 2007). Thereby,

the questionnaire was pretested with two management professors and two individuals from companies.

To access possible participants, convenience sampling was used, which means the authors informed about the survey through LinkedIn, Facebook, and Twitter, and used own personal contacts, as well as access to Company Lists to send out personal invitations to the survey.

In total 623 responses were received. These responses constitute an international sample, having predominance in Latin America which accounted for 49.6% (countries involved are Brazil, Colombia, Cuba, Mexico, Paraguay, Peru, Uruguay, and Venezuela), followed by Europe with 25.9% (countries involved: Austria, Belgium, Czech Republic, Denmark, England, Finland, France, Germany, Greece, Iceland, Italy, Liechtenstein, Luxembourg, Netherlands, Poland, Romania, Scotland, Spain, Sweden). In addition, participants from Australia, Bahrain, Bangladesh, China, India, Iran, Kazakhstan, Malaysia, Pakistan, Saudi Arabia, Turkey, United Arab Emirate, and the United States of America participated in the survey.

For data analysis, the software SPSS 23 was used. The examination presented in the following section is based on univariate analysis such as frequency, percentages, mean and standard deviation.

4 Presentation of findings

In this section, the descriptive findings of the survey are presented, starting with some general information about the participating organizations, before turning to the KRM related aspects.

4.1 General information about the participating organizations

The year of foundation on average was 1983 (range from 1900 – 2017) and the participating organizations have 9.020 employees on average.

With regard to the type of organizations involved, Figure 1 clarifies that a number of different organizations participated in the survey, which can be considered a promising outcome due to the fact that KRM is an issue that should concern any type of organization.
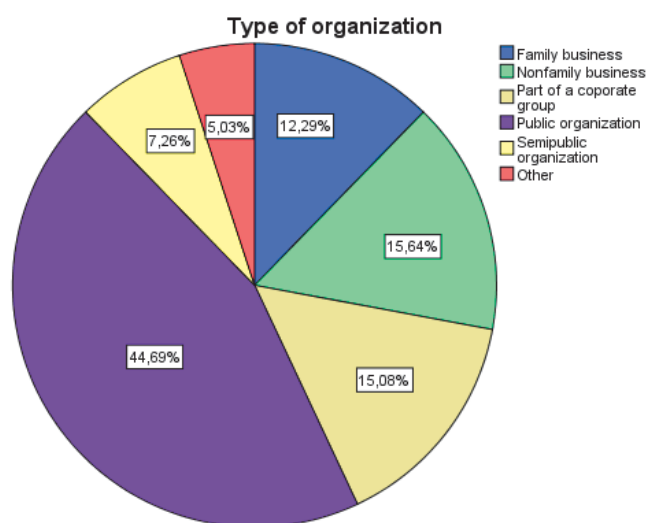
Type of organization

Figure 1. Types of organizations involved in the survey

The participants were also asked to assess the organization's performance in relation to its competitors along a number of selected items. The findings are presented in Table 1.

Table 1. Assessment of organization (scale from 1 (disagree) to 5 (totally agree))

Our organization (N=201)	Mean	SD
Is more successful	4,20	1,698
Has a greater market share	3,91	1,734
Is growing faster	4,08	1,769
Is more profitable	3,98	1,688
Is more innovative	4,03	1,786
Is more sustainable	3,79	1,711
has a better responsiveness to changes in the business environment	4,00	1,454
Is more agile	3,81	1,816

The findings presented in Table 1 suggest that the organizations involved are more successful, grow faster, are more innovative and have a better response time to changes in the business environment than their competitors.

4.2 Knowledge risk management in the organizations

In total 42.1% of the organizations reported that their organization does risk management, 33.9% replied in the negative, while the remaining 24% indicated that they did not know. Those participants who replied in the positive were also asked if the organization's risk management considers knowledge risks as well. In total 47.4% confirmed this, while 14.3% replied in the negative and 38.3% reported they do not know. Moreover, these participants were asked whether the organization has an in-depth

understanding of its critical knowledge. In total 52.3% answered in the positive, 21.5% in the negative and 26.2% of them indicated they did not know.

4.3 Knowledge risks identified in the organizations

The participants were also asked which knowledge risks are considered in the organization's risk management. The findings are presented in Table 2.

Table 2. Types of knowledge risks addressed in the organizations

Knowledge risks	N	Percent
Knowledge loss	78	9.6%
Knowledge leakage	58	7.2%
Knowledge spillover	24	3.0%
Knowledge outsourcing risks	50	6.2%
Risks related to knowledge gaps	56	6.9%
Relational risks	33	4.1%
Risk of using disinformation or unreliable information	76	9.4%
Risk of improperly applying knowledge	58	7.2%
Risks related to unlearning	36	4.4%
Risks related to forgetting	45	5.5%
Knowledge waste	52	6.4%
Knowledge hiding	55	6.8%
Knowledge hoarding	25	3.1%
Risks related to social media	62	7.6%
Risks related to cyber-crime	66	8.1%
Risks related to digitalization	35	4.3%
Other	2	0.2%

The risks most often considered by the examined organizations were knowledge loss (9.6%) and risk of using disinformation or unreliable information (9.4%). The least common knowledge risks were knowledge hoarding (3.1%) and knowledge spillover (3%).

4.4 Approaches to analysing knowledge risks

Next, the participants were asked to specify the approaches they use to analyse the quality (i.e. likelihood of occurrence) of knowledge risks in the organizations (Table 3). The approaches most often indicated were SWOT analysis (14.2%) and root cause analysis (11.9%). The ones rarely mentioned were assumptions analysis (4.7%) and influence diagrams (6.8%).

Table 3. Overview of analytical approaches to knowledge risks analysis

Analytical approaches	N	Percent
SWOT Analysis	87	14.2%
Brainstorming	69	11.2%
Delphi technique	57	9.3%
Interviewing	63	10.3%
Root cause analysis	73	11.9%
Checklist Analysis	58	9.4%
Assumptions Analysis	29	4.7%
Influence diagrams	42	6.8%
System or process flow charts	56	9.1%
Expert Judgment	52	8.5%
Other	28	4.6%

Additionally, the participants were asked whether they are continuously monitoring knowledge risks. In total 29.1% responded in the positive, while 44.2% in the negative and the remaining 26.7% reported that they did not know whether this is done.

Moreover, 33.3% of the participants stated that they continuously report their KRM activities, 49.6% answered in the negative, and 17.1% did not know if this is done or not.

The KRM activities are mainly reported to the top management/leadership (40%) followed by the middle management (29.4%) and the departments concerned (21.2%). A total of 9.4% stated that the KRM activities are reported to all organization members.

4.5 Consequences of missing knowledge risk management activities

The authors were also interested in collecting data about possible consequences of missing knowledge risk management activities. Therefore, the participants were invited to assess a selected number of consequences. The findings are presented in Table 4 (multiple answers were possible).

Table 4. Consequences of missing KRM

Consequences	Responses	Percent
Reduced capacity to innovate	72	13.1%
Threatened ability to pursue strategies	69	12.6%
Undermined strategies caused by reduced efficiency	67	12.2%
Lost knowledge has given other actors an advantage	80	14.6%
Increased vulnerability	89	16.2%
Reduced quality of products or services	104	19.0%
Demotivated staff	46	8.4%
Other	21	3.8%

As can be seen in Table 4, the most often indicated consequences were the reduced quality of products or services (19%) and increased vulnerability (16.2%). The least popular consequence was demotivated staff (8.4%).

5 Conclusions

The main aim of the present paper was to empirically investigate how knowledge risks are managed in organizations. Based on an international sample involving private and public organizations, the findings show that the participating organizations have identified a variety of knowledge risks and ways of analysing them. These are promising findings as it suggests that organizations are aware of knowledge risks and their different types. On the other hand, the findings indicate that just a small number of organizations manage these knowledge risks. The findings obtained for the activity of risk management, in general, reveals a clear potential for improvement. Having a systematic approach to knowledge risk management is likely to support the organizations in reducing the negative consequences of missing activities, such as reduced quality of products or services and increased vulnerability.

The authors believe that the present study has both theoretical and practical implications. From a theoretical point of view, the study makes a contribution to the emerging body of knowledge regarding knowledge risks and knowledge risk management by providing empirical insights into the practices of both public and private organizations. By having access to data from a number of countries, the authors get a deeper understanding of the practices undertaken in the context of KRM.

From a practical point of view, the study may be of interest to practitioners (i.e. owners, managing-directors, and managers) as they do not only obtain information about different types of knowledge risks, but also about ways to analyse them. What is more important, they can also get some insights about negative consequences when knowledge risk management activities are absent.

As with all studies, the present one is not without limitation. The authors want to highlight a bias that may have been created through the use of personal contacts, which covers people (organizations) with a particular interest in KM.

Given the diversified sample, additional analysis focusing on the role of cultural differences will be conducted. The authors will also apply more sophisticated statistical techniques in the next steps.

References

Agndal, H. and Nordin, F. (2009) 'Consequences of outsourcing for organizational capabilities: Some experiences from best practice', *Benchmarking: An International Journal*, 16(3), pp. 316–334. doi: 10.1108/14635770910961353.

Ahmad, A., Bosua, R. and Scheepers, R. (2014) 'Protecting organizational competitive advantage: A knowledge leakage perspective', *Computers and Security*. Elsevier Ltd, 42, pp. 27–39. doi: 10.1016/j.cose.2014.01.001.

Annansingh, F. (2012) 'Exploring the risks of knowledge leakage: an information systems case

study approach', in Huei Tse Hou (Ed.) (ed.) *New Research on Knowledge Management Models and Methods*. InTech. Available at: http://cdn.intechopen.com/pdfs-wm/33417.pdf.

Cegarra-Navarro, J., Martinez-Martinez, A., Ortega Gutiérrez, J. and Luis Leal Rodríguez, A. (2013) 'Environmental knowledge, unlearning, and performance in hospitality companies', *Management Decision*, 51(2), pp. 341–360. doi: 10.1108/00251741311301858.

Cerne, M., Nerstad, C. G. L., Dysvik, A. and Skerlavaj, M. (2014) 'What Goes Around Comes Around : Knowledge Hiding, Perceived Motivational Climate, and Creativity', *Academy of Management Journal*, 57(1), pp. 172–192. doi: 10.5465/amj.2012.0122.

Connelly, C. E. and Zweig, D. (2014) 'How perpetrators and targets construe knowledge hiding in organizations', *European Journal of Work and Organizational Psychology*, 24(3), pp. 479–489. doi: 10.1080/1359432X.2014.931325.

Connelly, C. E., Zweig, D., Webster, J. and Trougakos, J. P. (2012) 'Knowledge hiding in organizations', *Journal of Organizational Behavior*, 33, pp. 64–88. doi: 10.1002/job.737.

Durst, S. and Zieba, M. (2017) 'Knowledge Risks – Towards a Taxonomy', *International Journal of Business Environment*, 9(1), pp. 51–63.

Ferenhof, H., Durst, S. and Selig, P. M. (2015) 'Knowledge Waste in Organizations: a Review of Previous Studies', *Brazilian Journal of Operations & Production Management*, 12(1), pp. 160–178. doi: 10.14488/BJOPM.2015.v12.n1.a15.

Joe, C., Yoong, P. and Patel, K. (2013) 'Knowledge loss when older experts leave knowledge-intensive organisations', *Journal of Knowledge Management*, 17(6), pp. 913–927. doi: 10.1108/JKM-04-2013-0137.

Mohamed, S., Mynors, D., Andrew, G., Chan, P., Coles, R. and Walsh, K. (2007) 'Unearthing key drivers of knowledge leakage', *International Journal of Knowledge Management Studies*, 1(3–4), pp. 456–470.

Parker, H. (2012) 'Knowledge acquisition and leakage in inter-firm relationships involving new technology-based firms', *Management Decision*, 50(9), pp. 1618–1633. doi: 10.1108/00251741211266714.

Saunders, M., Lewis, P., & Thornhill, A. (2007). Research Methods for Business Students. 4th ed, Harlow, Essex: Pearson Education Limited.

Webster, J., Brown, G., Zweig, D., Connelly, C. E., Brodt, S. and Sitkin, S. (2008) 'Beyond knowledge sharing: Withholding knowledge at work', *Research in Personnel and Human Resources Management*, 27(8), pp. 1–37. doi: 10.1016/S0742-7301(08)27001-5.

Zieba, M., & Durst, S. (2018) "Knowledge Risks in the Sharing Economy." In E.-M. Vatamanescu & F. M. Pınzaru (eds.), Knowledge Management in the Sharing Economy. Cross-Sectoral Insights into the Future of Competitive Advantage, Springer, Cham (pp. 253-270).