

Registration, Access and Use of the Personal Knowledge of Employees

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Abstract

Organizations have managed information regarding the knowledge of their employees using various processes with dissimilar success. Personal knowledge registration (PKR) is one way of managing this knowledge. PKR is a system of concepts, methods and processes that can be implemented in different information systems. PKR can also be defined as a social knowledge system, a community of knowledge, and a directory to the education, training and experience of employees, residing within an organization at a particular time. The abbreviation PKR is thus used to denote both the registration process and occasionally the registry itself.

The aim of this research was to provide an understanding of how organizations support PKR, and how personal knowledge registration impacts the work of different employees. The first objective contributing to this aim was examining the collaboration of different professionals, records professionals in particular, regarding the registration process. The second objective was studying the strategic intentions of PKR and in what manner those intentions were put into practice. The third objective concerned the documentation requirements of the Icelandic Standard of Equal Pay No. 85:2012 (EPS), Act on Equal Status and Equal Rights of Women and Men No. 10/2008 with amendments no. 54/2017 and the General Data Protection Regulation (GDPR) regarding personal knowledge. The fourth objective was to analyse the access of PKR and how this access, and its level of transparency, was perceived by PKR users. An underlying objective was to discover whether, and how PKR had benefited organizations financially.

This research was interdisciplinary, drawing on theories of information and records management, knowledge management and information technology. Qualitative methodology was used for conducting this study. The contextual framework covered 18 organizations in Iceland. A total of 55, semi-structured interviews were conducted with different professionals. An analysis of comprehensive internal documentation was made. Participant observations were conducted to contribute to the data collection. Grounded theory was used to analyse the data.

The findings are described in four, peer-reviewed papers. The findings show that there is a positive perception of PKR as a much needed practical knowledge management tool and as economically significant for value creation. Managerial support and clear purpose and responsibility of the registration process negatively influenced PKR use. Access was usually restricted to the personal

profile of employees, despite there being technological and social solutions for further access. Therefore, the use of PKR was unreasonably limited. A third of the participating organizations had received the Knowledge Company of the Year award. These award winners did not succeed any better when it came to the practice of PKR. In addition, external factors, comprising the regulatory and legal requirements of EPS and GDPR placed added constraints on PKR as a social knowledge system. Another outcome was that, while information and records professionals found it important to have a role in the decision making regarding information management, their part remained only minimal in the selection, registration, access, usability and security of information regarding the knowledge of employees.

Ágrip

Skipulagsheildir hafa leitað ýmissa leiða til þess að halda utan um þekkingu starfsfólks og notað til þess ýmis konar upplýsingakerfi með misjafnlega góðum árangri. Skráning einstaklingsbundinnar þekkingar (*personal knowledge registration*) er ein leið til þess að halda utan um þekkingu starfsfólks. Með skráningu einstaklingsbundinnar þekkingar er átt við kerfi hugtaka, aðferða og ferla sem hægt er að innleiða í margs konar upplýsingakerfi. Skráning og notkun þekkingar getur verið skilgreind sem félagslegt þekkingarkerfi, kerfi sem veitir möguleika á gagnvirku samfélagi þekkingar innan skipulagsheildar. Upplýsingar um þekkingu eru þannig vistaðar í gagnvirku upplýsingakerfi sem felur í sér leitarbæra skráningu menntunar, þjálfunar og reynslu þess starfsfólks sem starfar hjá tiltekinni skipulagsheild á hverjum tíma.

Markmið rannsóknarinnar var að öðlast skilning á því hvort, og þá hvernig, stjórnendur leituðust við að styðja við skráningu einstaklingsbundinnar þekkingar starfsfólks. Jafnframt var kannað hvernig skráning þekkingar hafði áhrif á störf ólíkra sérfræðinga. Í fyrsta lagi var samstarf skjalastjóra við aðra sérfræðinga innan skipulagsheildanna kannað í tengslum við aðkomu þeirra að skráningarferlinu. Í öðru lagi var inntak og tilgangur stefnuskjala er vörðuðu skráningu og deilingu þekkingar rannsakað með það fyrir augum að kanna hvernig framkvæmd þeirra birtist í daglegu starfi. Því næst var skoðað hvort skráningarkröfum Jafnlaunastaðals nr. 85/2012 væri mætt sem og lögum um jafna stöðu og jafnan rétt kvenna og karla nr. 10/2008, með breytingum nr. 54/2017. Enn fremur var skoðað hvort kröfum um persónuvernd í samræmi við lög um persónuvernd og vinnslu persónuupplýsinga nr. 90/2018 væri mætt. Í fjórða lagi var aðgangur að skráðri einstaklingsbundinni þekkingu kannaður, auk þess að rýna í reynslu notenda af aðgangi, gagnsæi og notkun skráðra upplýsinga. Undirliggjandi þáttur var að kanna hvort og með hvaða hætti skráning einstaklingsbundinnar þekkingar hefði í för með sér fjárhagslegan ávinning fyrir skipulagsheildir.

Rannsóknin er þverfræðileg og byggist á kenningum í upplýsinga- og skjalastjórn, þekkingarstjórnun og upplýsingatækni. Eigindleg aðferðafræði var notuð við framkvæmd rannsóknarinnar. Gögnum var safnað hjá 18 skipulagsheildum á Íslandi. Tekin voru hálfstöðluð viðtöl við 55 sérfræðinga á ýmsum sviðum. Fyrirliggjandi gögn úr innra umhverfi skipulagsheildanna voru skoðuð og þátttökuathuganir framkvæmdar til þess að styðja við og auka vægi gagnaöflunar. Grunduð kenning var notuð við að greina rannsóknargögn.

Niðurstöður rannsóknarinnar eru birtar í fjórum vísindagreinum. Þær benda til þess að starfsfólk hefði jafnan jákvætt viðhorf til skráningar einstaklingabundinnar þekkingar. Það taldi að hún væri áhrifamikið og hagnýtt verkfæri til verðmætasköpunar. Hins vegar hafði takmarkaður stuðningur stjórnenda, sem og skortur á ábyrgð og skýrum tilgangi með skráningu þekkingar, neikvæð áhrif á gagnsemi og notkun skráðra upplýsinga. Aðgengi starfsfólks að skráðri þekkingu var yfirleitt takmarkaður við eigin þekkingu og fól ekki í sér aðgang að þekkingu samstarfsfólks, enda þótt tæknilegir og félagslegir þættir væru til staðar innan skipulagsheildanna til þess að veita frekari aðgang. Þriðjungur þeirra skipulagsheilda sem tóku þátt í rannsókninni höfðu hlotið verðlaun sem þekkingarfyrirtæki ársins. Niðurstöður rannsóknarinnar benda til þess að vinningshafar hafi samt sem áður ekki staðið frammar öðrum skipulagsheildum hvað varðar skráningu einstaklingsbundinnar þekkingar. Lagalegar kröfur og regluverk, sem tengdust jafnlaunastaðli og lögum um persónuvernd, höfðu þar að auki íþyngjandi áhrif á þarfir skipulagsheilda fyrir skráningu þekkingar. Niðurstöður rannsóknarinnar beina einnig athygli að hlutverki skjalastjóra. Fram kom að skjalastjórar töldu mikilvægt að skráning einstaklingsbundinnar þekkingar ætti sér stað. Þar töldu þeir sig hafa mikilvægu hlutverki að gegna. Þrátt fyrir að hafa sérhæft sig í skráningu, aðgangssöryggi, vistun og miðlun upplýsinga reyndist aðkoma skjalastjóra takmörkuð þegar kom að þessum þáttum varðandi einstaklingsbundna þekkingu starfsfólks.

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List of Papers

- Paper I: Haraldsdottir, R. K. & Gunnlaugsdottir, J. (2018). The missing link in information and records management: Personal knowledge registration. *Records Management Journal*, 28(1), 79-98.
- Paper II: Haraldsdottir, R. K., Gunnlaugsdottir, J., Hvannberg, E. & Christensen, P. H. (2018). Registration, access and use of personal knowledge in organizations. *International Journal of Information Management*, 40(1), 8-16.
- Paper III: Haraldsdottir, R. K. & Gunnlaugsdottir, J. (submitted Sep 2018). Complexity in information management: Personal knowledge registration in a regulatory environment. *International Journal of Information Management*.
- Paper IV: Haraldsdottir, R. K. (submitted Nov 2018). Knowledge registration, access and use in organizations: Are the award winners doing better? *Information & Organization*.

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1 Introduction

Icelandic organizations frequently portray themselves as knowledge organizations by using the phrase “we are a knowledge organization.” They also present their knowledge indirectly by providing and sharing their expertise with the external environment of the organization and in their marketing material where the collective knowledge of employees is portrayed as a pillar of the organization. Furthermore, many Icelandic organizations conduct elaborate training programmes, or schools, to facilitate the professional development of their employees. These programmes are often partially taught by employees that are considered experts on the subjects. However, a large part of all training in Icelandic organizations is conducted by external instructors. The reason may partly be that the organizations lack systematic registration of the personal knowledge of their own employees.

In an organization of 200-300 employees, it is possible for people to know one another “well enough to have a reliable grasp of collective organizational knowledge”, but beyond this size, it becomes impossible (Davenport & Prusak, 1998, p. 17-18). As seen in the following short narrative, at times it happens that the knowledge or expertise needed for a programme, or a particular project, already exists within the organization without the employees being aware of it. It so happened that this lack of overview of the knowledge of employees was somewhat affirmed years ago when the author of this thesis was working at the Department of Continuing Education at the University of Iceland. A training manager, from a rather large organization, had called looking for a specific financial expert to conduct an in-house training programme. After telling the training manager that the person she was looking for was actually an employee in her organization, the reply was: “Really, does he work for us, oh please don’t tell anyone I asked you!”

While little is known about how information on the personal knowledge of employees and their participation in training and development programmes is registered, studies in information and records management, knowledge management (KM) and information technology (IT) are extensive and growing (Argote & Fahrenkopf, 2016; Barley et al., 2018; Franks, 2013; Gunnlaugsdottir, 2015; Hvanberg, 2015; Oliver & Foscarini, 2014). The focus of the present research was on the personal knowledge of employees in Icelandic organizations, i.e. their education, training and skills, while emphasizing the intersection of registration, access and use.

The term personal knowledge registration and the abbreviation PKR were created by the author of this thesis to explain the particular topic of this research and to conceptualize the specific elements that constitute the registration, access and use of personal knowledge. To further explain the term, a theoretical model, portraying PKR in the midst of three interdisciplinary fields, was also created by the author to describe the theoretical and contextual position of PKR, see Figure 1.

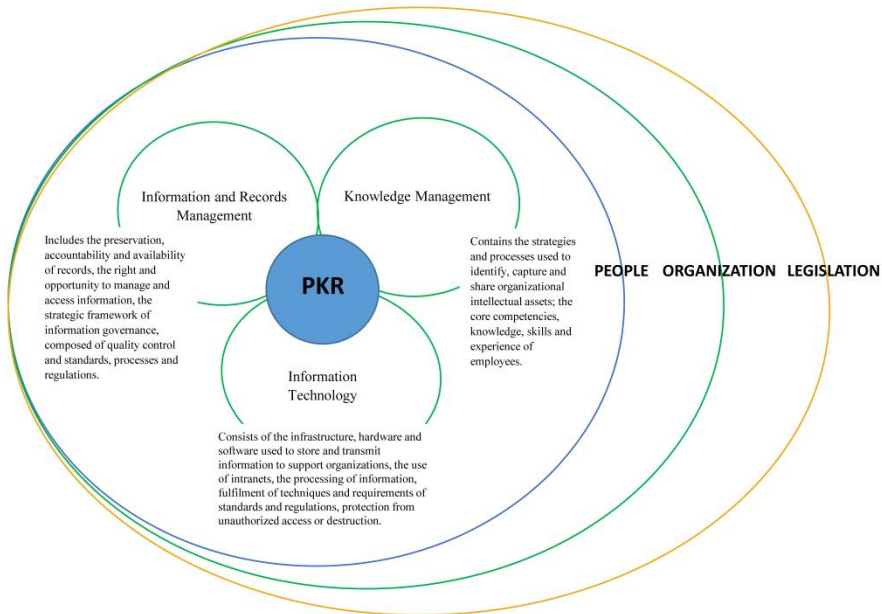


Figure 1 - Theoretical model of PKR

Figure 1 presents PKR in the middle of three main theoretical disciplines: information and records management, KM and IT. The key contributions of each discipline, based on the *Glossary of Records Management and Information Governance Terms* (ARMA International, 2016) is then shortly labelled in relation to the present thesis. Then there are three circles. The innermost, blue circle signifies the people who are simultaneously users of, contributors to and objects of PKR. They represent the first, internal factor of the model as the key stakeholders, as explained by Goldsmith et al. (2012). The green circle titled organizations represents the companies and institutions in which people work. The final, yellow circle is the legal environment or the external framework in which the other two circles reside. Social systems, like organizations, are placed on the boundaries of the past and the future and are capable of continuing by referring to past experiences and by using prior knowledge and experience to make choices for the future (Morsing, 1995). External environmental factors,

such as legislation regarding the protection of personal data or the implementation of equal pay, affect the organizations working in that environment due to the fact that legislation requires a certain re-creation of formal structures.

Information and records management is an important building block for information governance, which is a “strategic cross-disciplinary framework” including a variety of processes, quality control, regulations and standards that hold organizations accountable for the “right handling of information assets” (ARMA, 2016, p. 28; Kallberg, 2013; Lappan, 2010; McLeod, 2012b). IT systems consist of software, hardware, processes and policies that are used to organize, track and distribute information, whether placed in HRMS, intranet sites, ERMS or a corporate social media platform. The design, development and implementation of IT systems, as well as its perceived user-friendliness by the users, affects the possible collaborative utility of the systems and the information culture of the organization (Damodaran & Olphert, 2000; Bailey & Vidyarthi, 2010; Bailey, 2013; Hvannberg, 2015; Leyer et al., 2016; Oliver & Foscarini, 2014). Organizations may need or choose to follow international management standards, which include people, processes and a variety of information systems. These are standards regarding information and records management, ISO 15489 (ISO, 2016), information security, ISO 27001 (ISO, 2013), quality management ISO 9001 (ISO, 2015) and, in the case of Iceland, the Equal Pay Standard, IST 85 (Icelandic Standards, 2012). These standards provide guidance and assist organizations to systematically manage sensitive company information and to meet external requirements, such as legislation. (Brumm, 1996; Goetsch & Davis, 2012; Gunnlaugsdottir, 2012; ISO, 2016; IST, 2012).

KM, as presented in Figure 1, involves key factors of individual learning, i.e. the education, training and skills that the employee brings with him or her to the workplace and develops further, through adult-learning, in-house and / or external courses and webinars, while working. It also involves the social aspect of active participation, commitment and the willingness to share personal knowledge with co-workers (Fernie et al., 2003; Hwang et al., 2018). The development and training of employees, and the facilitation of knowledge sharing, are key factors within human resource management (HRM) (Delaney & Huselid, 1996; Fernie et al., 2003; Kavanagh & Johnson, 2017; Thunnissen et al. 2013).

The possibility of knowledge sharing, in the form of one employee assisting another using PKR as a directory to knowledge, takes place when the knowledge seeker has searched, found and read information on the education, training or skills of a co-worker and decides to contact the knowledge owner

directly. The richness of the interaction of the two may differ depending on how their interactions takes place. They may start low by text reading and evolve to being moderate by using a phone or an e-mail (text messaging). The interaction may become medium high, by using Skype, Facetime or similar social media device (voice and view). And, it may become high, by the physical presence of a face-to-face collaborative interaction (voice, view, expression, discussion, direct contact) (Christensen & Pedersen, 2018; Lengel & Daft, 1988).

It may be postulated that the sharing of personal knowledge in PKR takes place in a similar manner as in the SECI model created by Nonaka and Takeuchi (1995). In the SECI model, the creation of organizational knowledge takes place when the socialization, externalization, combination and internalization of knowledge enter a cyclical rhythm where explicit and tacit knowledge interrelate (Nonaka et al., 2000). PKR may facilitate organizational knowledge creation through the internalization or socialization of employees who discuss and combine their knowledge and experience. Knowledge sharing takes place through divergent social interaction. However, the media richness remains low if the knowledge seeker does not contact the knowledge owner, as the registered information is not available for reuse, as perhaps in other types of knowledge repositories, or KMS, without the personal interaction of the knowledge owner and the knowledge seeker.

The focus of KM has, from the start, been on knowledge processes, i.e., knowledge creation, sharing, transfer and application (Argote & Fahrenkopf, 2016; Argyris, 1999; Davenport & Prusak, 1998; Liebowitz & Beckman, 1998). Knowledge has been defined as either internal or external to the organization and as tacit among the employees or explicit when shared with others (Jashapara, 2011; Sigala & Chalkiti, 2007, 2014). Tacit knowledge is dependent on its holder, attached to a person's mind, difficult to communicate, and deeply grounded in an individual's action and experiences (Nonaka & Takeuchi, 1995; Panahi et al, 2013; Polanyi, 1966). Explicit knowledge may be explicit to some, and partly explicit or tacit to others, depending on its accessibility (Haraldsdottir, 2017; O'Dell & Grayson, 1998). Scholars have increasingly come to view knowledge as an important resource for successful organizations of the contemporary world, and the need to produce a common ground to bring together diverse knowledge into some shared form has been particularly influential for the past two decades (Barley et al., 2018).

At times, knowledge was measured, categorized and registered according to job descriptions and responsibilities (Becker & Gerhart, 1996). Delaney and Huselid (1996) acknowledged the value of such HR practices and the systems of such practices, including the registration of extensive employee training into HR management systems. Hislop (2003) once wrote that KM and HR

management could be linked by focusing on human and social factors, such as how employees' levels of commitment influence the overall performance of organizations. Thunnissen et al. (2013) later drew attention to the economic and non-economic value that talent management could create at individual, organizational and societal levels.

Recently, the legislation of the Icelandic Standard of Equal Pay No. 85:2012 (EPS) (Icelandic Standards, 2012), required that organizations document information on the knowledge of employees as records of evidential value (Act on Equal Status and Equal Rights of Women and Men No. 10/2008, Article 11; Icelandic Standards, 2012; Ministry of Welfare, 2018). Due to the recent legislation, the registration of the knowledge of employees may play a key role in fulfilling the requirements of EPS (Haraldsdottir, 2017; Haraldsdottir & Gunnlaugsdottir, 2018). Furthermore, KM and information and records management become interrelated when studies on codification and classification of knowledge into information systems take place (Andreeva & Kianto, 2012; Davenport and Prusak, 1998; Hansen et al., 1999; Jashapara, 2011; Kumar & Ganesh, 2011; McLeod et al., 2011; Slagter, 2007).

PKR can be described as a platform that facilitates the interaction of individuals who, after having used the platform, have the opportunity to share their knowledge directly. A platform has been defined as “different mechanisms or technological vehicles for connecting people and information” (McFarland & Ployhart, 2015, p. 1654). A PKR platform includes information on formal education; former work experience; participation in internal and external training programmes, conferences and webinars; teaching and writing experience and the language, IT and computer skills of employees (Haraldsdottir & Gunnlaugsdottir, 2018). PKR is a directory to the knowledge origin as it does not contain the knowledge itself but points to the knowledge owner (Chan & Liebowitz, 2006; Leyer et al, 2016).

KM and the registration of intellectual assets into information systems has previously been studied in Iceland (Edvardsson, 2009; Grimsdottir & Edvardsson, 2018; Gunnlaugsdottir, 2003; Hreinsdottir, 2001). Past results show that the purpose of registration has been to improve decision making and productivity, reduce costs and build interdisciplinary teams. Few researchers have explored or examined knowledge sharing behaviour through directories of personal knowledge or by using an interdisciplinary viewpoint of information and records management, IT and KM. This gap in the literature of these three disciplines has hitherto neither included an empirical analysis of the registration of the education, training and skills of employees into a collaborative directory, nor emphasized the possible social interactions and knowledge sharing that may take place using PKR.

This research will shed light on a particular aspect of information management, the documentation process of records regarding the knowledge of employees. It also underlines the use of directories, and not repositories, and the collaborative and social aspects of the person-to-document-to-person connection that has been lacking in the KM literature (Leyer et al., 2016).

1.1 Aim and objectives

The aim of this research was to examine how organizations supported PKR and how PKR practices impacted the work of different employees. The purpose was to provide an understanding of the accessibility and use of personal knowledge registration in Icelandic organizations. To achieve this aim, the following objectives were formulated.

- A. To examine the collaborative aspects of PKR and the roles and responsibilities of different facilitators. Particular focus was placed on how records professionals collaborated with HR and training managers in the registration of the personal knowledge of employees (see Paper I).
- B. To focus on the purpose of implementing PKR. Attention was put on the strategic intentions of organizations with PKR, along with their collaborative tasks and qualities, to understand in what manner those strategic intentions, tasks and qualities were put into practice (see Paper II).
- C. To examine how the EPS and the Act on Equal Status and Equal Rights of Women and Men No. 10/2008 with amendments no. 54/2017 that entered into force on January 1st 2018, as well as GDPR, affected personal knowledge registration in organizations. The emphasis centred on analysing the registration requirements of the standard and the legislation and, correspondingly, by examining the experiences and perceptions of interviewees of these requirements (see Paper III).
- D. To analyse how and by whom PKR was being accessed and how this access was experienced by the users involved. A particular aspect of this objective was to explore in what manner organizations that had received the Knowledge Company of the Year award in Iceland, were using PKR in comparison to other organizations (see Paper IV).

An underlying practical implication of the research was to discover whether and, if so, how organizations had benefitted financially from using PKR (see Paper IV).

This thesis seeks to explore the purpose, methods, processes, successes and pitfalls of using PKR to register, access and use the personal knowledge of employees. It combines and compares various viewpoints extracted from semi-structured interviews with 55 different professionals from 18 public and private organizations in Iceland, as well as documentary material and participant observations. KM literature has primarily focussed on two strategies for managing knowledge, codification and personalization (Argote & Fahrenkopf, 2016; Hansen et al, 1999; Scheepers et al., 2004). The originality of this research lies in how it connects diverse strategies by focusing first on the usability of information technology to facilitate PKR and then by studying the social interaction that may take place between different professionals after using PKR (Christensen & Pedersen, 2018). Finally, as knowledge can reside in multiple locations or individuals, this research examined what challenges the organizations encountered in the management of their collaborative knowledge (Barley et al., 2018).

To further guide the research and better understand its aim and the objectives, the following research questions were formulated:

1. In what manner did records professionals collaborate with other professionals, such as education or human resource managers, on personal knowledge registration?
2. What was the status of personal knowledge registration in Icelandic organizations from 2010-2018?
3. In what way, if any, did the EPS and GDPR impact the registration, access and use of personal knowledge registration?
4. By which means, if any, was the registration of personal knowledge made accessible and usable in the participating organizations.

4.1 In what manner did the knowledge award winners differ from others, and if so why?

Each objective and research question is interrelated. For example, objective A, to examine the collaborative aspects of PKR and the roles and responsibilities of different facilitators, and the first research question on how records professionals collaborated with other professionals is connected. The same applies to the three objectives, B, C and D, which are correspondingly consistent with research questions 2, 3 and 4.

To better understand the background of the research, the Icelandic context will be briefly described. This is important to comprehend the economic, gender equality, educational, technical and legal environment in which the research was conducted.

1.2 The Icelandic context

Iceland is situated in the midst of the Atlantic Ocean. With a population of nearly 350.000 inhabitants who live for the most part in the capital area or by the coastline (Statistics Iceland, 2018a), Iceland is one of the most sparsely populated countries in Europe. Iceland is a constitutional republic with a parliamentary system of government. The president and the members of parliament are elected by popular vote for a term of four years. The parliament of Iceland, named Althingi dates back to 930, but the country was under Norwegian and then Danish rule until gaining independence in 1944 and has a close relationship with the Scandinavian countries. (Gudjonsdottir, 2018; Gunnlaugsdottir, 2015). Iceland is known for its nature, fisheries, gender equality, a financial crisis in 2008, and most recently, proportionally unusual success in football (Halldorsson, 2017).

The legal environment regarding business and the economy in Iceland is the same as within the European Community (EC). Iceland has been a member of the European Economic Area (EEA) since 1994. Iceland must, therefore, adopt the legislation and regulations that the EC introduces. The organizational culture and the views of managers towards work and management is quite similar to that which can be found in Western Europe and North America (Gunnlaugsdottir, 2016). The organizational culture is marked by a relaxed climate and supported by flat organizational structures and direct communication, low-power distance between employers and employees and low masculinity (Minelgaite et al., 2018). While Iceland is, in many ways, similar to other Nordic countries in terms of being a welfare state and a shared history, culture, religion and similar languages, there is still a considerable difference when it comes to individualism. This is perceived as higher in Iceland than the other Nordic countries and more in step with Anglo-Saxon countries (Gudmundsdottir et al., 2015). The gross domestic product (GDP) in Iceland is 51.783 dollars per capita (OECD, 2018).

According to the World Economic Forum Index, Iceland is the most gender-equal country as it has closed over 85% of its overall gender gap. (Marinosdottir & Erlingsdottir, 2017; World Economic Forum, 2018). Iceland enacted gender quotas for corporate boards in 2013 (Act on Public Limited Companies, No. 13/2010 with amendments) and is the first country to require that all organizations employing 25 employees or more, must obtain a verified certification of their equal pay systems on an annual basis (Gray, 2018; Erlingsdottir, 2017; Act on Equal Status and Equal Rights of Women and Men No. 10/2008 with amendments, Article 19; Sigmarsdottir, 2018). This Act applies to almost 1200 employers and 147,000 employees, which represents about 80% of the active workforce (Ministry of Welfare, 2018). Nevertheless,

studies show that women are outnumbered by men in positions of authority (Juliusdottir et al., 2018). This applies to government ministers, local government representatives, ambassadors, directors of state enterprises and CEOs in private companies. Less than 10% of the largest companies, with more than 250 employees, have female CEOs (Juliusdottir et al., 2018, Statistics Iceland, 2018b).

In 2017, around 21% of the Icelandic population aged 25-64 years had a bachelor's degree and about 17% of people in the same age range had finished a master's degree (OECD, 2018, p. 54). The OECD average for postgraduate degrees was 12% in 2017. Education policy in the Nordic countries focuses on access to the highest levels of education to preserve the integrity of the high quality of life and economic well-being of citizens (Ulpukka et al., 2018). It is also worth mentioning that the Confederation of Icelandic Enterprises, which includes about 2,000 businesses and accounts for about 70% of all salaried employees on the Icelandic labour market, advocates for systematic adult education and training for employees in organizations (Confederation of Icelandic Enterprises, 2018). According to the confederation, many Icelandic organizations have organized ambitious educational programmes, orientation for new employees is flourishing and the knowledge and skills of employees are continually developing. The Confederation of Icelandic Enterprises also acknowledges and praises organizations that have in-house schooling systems. In these, employees with little formal education can accomplish education levels recognized by the secondary school system. The same support applies to various other associations and trade unions in Iceland.

The results of a recent study in Iceland show that only 49% of public organizations had an employee responsible for managing records in 2016. The study included 200 public organizations and the response rate was 80% (National Archives of Iceland, 2017). A similar study, conducted in 2012, indicated that only 25% of public organizations employed a person full-time who was responsible for managing records (National Archives of Iceland, 2013). The comparison between the two studies is, however, not advisable as there is no information available on the job percentage of those responding to this particular question in the later study.

A recent study on information and records management within the organizations in Reykjavik, the capital of Iceland, showed that only 18.39% of the organizations had recruited a records professional (Reykjavik Municipal Archives, 2018). The studies indicated that information and records management was significantly better in the organizations that had a professional information and records manager. Also, the best possible results were obtained by having a full-time employee dedicated solely to records management

(National Archives of Iceland, 2017, p. 11; Reykjavik Municipal Archives, 2018, p. 10). The participation of professional information and records managers in the private sector in Iceland has not been thoroughly examined, but the Icelandic Records Management Association (IRMA) estimates that approximately 20% of their 300 total members are working for private organizations (Th. Magnúsdóttir, personal communication, 15. May 2017). It should be noted, however, that not all members of IRMA are currently working as information and records professionals.

In an article presenting statistical data on different aspects of the information society in the European Union (EU) and focusing on the availability of information and communication technologies (ICTs) and their use, Iceland was reported to have 99% of homes connected to the internet (Eurostat, 2018). With near omnipresent access, Icelanders are frequent internet users (Internet World Stats, 2017). One of the most common online activities in the 28 member states (EU-28) of the European Union in 2017 was participation in social networking. In 2017, 79% of Icelandic organizations used social media. This is a higher percentage than in other European countries, where the average for EU-28 was 47%. Of the different types of social media measured in the poll, 82% of Icelandic organizations reported having a website and 63% reported using a website and social media (Statistics Iceland, 2018c).

1.3 Structure of the thesis

This thesis consists of six chapters. The present introduction is an overall description of the research.

The second chapter contains a literature review which presents the theoretical perspectives on which the thesis is built. The concept of PKR is defined and explained, starting with a discussion of how PKR can be utilized as an interactive KM tool explaining the facilitators, tasks and qualities of PKR. A discussion of information systems and the management of information follows. Then, the discipline of information technology, in particular the social-technical perspective, is introduced as one catalyst for successful and collaborative PKR. An introduction to information and records management follows, focusing on the roles and responsibilities of records professionals regarding PKR. The third discipline, KM, is introduced with a focus on the dynamic influences of strategic decisions, direct communication and the various platforms used for PKR purposes. A discussion of the regulatory and legal environment of PKR follows, emphasizing possible influences of EPS and the General Data Protection Regulation (GDPR) (European Commission, 2018). A short summary brings together the key perspectives relevant to the research.

In the third chapter, the methodology of the thesis is described and justified. The reasons for choosing qualitative methodology, and the settings of the research, are presented. The standpoint of the researcher is defined. The chapter covers the methods and procedures used in obtaining the data and the data analysis. The validity and reliability of the thesis are outlined.

Chapter 4 presents the four, peer-reviewed papers that collectively form the core of this thesis. Two of the papers, Papers I and II, have been published in international journals on records management and information management (Haraldsdottir et al., 2018; Haraldsdottir & Gunnlaugsdottir, 2018). Papers III and IV have been submitted to international peer-reviewed journals.

Chapter 5 consists of a discussion of the overall findings from the four scientific papers and the theoretical and practical implications of the research.

Chapter 6 presents the conclusion of the research.

2 Information and management

To better understand the human and technological aspects of PKR, an interdisciplinary approach was considered to be best. Interdisciplinary studies involve or combine two or more academic disciplines or fields of study (Jashapara, 2011). The interdisciplinary richness of any research can be compared by weighing the following four variables: the number of disciplines involved, the distance between them, the novelty and creativity involved in combining the disciplinary elements and their degree of integration (Nissani, 1995). An example of such studies is the integration of social science into energy studies, where it is suggested that infrastructure and technology must be altered and social change supported in order to achieve a future energy system that enhances human well-being (Sovacool et al., 2015). This relates to the socio-technical aspects of PKR. Interdisciplinary studies have been defined as a process of answering a question or addressing a topic that is

too broad or complex to be dealt with adequately by a single discipline, and draws on the disciplines with the goal of integrating their insights to construct a more comprehensive understanding (Repko, 2008, p. 16).

Drawing on this definition, organizations rely on information technology for the management of business and to develop and maintain their organizational and communicational assets. The Association for Intelligent Information Management (AIIM) states that organizations must be capable of managing both electronic and physical information throughout the information lifecycle, regardless of source or format (AIIM, 2018). This means that the management of information consists of the collection, management and distribution of information from one or more sources to one or more audiences through various information systems. Organizations include different sets of computer programmes and software in their business applications, such as electronic records management systems (ERMS) and knowledge management systems (KMS), along with many others. Given these conditions, it may be argued that the focus of information management and, thereby, the registration, access and use of the personal knowledge of employees are interdisciplinary. Hence, it is necessary to draw on different disciplines to understand how it is possible for organizations to capture, manage, preserve, store and deliver the right information to the right people at the right time (AIIM, 2018).

2.1 The concept of personal knowledge registration (PKR)

As stated in the introduction of this thesis, the term personal knowledge registration and the abbreviation PKR were created by the author to capture the procedure of managing the knowledge of employees, with a particular focus on their individual education, training and skills, and the registration, access and use of the collective knowledge of the organization. The abbreviation PKR is used to denote both the registration process and at times the registry itself. One way to view PKR is as a system of concepts, processes and methods that can be implemented in different information systems (Haraldsdóttir & Gunnlaugsdóttir, 2018), whether the platform consists of a database, human resource management systems (HRMS), the intranet or social media.

Knowledge has been defined in a variety of ways, usually by making a distinction between knowledge and information. Most definitions share the notion of knowledge involving the “interaction with the human” (Fernie et al., 2003, p. 178) and processing the reality at hand. Making judgments is the ability of the individual. It can, therefore, be claimed that all knowledge is personal, i.e., bound to the way the individual places meaning and interprets information (Fernie et al., 2003; Hwang et al., 2018; Pauleen, 2009). PKR is one type of a knowledge directory in a “cleverly constructed database” as described by Davenport and Prusak (1998, p. 72). Similar to the concept of personal knowledge management (PKM), PKR has developed from the core disciplines of information science, information technology and knowledge management, while being under the influence of the social sciences, education, communications and philosophy. (Jashapara, 2011; Pauleen & Gorman, 2011; Saffady; 2016).

While the management of personal knowledge concerns increasing individual effectiveness in work environments and the knowledge of society for the benefit of the individual, PKR has the possibility to create a social community of knowledge, as described by Sigala and Chalkiti (2014) in their study of how web 2.0 enhanced and transformed KM practices in Greek tourism. Their results revealed that knowledge sharing was a process by which an individual “imparts his or her expertise, insight or understanding to another individual.” The knowledge seeker, or recipient, may draw on the knowledge of the knowledge owner by “[using] the knowledge to perform his or her task(s) in a better way” (2014, p. 801). Christensen and Pedersen (2018) studied how intra-organizational proximity influences the frequency of knowledge transfer and supported the notion that social relationships have a positive effect on the transfer of knowledge. Their results showed that the proximity of individuals influenced knowledge sharing directly. Christensen and Pedersen (2018, p. 1799) and Sigala and Chalkiti’s (2014) results “echo what practitioners often

claim [to be] the main barriers of knowledge sharing: the time and resources required engaging in knowledge sharing activities.”

Knowledge sharing involves knowledge exchange activities between individuals, groups and communities of practices (Wasko & Faraj, 2005), where the acquisition and sharing of the personal knowledge of employees can take place. PKR platforms have the potential to facilitate employees who may choose numerous ways to connect with colleagues to enrich their knowledge sharing, especially when the sharing takes place face-to-face (Lengel & Daft, 1988). Since PKR consists of information on the personal knowledge of employees while employed, registered information, if regularly updated, remains searchable and applicable. To give an example, the knowledge seeker may, by using PKR, find the needed expertise in a directory and choose to contact the knowledge owner. This personal contact may aid the knowledge seeker through receiving assistance or professional advice from the knowledge owner and by the interactive communication of the two. This collaboration that might not have happened if there would have been no PKR does not make the knowledge seeker an expert in the particular field or experience of the knowledge owner. As the directory does not function as a repository, the knowledge of the knowledge owner does not remain available after he or she is no longer working for the organization.

PKR is also comparable to the information a person registers in a curriculum vitae (CV), except that the information is made accessible within the organization, although the transparency of the registered information may vary. PKR works in a similar fashion as corporate knowledge directories, company yellow pages and expert networks (Andreeva & Kianto, 2012; Vuori & Okkonen, 2012). To better understand PKR, a conceptual model was created by the author and introduced in a published article (Haraldsdottir et al., 2018) that forms the second paper of the thesis. Based on the assumption that managing knowledge is a multi-professional task, the model represents six facilitators of PKR in accordance with the main interview groups of this research, which are further explained in Chapter 3, the methodology, of this thesis, see Figure 2.

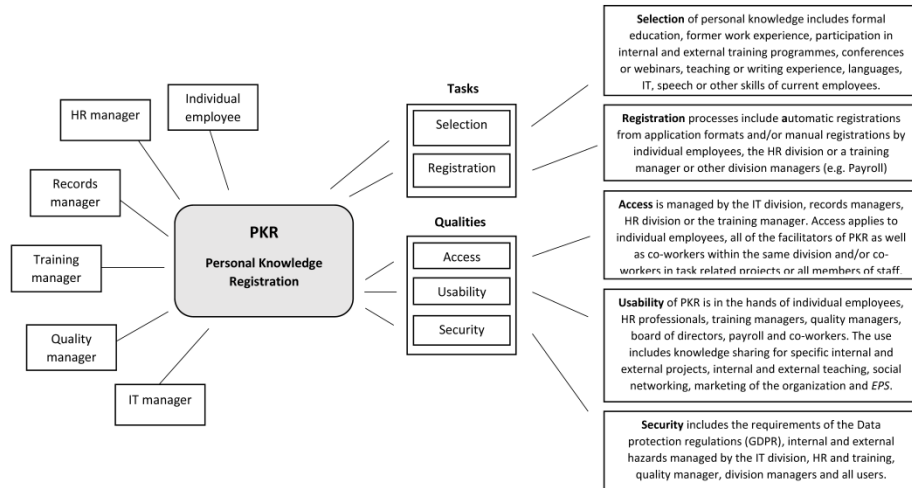


Figure 2 - Conceptual model of PKR (Haraldsdottir et al., 2018)

Figure 2 demonstrates the six facilitators of PKR on the left. Key stakeholders of information, here named facilitators, include various managers such as records managers, human resource managers, training managers, quality managers, IT managers as well as individual employees.

The reason for each facilitator to be connected to PKR differs (Haraldsdottir et al., 2018). While management needed a visible structure or some form of a knowledge dashboard, HR focused on the career development and recruitment of employees. Training managers required an overview to find in-house instructors for training programmes, and quality managers connected PKR with quality procedures as a way to ensure the selection of the most qualified employees for every project. IT professionals were responsible for the security of the systems being used. Employees, which also included all of the above, used PKR to document their personal education and training, and in some cases, to search for information on the knowledge of colleagues (Haraldsdottir et al., 2018). These facilitators had two main tasks, the selection and registration of the information to be documented into a PKR platform. The model shows three quality aspects to PKR: access, usability and security, which are situated on the right-hand side of PKR in Figure 2.

The tasks and the three different qualities of PKR are further described on the right side of the model. First is the selection of what sort of personal knowledge is registered, which is made by employees themselves in cooperation with their manager or a HR manager. These include the qualifications of employees which constitutes their knowledge (know-what). The selection includes filtering and organizing content in a systematic manner so that users can evaluate their search results and see if they meet their needs.

The registration process is partially automatic. New employees may apply for a job on the website of the organization, adding files into a web-based application. PKR (whether in a HRMS or other system) reads the application automatically and registers the information. Manual entering of information takes also place, especially as work experience grows. The registration of added education, such as from external training programmes, is in the hands of individual employees, the HR or training manager or a supervising manager, depending on the centralization of the system being used for PKR.

Access to these registrations is managed by different professionals, such as HR, IT or by a records manager. Access may be limited to the HR or training manager, as it is their responsibility to find in-house knowledge and administer a needs analysis for further recruitment of employees. Employees with access can use PKR. Without an open access, the social significance of PKR is hindered. Lack of usability appears as lack of user-friendliness of the system and may also hinder its use. The security of registered information is in the hands of the collective group using PKR. External hazards are monitored by the IT division while internal hazards may be reduced by standardizing work processes. For a further and more detailed discussion of the model, see Paper II (Haraldsdottir et al., 2018, pp 9-10).

PKR as an information system holds information on the formal education; former work experience; participation in internal and external training programmes, conferences or webinars; teaching and writing experience and languages; and the IT and communication skills of existing employees. This knowledge, which is selected and registered in the interest of individual employees and in accordance with organizational knowledge sharing strategies (Haraldsdottir et al., 2018), is documented in a directory. The motive behind implementing PKR is to generate an overview of accumulated personal knowledge embedded in the employees (Gunnlaugsdottir, 2008; Henttonen et al., 2016; Hase & Galt, 2011; Leyer et al., 2016 Macguire, 2005). As such, PKR comprises personnel records, often related to human resource management systems (HRMS), human resource information systems (HRIS), information registered into the learning and development module of talent management systems (TMS) or human capital management systems (HCM) (Kavanagh & Johnson, 2017).

Instead of focusing on capturing and documenting know-how or best practices with an emphasis on knowledge leakage caused by personnel turnover, retirement or when the knowledge owner leaves the organization for different reasons (Calo, 2008; Carmel et al., 2013), the attention is centred on current employees and the ways in which PKR can connect knowledge seekers directly to knowledge owners. Thus, PKR may be described as a people-to-directory-to-

people connection, emphasizing the connection with the knowledge owner (Leyer et al., 2016), which is the opposite of the people-to-document connections in a repository with the objective of capturing, categorizing, storing and effective reuse of codified best practices and procedures (Hansen et al., 1999; Kumar & Ganesh, 2011; Venkitachalam & Willmott, 2017; Wallace et al., 2011).

Still, knowledge packaging in a directory takes place in a similar manner as in a repository. It includes filtering, organizing and indexing content in a systematic manner so that users can evaluate their search results to see if they meet their needs (Kankanhalli et al., 2011). With the selection, registration and filtering of information regarding the personal knowledge of employees, it is possible for PKR to manage knowledge for both individual and organizational purposes and interrelate the management of information and records with IT and KM (Gunnlaugsdottir, 2003; Haraldsdottir, 2016; Haraldsdottir & Gunnlaugsdottir, 2018; Penn, 1994; Palmer, 2002).

Leyer et al. (2016) stated that the purpose of a social knowledge system is to provide easy access to available knowledge sources, while the knowledge itself was not contained in the system. The same applies to PKR. It is a directory to the origin of knowledge, i.e., which employees possess the required knowledge (Leyer et al., 2016, p. 97). Another aspect that distinguishes PKR from knowledge repositories is its emphasis on personal interaction, whether face-to-face or face-to-interface (Christensen & Pedersen, 2018). PKR may help employees find common ground and locate experts in a particular domain, as pointed out in Ellison et al. (2015). The knowledge is characterised as personal because information regarding the knowledge owner is retrievable in the PKR and the reuse by the knowledge seeker occurs through direct communication (Haraldsdottir et al, 2018; Sigala & Chalkiti, 2014).

Thus, loss of knowledge cannot be avoided if and when the knowledge owner leaves an organization for some reason, though some may have been shared with colleagues through on-the-job training programmes, project-based cooperation and communication (Saks & Burke-Smalley, 2014). For knowledge sharing to happen, the knowledge owner needs to be known and available.

2.2 Information technology

Three elements affect an individual's inclination to share knowledge: positive attitude towards sharing, the perceived benefits of sharing and self-efficacy of knowledge sharing (Henttonen et al., 2016; Hwang et al., 2018). A fourth element could be added and that is the opportunity to share and the platform for sharing. Information technology plays a central role in knowledge and information management, focusing on ways to connect individuals with experts

with relevant, tacit knowledge (Alavi & Leidner, 2001; Barley et al, 2018). What platform or information system is chosen for PKR depends first on the strategic decisions of top management regarding such platforms and on the ultimate purpose of registration, the level of transparency of access and the media richness of intended use.

In successful organizations of tomorrow, the trend is to implement autonomous things, smart spaces and artificial intelligence driven development (Cearley & Burke, 2018). Moreover, artificial intelligence is capable of filtering floods of information that would otherwise not make sense (Bernstein, 2016). It is, therefore, not surprising that people tend to label their workplaces as smart because the technology allows managers to constantly observe their employees for managerial, safety or security reason by using

a cocktail of smartphones, computers, fixtures with embedded sensors, and cameras [that] collectively contain enough locational, audio, video, text, and activity data to produce an unfathomable set of digital breadcrumbs. And, the more information management gets, the more it realizes it needs (Bernstein, 2016, p. 10).

The information registered in a PKR directory needs filtering, as described in Kankanalli et al. (2011), whether or not that filtering or categorization takes place by artificial means. The smart element of the modern workplace, and this apparent observational need of managers, appears not to be centred on the intellectual assets of organizations (Haraldsdottir et al., 2018). In recent years, scholarly contributions on KM have shifted to examining the role of social media technologies in fostering knowledge integration in organizations, which may point at the knowledge owners in a more visible manner (Majchrzak et al., 2013; McFarland & Ployhart, 2015).

With that in mind, an information system such as a PKR demands more than a simple database containing objects, information and events. It crucially involves the joint interpretation of these objects and events by the actors involved, as described by Bannon and Bødker (1997). They referred to the concept of a boundary object to explain that a collaborative information system may be like “a blackboard, a boundary object [that] sits in the middle of a group of actors with divergent viewpoints” (1997, p. 4). A boundary object may also be described as a social knowledge network, i.e., the distribution of knowledge across interconnected participants. The network functions not as an “aggregate stock of knowledge” but as nodes that are interconnected by social relationships that both enable and constrain the sharing of knowledge (Barley et al., 2018, p. 298).

The term social-technical system was founded on the principle that the joint optimization of social and technical factors of production created conditions for optimal organizational performance as organizations are made up of people that produce products or services while using technology, and that each affects the operation and actions of the other (Bernstein, 2017; Fernie et al., 2003; Hvannberg, 2015; Pasmore et al., 1982). The aim of computer-based system designers was “not the replacement of human beings with machines, but the development of socio-technical systems within which man-machine socio-technical ‘partnership’ [was] enabled” (Wilson, 1994, p. 344). In line with this, the central concept of computer supported cooperative work was humanizing systems and emphasizing the power of the person (Ackerman et al., 2013; Hwang et al., 2018). It has been postulated that this could be done, for instance, by the active participation of key stakeholders and their socialisation and involvement in the creation and development of the system (Bano & Zowghi, 2015; Goldsmith et al., 2012; Oliver & Foscarini, 2014).

What constitutes an information system is arguable, as employers may claim that they are using an information system or a database to register the knowledge of employees while the only system in use is a spreadsheet on their private desktops (Haraldsdóttir & Gunnlaugsdóttir, 2018; Orlikovski, 2000). It has, furthermore, been argued that organizations no longer create and control many of the information systems on which their employees rely. Information systems such as Google Docs, Dropbox and Office365 exist outside of and independent of the organizations that use them. Organizations and employees themselves “choose devices as consumer products and make use of data and information services in the cloud for work, learning, entertainment, and maintaining personal relationships” (Winter et al., 2014, p. 252).

This paradox, which first appeared prior to most information systems of the 21st century, was examined by Argyris and Schön (1978). They distinguished between espoused theories and theories-in-use. Espoused theories are those that individuals claim to follow, like organizational yellow pages or directories intended for information on education and training. Theories-in-use are those that can be derived from the concrete actions of individuals, which may occur through the sharing of knowledge and expertise using social media platforms such as LinkedIn or Workplace, or by not registering or sharing information at all (Argyris, Putnam & Smith, 1985).

The notion of inconsistency between rhetoric and reality is supported in Gunnlaugsdóttir’s (2005) thesis on the implementation and use of ERMS. In her study, Gunnlaugsdóttir (2005) referred to Orlikowski (2000) who took this paradox one step further and distinguished between espoused technologies, meaning the technologies that organizations buy and install, and technologies-

in-use, or those technologies that employees actually use in their daily work (Orlikovski, 2000, p. 254). This suggests that there may be a sharp distinction between the formal structure of an organization and its actual day-to-day work activities. Organizations do not necessarily function in accordance with their formal blueprints. Rules can be violated and decisions not implemented. Technologies turn out to be inefficient or inspection systems too vague to provide coordination (Meyer & Rowen, 1977). The same applies when the collective belief implies that a trending IT technology may be at the forefront of practice, legitimizing the organization and the leaders using it regardless of performance improvement (Wang, 2010). A comprehensive information system may, therefore, turn out to be useless if the perceived users prefer not to use it (Damodaran & Olphert, 2000; Franks, 2013; Gunnlaugsdottir, 2003, 2012; Hwang; 2018; Packalén, 2015).

When developing and implementing a system, it is imperative to give credit to the internal factors of organizations to be able to better represent a realistic view of organizational life, so that the system can “facilitate rather than constrain” the management of information within the organization (Foscarini, 2012; Oliver & Foscarini, 2014, p. 25). The manner in which all the information about the education, training and skills can be used by individual employees, their teams, their supervisors or the community of colleagues within the organization is a managerial question, not a technology question (Barley et al., 2018; Bernstein, 2017). Thus, the extent of access and usability is a managerial decision which depends on trust and an organizational culture that fosters psychological safety (Ackerman et al., 2013; Klamma et al., 2007).

In a similar manner, one could argue that the security of information systems, developed and used in a collaborative manner, rests partly on the invisible efforts of the users who take part in building and maintaining the platform (Bannon & Bødker, 1997; Hwang et al; 2018; Leyer et al., 2016). Hence, the ability to allocate and effectively utilise organizational knowledge, as described by Henttonen et al. (2016), relies largely on the employees who actually create, register, share, and use existing knowledge and their reciprocal relationships (Andreeva & Kianto, 2012; Bailey, 2013; Damodaran & Olphert, 2000; Haraldsdottir et al., 2018).

2.3 Information and records management

Information and records management has been considered “an essential building block” of information governance (ARMA International, 2016). The purpose of information and records management is primarily to manage information as evidence of business activities and for accountability (ISO, 2016; Oliver & Foscarini, 2014). The role of records management is to support the

organization in conducting its business and to add value by enabling and protecting the organization (McLeod, 2014, p. 193). Almost anything that contains information of evidential value can be managed as a record (DLM Forum Foundation, 2010, p. 24). Thus, documenting information on employees' education, expertise and skills, as in PKR is a part of information governance (Haraldsdóttir & Gunnlaugsdóttir, 2018: Haraldsdóttir & Gunnlaugsdóttir, Paper III).

Records, in the form of PKR, are generated as by-products of actions and are evidence of those activities (Packalén, 2015). Functional classification, or filtering, of such activities lists them in the context of their creation (Shepherd & Yeo, 2003, p. 73-74). Still, functional classification in information systems needs to be adapted to the culture in which it is applied in order to improve its usability (Foscarini, 2010, 2012; Gunnlaugsdóttir, 2012). In fact, the joint work of records professional with other professionals in a collaborative environment portrayed in Figure 1 may be useful for meeting the needs of users (Bailey & Vidyarthi, 2010).

ISO 15489 states that records management is responsible for “the efficient and systematic control of the creation, receipt, maintenance, use, and disposition of records, including processes for capturing and maintaining evidence of and information about business activities and transactions in the form of records” (ISO, 2016, p. 3). Among other responsibilities of the records professional is the development of a records strategy. This is a records storage plan of both physical records and digital information such as e-mails, websites, cloud services, wikis, blogs and social media (Franks, 2013; Saffady, 2016).

What is more, the requirements of business confidentiality, privacy and public access must be balanced (Gunnlaugsdóttir, 2015). When records of evidential value are involved, records professionals are the ones responsible. The profession of information and records management has been developing alongside technological changes, including the advent of social media and cloud computing, as well as added quality and service requirements and legal restrictions (Anderson et al., 2017; Foscarini, 2012; Goldsmith et al., 2012; Gunnlaugsdóttir, 2012; Lappan, 2010; McLeod, 2012b; Kallberg, 2013).

Moreover, information and records management and quality management are seen as interrelated fields (Brumm, 1996; Gunnlaugsdóttir, 2012). Using the ISO 15489 standard for information and records management is considered necessary for any organization interested in obtaining other international standards (Goetsch & Davis, 2012; Gunnlaugsdóttir, 2012). International standards are gradually becoming more important for organizations worldwide. In fact, the quality function of these standards has been eye-opening for Icelandic organizations and the government and gained added value due to the

financial crisis in 2008 and the consequent lack of trust in the Icelandic economy (Gunnlaugsdottir, 2015). The EPS has, in a similar manner, raised awareness towards the particular expertise of records professionals due to the registration requirements of the standard. It may be argued that documents and records regarding HR matters have not been the biggest burden of ERMS so far. These documents are either kept in HRMS or in locked cabinets in HR offices due to their delicate and private content. Yet, these documents, if they belong to a public organization in Iceland, ought to be delivered to the National Archives according to Act No. 77/2014 on public archiving. The registration requirements of EPS may, furthermore, add to the documentation procedures of HR divisions, which may wish to use the expertise of records professionals.

Cox (2005) pointed to the possibility for records professionals to consider the need for functional requirements other than evidence for recordkeeping of documents, such as for decision making and corporate memory. This may apply to HR documents, although they, too, have now become evidence due to EPS. Lemieux et al. (2014) also described how records professionals could have a part beyond the traditional roles of records management. Records professionals, as data experts, could function as partners in analytic processes, providing information about the location of data, and add to the understanding and trust of data through explaining its structure, context and history. The roles and responsibilities of records professionals have been widely discussed in the records management literature, where it has been stated that the profession should engage more in collaborative projects with other professionals such as data scientists, business analysts, policy makers, information technology designers and software engineers (Anderson et al., 2017; Lemieux et al., 2014, McLeod, 2012a; Oliver & Foscarini, 2014). In this thesis, it is postulated that records professionals should likewise collaborate with professionals in HR and training (Haraldsdottir & Gunnlaugsdottir, 2018).

2.4 Knowledge management

Davenport and Prusak (1998) stated that KM “draws from existing resources that [the] organization may already have in place – good information systems management, organizational change management, and human resources management practices” (p. 163). According to Saffady (2016), KM incorporates the creation, storage, arrangement, retrieval and transfer of organizational knowledge. He maintained that records management operations and concepts promote KM and that “recorded information is an important embodiment of an organization’s intellectual capital” (Saffady, 2016, p. 34).

Nonaka (1991) stated that the availability of personal knowledge to others was the central activity of the knowledge-creating company. KM theories, in

particular Nonaka and Takeuchi's studies (1995), highlighted individual knowledge creation and sharing as a catalyst for organizational learning. This was in line with the scholarly work of Argyris and Schön (1978, p. 7), who argued that there was no organizational learning without individual learning and that individual learning was necessary for organizational learning to occur. Thus, organizational learning does not take place without the learning of individual employees and the sharing of knowledge.

In addition, not all the knowledge and expertise of employees is enough to gain organizational learning if their individual learning remained tacit. Early tools, used to create repositories of explicit knowledge to be shared, ultimately evolved into "information graveyards" with few users and contributors (Barley et al., 2018). Studies indicated that, by using KMS, organizations enabled their employees to store the knowledge they "carry in their minds and make it available for wider use" (Sutanto & Jiang, 2013, p. 258). This part of KM has been described as a "less tangible phenomena" as it usually concerns tacit knowledge related to the "expertise and experience" of employees (Choo et al., 2006, p. 493; Hwang et al., 2018). Knowledge sharing practices of this kind have been difficult to facilitate due to the sticky nature of knowledge and the great deal of effort needed for it to transfer (Fernie et al., 2003; Leonardi & Meyer, 2015; Szulanski, 2003). This notion is supported by Fernie et al. (2003), who argued that tacit knowledge was gained and exchanged through interpersonal contact and that the primary repository for knowledge was within the brain of the individual employee, despite efforts to the contrary. Thus, the possibility of creating an avenue for social interaction between employees by using PKR mirrors the notions that individual sharing of tacit personal knowledge is considered to be a product of socialization (Fernie et al., 2003; Hwang et al., 2018).

KM scholars have, for the last two decades, examined processes regarding knowledge creation, capture, distribution, application and reuse (Alavi & Argote & Fahrenkopf, 2016; Barley et al., 2018; Leidner, 2001). Knowledge reuse has been considered a major justification for KM (Majchrzak et al., 2004) and an important factor for achieving business goals. The emphasis has been on knowledge processes (Davenport & Prusak, 1998; Argyris, 1999), best practices, sharing work-related experience with co-workers (Argote & Fahrenkopf, 2016; Christensen, 2007; Christensen & Pedersen, 2018; Davenport & Prusak, 1998; Liebowitz & Beckman, 1998) and the optimal usage of employees' work-related knowledge (Fernie et al., 2003; Hansen et al., 1999; Scheepers et al., 2004; Skyrme, 2011).

More recently, it has also been widely accepted that knowledge is a key factor in production and competitiveness (Barley et al., 2018; Skyrme, 2011;

Wasko & Faraj, 2005). Organizations are becoming more interested in assessing, managing and developing their intellectual assets, including the knowledge of their employees (Buenechea-Elberdin et al., 2018). By being mainly tacit and intangible and somehow embedded in organizational structures and cultures, “knowledge cannot be easily copied and substituted and so, it enables firms to create business value in a unique, inimitable and non-transferable way” (Sigala & Chalkiti, 2014, p. 800). The weight has been on finding ways to limit time-consuming information searches, redundant work or rediscovery of the wheel when employees leave the organization (Calo, 2008; Carmel et al., 2013; Leyer et al., 2016), while the purpose of PKR emphasizes knowledge sharing of the employees staying in the organization (Haralddottir et al., 2018).

Despite the apparent value of KM, O’Dell and Grayson (1998) found that even the “pursuers of best practices ... and some of the most intellectually curious, performance-oriented organizations in the world” did not know about “practices hidden, untouched and undocumented, inside the walls of their own organizations” (1998, p. 155). The findings of Szulanski’s (1994) research on barriers to knowledge transfer, furthermore indicated that the biggest barrier to the sharing of knowledge were due to plain ignorance on both ends of the transfer. Neither did the knowledge owner knew someone in need of the knowledge they had nor did the knowledge seeker realize that someone else had the knowledge they required. Too often, it is assumed that knowledge freely exists and can be captured and shared between contexts (Fernie et al., 2003). Still, few organizations have a way to systematically track the skills of their employees or to estimate what skills they lack (Barley et al., 2018; Haraldsdottir et al., 2018; Hesse, 2017; Sundquist & Svård, 2016).

At the same time, organizations tend to promote their employees’ knowledge as their biggest source of competitive advantage and most valuable asset as stated in the introduction of this thesis. In this knowledge driven and competitive economy, many organizations have implemented KMS or knowledge repositories (Barley et al., 2018; Fadel & Durcikova, 2014). Organizations that can efficiently identify knowledge within their ranks and apply it in their operations are considered more likely to have an edge over their competitors (Migdadi, 2009). This competitive edge is likewise grounded in the way organizations manage to attract, select, develop and retain their talented employees (Stahl et al., 2012).

Borgatti and Cross (2003) claimed that the probability of seeking information from another person was correlated with knowing what that person knows (i.e., know-who), valuing the knowledge, having timely access to it and perceiving it not too costly. Nebus (2006) maintained that a person’s choice of

contact was influenced by existing relationships (what he terms an advice network). While known relationships, or what Granovetter (1973) terms strong ties, may be warmer known relationships and, therefore, comfortable and easy to access, they may also induce hindrances and exclude the best possible and unknown contact persons (Ellison et al., 2015). As stated in Borgatti and Cross (2003, p. 442), people may interact with a limited set of co-workers for knowledge seeking, which may be hindering if other people are better sources. Not knowing whom to ask is problematic if the knowledge network is only partially explicit. Moreover, trust and ownership and reciprocal relationships within the organization play a key role in facilitating knowledge sharing (Drucker, 1993; Ford, 2003; Klamma et al., 2007; Newman & Newman, 2015).

Portals of best practices, internal benchmarking or work-related know-how, needs adaption from original use before re-use (Nebus, 2006). In this research, it is argued that, since PKR consists of accumulated information on employees' education, training and skills, gathered information at any particular time remains searchable, trustworthy and applicable, and not in need for adaption before use. Still, PKR, like any other information system, needs constant updates and participating efforts from all stakeholders in order to survive.

The most recent focus of KM for externalizing knowledge is on social media with the intention of facilitating knowledge sharing in organizations (Ellison et al., 2015; McFarland & Ployhart, 2015; Mäkinen, 2013; Newman, 2016; Panahi et al, 2013). Digital natives prefer using social media for both personal and work-related communication (Gunnlaugsdottir, 2016). For them it is natural to share knowledge and experience via enterprise social network sites (ESNs) (Ellison et al., 2015). Social media is much more open, interactive, fluid and dynamic than other forms of virtual communities (McFarland & Ployhart, 2015) and is used for several reasons, most commonly as a space for personal self-expression and for making connections between friends (Bachmaier, 2015; Dijck, 2016). Facebook, Workplace, IBM Connections, Yammer, Twitter and LinkedIn are used to help improve important organizational processes (Treem & Leonardi, 2012; Vuori & Okkonen, 2012), create collaborative systems (Bradley & McDonald, 2011; McFarland & Ployhart, 2015, Morrice, 2013) and enhance knowledge transfer (Leonardi & Meyer, 2015).

While social media is blossoming, users claim that traditional information systems, such as ERMS, are too slow and complex, unattractive and constraining and therefore seen as old-fashioned, which in turn hinders general use of the systems (McLeod, 2012b; Gunnlaugsdottir, 2009). Damodaran and Olphert (2000) support this argument in their study of barriers and facilitators of knowledge management systems as identified barriers included lack of user-friendliness, poor design of user-interface, instability and unreliable software,

slow response time, imposition of the technology in use, inadequate training of the system, unsuccessful delivery of promised functionality of the system and absence of added value.

In contrast to public social software, social applications within organizations, such as Yammer and Workplace by Facebook, are restricted to internal use only (Bell, 2012, Hildrum, 2009). The objective of using social media as a knowledge sharing platform within an organization is to provide a secure and trustworthy interactive information space for employees to easily connect and communicate (McFarland & Ployhart, 2015). As in prior studies on Collaborative Adaptive Learning Platforms (CALP) where the idea was to connect people to people through content on social software (Klamma et al., 2007), PKR connects people to people through knowledge search. For CALP it was necessary to encompass the element of offering the possibility to identify experts inside and outside of the organization with the required know-how that could help achieving better results or for persons who shared the same interests (Klamma et al., 2007, p. 79). The social element for PKR is to offer the possibility to identify experts within the organization, colleagues with specialized knowledge, experience or skills in order share knowledge, i.e by participating in a project, in an organized teamwork or in order to train other colleagues who lack some particular skill or knowledge. By enabling an open dialogue, social software encourages employees to interconnect, participate and build relationships based on mutual trust (Bachmaier, 2015; McFarland & Ployhart, 2015). Social media, hosted by the organization, provides a greater degree of control over the content and is ideal for projects that do not require external participation from the public (Franks, 2013, p. 178).

2.5 The legal environment

The external environment of PKR as symbolized in Figure 1 consists of legislative alterations that affect the information systems, information and records management and knowledge management of organizations. The legislation of EPS and GDPR represent the legislative influences of this research.

Iceland is the first country to require that all organizations obtain a verified certification of their equal pay systems (Sigmarsdottir, 2018; Act on Equal Status and Equal Rights of Women and Men No. 10/2008 with amendments, Article 19). In January 2018, a bill was passed in the parliament making it illegal for organizations employing 25 or more people to pay men more than women for work of equal value (Gray, 2018; Ministry of Finance and Economic affairs, 2018). The legislation requires organizations to document information on the qualifications of employees as evidential records, thus contributing to the

purpose of information and records management to manage information as evidence of business activity and accountability, as stated in ISO 15489 (ISO, 2016).

The EPS claims that “all decisions on wages and employment terms [must be] documented, reasoned and traceable” (Icelandic Standards, 2012, p. 7). EPS requires organizations to make, document, implement, sustain and continually optimize their equal wage management system. The EPS guidelines states that jobs must be evaluated against each other and a weight assigned to each. This includes the cognitive and physical competence that a job requires. This can include competences consisting of experience, training and education or the “knowledge obtained by education or experience, cognitive skills, initiative and independence and communication skills” (Icelandic Standards, 2012, p. 18).

At the end of December 2018, 40 organizations had been certified according to EPS. Prior to EPS becoming law, a small pilot group of organizations took the lead in 2012. The perception of the implementation process was described by a HR manager from one of the pilot organizations as pure quality management (Kristjansdottir, 2017) which interrelates the three disciplines of PKR. The participants of the pilot group agreed that the implementation had been a challenging commitment but that the gain of a transparent and fair payroll was worthwhile, (Althingi.is, 2018, p. 2). EPS creates an opportunity to change the way work is done in organizations, not only as regards equal pay, but also in information governance in general.

A total of 21 reviews were sent to the parliament when the EPS bill was under discussion. While most reviews agreed on EPS being an important tool to implement an equal pay system and ensure the same pay for men and women for jobs of equal value, the procedure to mandate organizations to implement the standard was criticized (Althingi.is, 2018). The reviews included serious reservations regarding how Icelandic supervisory authorities would be able to regulate the standard due to a lack of funding and staff. Former experience from the financial crisis in the Icelandic in 2008 may partly explain this criticism. It showed that domestic enforcers, in that case the Central Bank and the ministries in charge of economic affairs, were understaffed and lacked experience in how to manage a large financial sector (Benediktssdottir et al., 2011). The fear of repeated failure, this time in relation to monitoring how organizations were living up to the requirements of EPS was, therefore, real (Haraldsdottir & Gunnlaugsdottir, Paper III).

Simultaneously, personal data, such as information on the education, training and skills of employees, must be protected in accordance with the General Data Protection Regulation (GDPR) (European Commission, 2018; IT Governance Privacy Team, 2016). The GDPR regulation is an essential step to

strengthen individuals' fundamental rights in the digital age and facilitate business by clarifying rules for companies and public bodies in the digital single market. (European Commission, 2018)

The regulation was implemented on May 24, 2016 and has been in force since May 25, 2018 in the EU. Regulations are distinct from directives. While directives set minimum standards that allow EU member states to provide their own legislation, regulations exist as laws themselves (IT Governance Privacy Team, 2016). The Icelandic Act on Data Protection and the Processing of Personal Data no. 90/2018 was enacted on July 15, 2018.

Organizations that selectively register information on employee knowledge and intend to give collaborative access to that information, as in PKR where the employees are able to see more than their own profiles, must ensure that they possess the informed consent of their employees to do so. Informed consent must be freely given and in an unambiguous manner. This means that the individual is given

information about the processing of [their] personal data, including ... the identity of the organization processing data, the purposes for which the data is being processed, the type of data that will be processed [and] the possibility to withdraw. (European Commission, 2018)

The data controllers, in this case, are the organizations that are responsible for abiding by the requirement of informed consent. Ensuring employees' consent to having their personal data processed is a critical component to preserving their rights and adhering to the privacy principles (IT Governance Privacy Team, 2016, p. 183). Data controllers are, furthermore, required to create documentation and processes that include the management of information assets. Thus, a register must be created to show what data are present, who can access it, where it is located, what the purpose of collecting it is and for how long it will be kept (Harvey, 2017). This register applies as well to the content, access and platform of a PKR.

Organizations that do not fulfil these requirements are at risk to receive rectification measures from the Icelandic Data Protection Authority, or any data protection authority in Europe. If Icelandic organizations fail to comply with GDPR, they could face a fine of up to 4% of yearly revenue or 20 million Euros (The Icelandic Data Protection Authority, 2018). Therefore, the stakes are high.

Moreover, organizations will almost certainly be expected to implement and use new technologies in which privacy and data protection are embedded. The challenge is for organizations to find means to hide personal data, using anonyms, pseudonyms or encryption, in an attempt to secure the personal data

processed for their entire lifecycle, up to “their ultimate deployment, use and ultimate disposal” (Romanou, 2018, p. 101-102). Organizations may have to adapt their policies and internal processes, including the PKR process, make assessments on their privacy impact on a regular basis, and use innovative ways to comply with these new obligations, while continuing to develop and make the best use of the competitive edge embodied in their intellectual assets.

The regulative environment affects the socio-technical aspect of PKR (Haraldsdottir & Gunnlaugsdottir, Paper III). Social information systems have changed the way organizations, and their employees, interact, communicate and collaborate. Social information systems allow individuals to “search for, acquire, edit, or share relevant information ... and communicate via message with specific co-workers or everyone in the organization” (Limaj et al., 2016, p. 382).

While the equal pay legislation makes this registration of personal knowledge compulsory if the education, training and skills affect how certain jobs are evaluated, the GDPR calls for data minimisation, i.e., that the registered data should be adequate, relevant and limited to what is necessary for the purpose of documentation (Romanou, 2018, p. 102). Hence, the legal environment of EPS and GDPR may contain challenges to the use of social-technical systems such as PKR (Leyer et al., 2016).

2.6 Summary

In this chapter the scientific literature that has created the theoretical context of this thesis and influenced and inspired its author has been introduced. The chapter started with a brief description of the main components of interdisciplinary research, including the distance, novelty and creativity involved in uniting and integrating different elements of the chosen disciplines.

The concept of personal knowledge registration, and the abbreviation PKR, which was created by the author of the present thesis, was explained. PKR, as portrayed in the conceptual model in Figure 2 was introduced as a directory of current knowledge residing within an organization (Haraldsdottir & Gunnlaugsdottir, 2018; Haraldsdottir et al, 2018). Instead of focusing on capturing and documenting know-how or best practices into a repository for future use, PKR is limited to the personal knowledge of current employees. This knowledge is selected and registered in the interest of individual employees, and in accordance with organizational knowledge sharing strategy and legal requirements (Haraldsdottir et al., 2018; Haraldsdottir & Gunnlaugsdottir, Paper III; IST, 2012). The purpose of PKR is to connect the knowledge seeker directly to the knowledge owner and to provide easy access to available knowledge sources, while the knowledge itself is not contained in the PKR platform.

Knowledge sharing in PKR resembles the process, described by Sigala and Chalkiti (2014) by which an individual “imparts his or her expertise, insight or understanding to another individual” and the recipient of the knowledge has the opportunity to use “the knowledge to perform his or her task(s) in a better way” (2014, p. 801). Another aspect that distinguishes PKR from other forms of knowledge repositories, is its emphasis on personal interaction, whether face-to-face or face-to-interface (Christensen & Pedersen, 2018).

The three main disciplines that form the theoretical context of the thesis, IT, information and records management and KM are then introduced. Throughout the chapter a number of international studies have been discussed, showing that the registration, access and use of knowledge has been studied from different angles within the three disciplines.

IT has created the opportunity and platform to share knowledge with its focus on connecting knowledge seekers with knowledge owners as described by Barley et al. (2018). IT systems demand more than a simple database. A catalyst for a successful knowledge directory seems to be the joint interpretations of the purpose of the system by the actors involved (Bannon & Bødker, 1997). It is, therefore, not enough to implement a trending IT system if the support of top-management is lacking or if clear purpose of using the system and appropriate user training is missing (Gunnlaugsdottir, 2012; Haraldsdottir, Paper IV, Hwang, 2018). Active participation in the development and implementation of the system has positive effects on its potential use (Damodaram & Olphert, 2000; Bano & Zowghi, 2015).

It has been stated in this chapter that the purpose of information and records management is to manage information as evidence of business activity and for accountability reasons (ISO, 2016; Oliver & Foscarini, 2014). The role and responsibility of records managers has been explained as “the efficient and systematic control ... of records, including processes for capturing and maintaining evidence of and information about business activities and transactions in the form of records” (ISO, 2016, p. 3). The legislation of EPS in Iceland requires organizations to document information on the qualifications of employees as records of evidential value. PKR may, therefore, play a key role in fulfilling the requirements of EPS. The present research puts emphasis on the roles and responsibilities of records professionals within the information and records management literature, pointing to possibilities for a broader range of responsibilities for the profession (Haraldsdottir & Gunnlaugsdottir, 2018; Lemieux et al., 2014; McLeod, 2012a; Oliver & Foscarini, 2014).

While Saffady (2016) maintains that records management operations and concepts promote KM, the focus of the KM literature has mostly been on knowledge processes, best practices and the sharing of work related experiences

with co-workers (Argote & Fahrenkopf, 2016; Barley et al., 2018; Davenport & Prusak, 1998; Hansen et al., 1999; Skyrme, 2011). Organizations have more recently become interested in assessing, managing and developing their intellectual assets, the knowledge of their employees (Buenechea-Elberdin et al., 2018). The reason is due to the mainly tacit and intangible, and even sticky nature, knowledge and the way it, somehow, is embedded in organizational structures and cultures, “knowledge cannot be easily copied and substituted and so, it enables firms to create business value in a unique, inimitable and non-transferable way” (Sigala & Chalkiti, 2014, p. 800). Szulanski’s (1994) research on barriers to knowledge transfer indicated that the strongest barrier to the sharing of knowledge was plain ignorance on both ends of the transfer. Still, few organizations systematically track the skills of their employees (Barley et al., 2018; Hesse, 2017). As stated in Borgatti and Cross (2003), people may interact with a limited set of co-workers for knowledge seeking, which may be hindering if other people are better sources. While known relationships may be comfortable and easy to access, they may also induce hindrances and exclude the best possible and unknown contact persons (Ellison et al., 2015). Not knowing whom to ask is problematic if the knowledge network is only partially explicit.

The chapter draws attention to the use of corporate social media which is the most recent focus of KM for externalizing knowledge (McFarland & Ployhart, 2015; Mäkinen, 2013). Digital natives prefer using social media for both personal and work related communication (Gunnlaugsdottir, 2016) as it comes natural to them to share knowledge and experience via enterprise social network sites (Ellison et al., 2015). Social media was introduced as a much more open, interactive, fluid and dynamic option for knowledge sharing than other forms of virtual communities (McFarland & Ployhart, 2015). And, studies show that it has been used to create collaborative systems (Bradley & McDonald, 2011; McFarland & Ployhart, 2015) and to enhance knowledge transfer (Leonardi & Meyer, 2015).

At the end of this chapter, the attention was set on the legal environment of organizations, i.e., the external factors that affect PKR as portrayed in Figure 1. The legislation of EPS requires organizations to document information on the qualifications of employees as records of evidential value, thus contributing to the purpose of information and records management as stated in ISO 15489 (ISO, 2016). The organizations are at the same time implementing the General Data Protection Regulation (GDPR) which means that personal data, such as the information on the education, training and skills of employees, must be protected in accordance with the legislation (European Commission, 2018; IT Governance Privacy Team, 2016). Data controllers, in this case the organizations, are responsible for ensuring the consents of their employees to

having their personal data processed. Furthermore, a registry must be created to show what data are present, who can access it, where it is located, what is the purpose of collecting it and how long it is being kept (Harvey, 2017). This registry applies as well to the content, access and use of PKR.

3 Methodology

Qualitative methodology was chosen for this research. A qualitative study is one in which the findings are grounded in the data (Glaser and Strauss, 1967). The reason for choosing a qualitative methodology was to shed a holistic light on the employees' actual PKR usage, their experiences and views on the PKR methods that were applied in the organizations, and to get a glimpse of the pitfalls and the successes that may accompany such procedures. Qualitative methodology allows the researcher to study issues in depth, and data collection is not limited to predetermined categories.

Neuman (2011) organized the reasons for conducting a study into three categories: to explore a new topic, as done by examining a PKR, to describe a social phenomenon, i.e., the social interaction that may take place between employees after having used a PKR, or to explain why something occurs, i.e. the impacts of PKR challenges. When collecting data in qualitative research, the researcher is weaving a story out of the threads of data. Whether the story turns out to be correct or not is impossible to confirm, since correctness depends on the time and space that enfold the story and the social environment that creates it. Qualitative methodology is, therefore, a learning process from the day the very first setting is visited until the last letter has been written in the thesis, with the sincere hope of getting the story right (Stake, 1995).

3.1 Qualitative methodology

A coherent decision on a research design, i.e. to find a logical plan from getting from start to finish is of utmost importance according to Yin (2014). Qualitative research is a broad umbrella term that covers a wide range of techniques and philosophies (Hennink et al., 2011, p. 8) including the interpretative paradigms upon which this research is drawn (Charmaz, 2006; Denzin, 1998). In line with these paradigms and the aim and objectives of this research, qualitative methodology was intended to better understand the behaviour and perspectives of the participants themselves, as well as their social interactions and physical context (Hennink et al., 2011).

The research draws on the social constructivist approach. This approach looks at all social reality as constructed or created by social actors (Esterberg, 2002, p. 15). One of the premises of the social constructivist approach is that the meanings of things arise out of social interaction. These meanings are created, and sometimes changed, through interactive processes. In addition, the use of grounded theory acknowledges the influence of the researcher on the research process. It emphasizes reflexivity and accepts the notion of multiple realities

(Charmaz & Bryant, 2011). To compliment the constructive approach, inductive reasoning was used in this research. Inductive reasoning is a theory-building process, starting with observations of specific instances, and seeking to establish generalisations about the phenomenon under investigation (Hyde, 2000). This means that, instead of beginning with a particular theory and then looking at the empirical world to see if the theory is fully supported, qualitative research inductively begins with examining the social world and develops a theoretical framework in consistence with that world (Esterberg, 2002, p. 7).

This research draws upon qualitative methodology in a natural setting, where the researcher is an instrument of data collection who gathers words or pictures, analyses them inductively and focuses on the participants' meaning while describing an expressive process (Creswell, 2013). Qualitative research involves collection of empirical materials, such as case studies, personal experiences, life stories, interviews, and observational, historical, interactional, and visual texts that describe routine and problematic moments and meaning in the lives of different individuals (Denzin & Lincoln, 2012). Using a qualitative methodology and interpretative paradigm was considered the most appropriate plan for addressing the research questions. It involves collecting rigorous data and inquiring into the how and why that can be extracted from the experience of the participants, while discovering new perspectives and unexpected viewpoints along the way (Merriam, 2009).

As qualitative methods produce a wealth of detailed data on a relatively small number of participants (Patton, 1991), they were the most relevant choice for grasping the collaborative aspects of PKR and the roles and responsibilities of different facilitators, records professionals in particular, in the PKR process. Also, for understanding how organizational intentions with the implementation and use of PKR, as a knowledge platform, were supported and put into practice. The methodology was also suitable for examining documentary material regarding the Icelandic Standard of Equal Pay no. 85:2012 (Icelandic Standards, 2012) and the Act on Equal Status and Equal Rights of Women and Men No. 10/2008. These were studied as possible stimulants and/or hindrances for personal knowledge registration in organizations along with GDPR. The qualitative methodology was also useful in capturing how, and on what grounds, people who use information systems for PKR experienced their access and use of the registered information, both in award-winning organizations and others.

3.2 Multiple case study

A multiple case study, one of five methodological traditions from Creswell, was chosen for conducting this research (2013). The social aspects of organizations

are well suited for a case study since case studies are “used in many situations, to contribute to our knowledge of individual, group, organizational, social, political, and related phenomena.” (Yin, 2014). According to Neuman, we study a case because it is a part of some grouping of – type or kind –that we study to develop knowledge about causes of similarities and differences (Neuman, 2011, p. 41). The context is different for each of the cases. A multiple case study allows the researcher to analyse within each setting and across settings. Thus, several cases were examined for this research to understand the similarities and differences between the cases (Baxter & Jack, 2008, see further in Haraldsdottir et al, 2018; Haraldsdottir, Paper IV). One of the advantages of this approach is the close collaboration between the researcher and the participants to enable participants to tell their stories (Crabtree & Miller, 1999).

Potential data sources may include, but are not limited to: documentation, archival records, interviews, physical artefacts, direct observations, and participant observation. In a case study, each data source is one piece of the puzzle with each piece contributing to the researcher’s understanding of the whole phenomenon. This conjunction adds strength to the findings as the various kinds of data are interconnected to promote a greater understanding (Baxter & Jack, 2008). The case study results in a rich and holistic account of a phenomenon. It offers insight into and illuminates meanings that expand the reader’s experience (Merriam, 2009).

3.3 Research participants

To define the boundaries of the case study (Yin, 2014) and to obtain a holistic picture of the current status of registration of the knowledge of employees in Icelandic organizations, it was considered most relevant to use purposefully selected cases. While quantitative sampling concerns itself with representativeness, qualitative sampling seeks information richness (Crabtree & Miller, 1992). The aim was to capture the perspectives of different participants, and how and why the researcher believed that their different meanings illuminated the research topic (Yin, 2014). The number of participants or cases to recruit to the research was guided by a theoretical principle called saturation (Glaser & Strauss, 1967). The purpose of recruitment is to seek variation and context from the participants representing the selected cases, rather than a large number of participants with similar or redundant experiences. The number of participants in qualitative research is effectively guided by the diversity of the information gained (Hennink et al., 2011).

The 18 organizations that participated in the research were contacted by the researcher via an e-mail that was addressed to a gatekeeper. Gatekeepers play an important role between the researcher and the community under study

(Esterberg, 2002, p. 93). They assist researchers with participant recruitment and typically have knowledge about the community that may help when selecting participants. In this research, the common drawback of using a gatekeeper, leading to a limited choice of participants selected by the gatekeeper was not a hindrance due to the previous selection of key interviewees made by the researcher in accordance to their responsibilities within the organizations. A total of four training managers, eight HR managers, two middle managers and four information and records managers were contacted via an e-mail asking if they were willing to involve their organizations in the study. Ten out of the 18 gatekeepers had prior connection with the researcher through prior workplace, through the University of Iceland or through other teaching. One out of the 18 gatekeepers was a personal friend of the researcher.

The research was registered by Icelandic Data Protection Authority and given the number S4913/2010 (Appendix A). The number of employees within the 18 organizations that were visited ranged from 50 to 2000, with an average of 445. Data gathering was conducted in three phases. The first phase was in late 2010 to mid-2012, when the first three organizations (A, B and C) were visited and the scope of the research was established. A thorough literature review took place during this period that was continued in 2013 and onwards. From 2014 to 2016, data gathering in nine further organizations and an examination of organizational documentary material was accomplished. Organizations D, E and F were studied in detail, while six organizations were studied for corroborative purposes. The first three organizations were revisited to verify the information gathered earlier. Interviews and gathering of documentary material from the last six organizations happened in 2017 and 2018. In January 2018, it was decided to revisit eight out of eighteen organizations as further clarification was needed on the subject of EPS. Data analysis was completed in June 2018. Table 1 gives an overview of the participating organizations, see table 1.

Table 1. Overview of participating organizations

In-depth analysis in the first group of six organizations. 6-8 interviews in each organization.	A Financial Private Nearly 1000 employees.	B Technology Private Over 500 employees.	C Industrial/Consultancy Private 300 employees	D Industrial/energy Public Over 250 employees.	E Financial Public Nearly 200 employees.	F Surveillance Public Almost 240 employees.
First corroborative interview group. One interview in each organization.	G Technology Private About 600 employees.	H E-commerce Private Around 270 employees.	I Industrial/Consultancy Private About 350 employees.	J Surveillance Public Over 150 employees.	K Industrial/energy Public Around 460 employees.	L Industrial Public Just over 50 employees.
Second corroborative interview group. Award winners of the Knowledge Company of the Year Award. One interview in each organization.	M Private	N Private	O Private	P Private	R Private	S Private

The selection of the first group of organizations and the first 42 interviewees was purposive based on the objectives of the study and according to certain characteristics that were considered likely to give informative findings for the research (Morse, 1991; Esterberg, 2002; Merriam, 2009). The starting point that guided the selection of the first six cases, here named A, B, C, D, E and F (A-F), was to ensure that the selected organizations operated in different business sectors: finance, IT, energy, manufacturing, engineering, transport and telecommunications (Statistics Iceland, 2016). The participating organizations were considered to be either unique or in the forefront of their individual sectors. They were also evenly divided between the private and the public sectors. It was important that the organizations selected were technically capable of implementing a functional database or social media for managing knowledge. It was also preferable that they had experience in implementing a platform for knowledge registering purposes, whether or not they were successful. The objective was to get a comprehensive picture of the actual registration process, access and use of the information systems intended for PKR and to get a glimpse of the pitfalls and successes of their experience of social interaction facilitated by PKR.

The first group of six organizations was considered too narrow to paint a complete picture for this research which led to a comparison with another group of six organizations, here named G, H, I, J, K and L (G-L). This first corroborative group, which was also evenly divided between the public and the private sectors, was chosen by using snowball sampling, so named because of its similarity to a snowball, beginning small and growing by accumulating additional snow (Neuman, 2011). Numerous interviewees from organizations A-F described limited success in implementing PKR, whilst pointing repeatedly

to organizations G-L, which they had heard of or considered more successful in PKR.

In the first corroborative group of participants (G-L) an e-mail containing a formal letter was sent to a gatekeeper asking for a single interview within the organization. The request was also phrased to be open to two interviews if needed. It was decided to contact three information and records professionals and three individuals in charge of HR and/or training for comparison. This decision was made in line with the outcome of the analysed data from the first six cases (A-F). There, the interviewees had repeatedly mentioned the organizations in the corroborative group and pointed specifically in the direction of HR and training and information and records management.

The main characteristic of the second corroborative group, here named M, N, O, P, R and S (M-S) was that they were all recipients of the Knowledge Company of the Year award and were, for that reason, considered likely to provide a different angle on the research topic. The M-S organizations were all working in the private sector, such as in finance, manufacturing and tourism. Particular focus of this part of the study was set on examining the knowledge award verdicts for each award-winning organization and finding out in what manner these organizations were fulfilling their potential as knowledge award winners as regards PKR.

In an invitation letter the research was briefly explained along with the decision to include the award winners. The request was to interview the person with the most information about the award from within the organization. The intention was, at first, to include only organizations that had won the award between 2011-2016 but due to particular circumstances, the time period was lengthened to 2010, 2017 and 2018 in order to include a total of six organizations. The last interview in group M-S took place in early May 2018.

The risk of revealing the identities of interviewees was significant, in particular in the case of the award-winners. Those had all been publicly associated with the award in the media and elsewhere. It was, for that reason, considered important to conceal the individual business sector and size of the award-winners in the research.

In January 2018 eight out of the twelve organizations that constituted the first group and the first corroborative group were contacted again (A-F and G-L) for further clarification on the subject of EPS. Four interviewees from the first group (A-F) consisting of two information and records professionals and two HR managers and, four interviewees from the first corroborative group (G-L) based on the same selection were contacted via e-mail. In the message, the eight interviewees were asked to evaluate, either in writing or in a phone conversation the following; (1) what preparations their organizations had made

to fulfil the registration requirements of EPS; (2) how, if at all, PKR was being registered differently due to recent auditing and legal requirements; (3) in what way added PKR complied with GDPR; and (4) in what manner EPS and GDPR had, if at all, affected the roles and responsibilities of information and records managers within their organizations. After phone and e-mail reminders they had all answered by mid-March of 2018. All of the eight interviewees answered the questions in writing.

3.4 Methods

Qualitative research methods do not automatically make the research qualitative, but they help in defining the study from the perspectives of participating informants and understanding the meaning or interpretations that they give to objects, actions or events (Hennink et al., 2011). Semi-structured interviews, an analysis of documentary material and participant observations were used in this research. Each research method has its strengths and weaknesses so often two or more methods were used.

Grounded theory was used to analyse the data gathered (Glazer & Strauss, 1967; Charmaz, 2006; Charmaz & Bryant, 2011; Glaser & Strauss, 2017). Grounded theory has been described as an iterative process involving the continual sampling and analysis of qualitative data gathered from concrete settings. Grounded theory involves taking comparisons from data and reaching up to construct ideas and simultaneously connecting these ideas to the data. The researcher begins with a particular incident or topic from the field notes, whether from an interview, an observation or a document and compares it with another incident in the same set of data or another set (Merriam, 2009). This means learning about the specific and the general and seeing what is new in them. Grounded theory can provide a route for scholars to “see beyond the obvious and a path to reach imaginative interpretations” (Charmaz, 2006, p. 181).

Using triangulation, as in this research, involves using several kinds of data collected from various sources (Janesick, 1994). It is an attempt to ensure an in-depth understanding of the topic being studied (Denzin & Lincoln, 2012). Research designs that include multiple research methods, tend to be the strongest (Esterberg, 2002, p. 37).

3.4.1 Semi-structured interviews

Primary data was collected through semi-structured interviews. Interviews are personal, complicated and demanding in practice. The process can be said to resemble a dance, where the interviewer must be carefully attuned to the movements of the interviewees (Esterberg, 2002). The researcher’s role in

conducting an in-depth interview is to elicit the story (Hennink et al, 2011). The researcher must be capable of encouraging the interviewee to talk freely without influencing the direction of the conversation, while still probing at critical moments (Babin, Carr & Griffin, 2013).

In this thesis the goal was to use interviews to gain a holistic understanding of the topic of the research from the perspectives of the interviewees and to understand the reasons that lay behind these particular perspectives (Kvale, 1996). Respect for the interviewee, trust, sincerity and honesty are key factors in a good interview (Seidman, 2011). Thus, it is important to attempt to create a feeling of trust in the environment of the interview (Kvale & Brinkman, 2009). The researcher must safeguard all information and ensure that exposure of personal information will not occur. Finally, the researcher must avoid imposing her own thoughts or presumptions upon the interviewees or steering them towards a convenient truth. One way of avoiding such misinterpretations is to ask whether the story has been understood correctly and to correct any misunderstandings.

The interviewees were selected in a systemic manner and consisted of employees with the same or similar position in each organization. One criterion was to use multiple informants from each profession, analysing the interviews from different angles, within the same profession, within a specific case or organization and across cases, i.e., between different organizations. An important advantage of using multiple informants is that the validity of information provided by one informant can be compared to that provided by other informants. Moreover, the validity of the data used by the researcher can be enhanced by looking further into the dissimilarities among different reports. Hence, it was decided to select multiple respondents from each perspective (Glick et al.1990). For an overview of the interviewees, see Table 2.

Table 2. Overview of the interviews

Group I - In-depth analysis of interviews in six organizations							
	Private			Public			Total
	A	B	C	D	E	F	
Management*	2	2	2	2	2	1	11
HR Manager	1	1	1**	1	1	1	6
Education and Training Manager	1	1	0	1	1	1***	5
Information and Records Manager	1	1	0	1	1	1	5
Quality Manager	0	0	1	1	0	0	2
Employee working on Quality Control	0	0	0	0	1	0	1
General employees****	3	0	4	2	2	1	12
							42

Group II - Corroborative analysis of interviews in six organizations							
	Private			Public			Total
	G	H	I	J	K	L	
HR Manager	0	0	1	0	0	0	1
Education and Training Manager	1	1	0	0	0	0	2
Information and Records Manager	0	0	0	1	1	1	3
							6

Group III - Corroborative analysis of interviews in six organizations - <i>Knowledge Company of the Year</i>							
	Private			Public			Total
	M	N	O	P	Q	R	
Management	0	1	0	0	1	0	2
HR Manager	1	0	1	0	0	1	3
Education and Training Manager	0	0	1	1	0	0	2
							7
							TOTAL 55

* Interviewees with one of the following titles: Head of department / division, Executive manager and Administrative Official.

** An employee responsible for HR and Education and Training.

*** An employee responsible for Education and Training and Quality Management.

**** Employees that work within the same division as interviewed Management

Interviewees had the following responsibilities: personnel administration and HR strategies, in-house training programmes and training strategies, implementation and administration of electronic records management systems, implementation of international and Icelandic standards and quality strategies, and management in various divisions, including IT and general employees.

In line with the exploratory nature of the research, the goal of the interviews was to see the research topic from the experience or perspectives of the interviewees. To meet this goal, it was decided to keep a low degree of structure in the interviews while still focusing on specific situations and action sequences from the interviewees' place of work, rather than abstractions or general opinions (King, 1999). An interview guide (Appendix B) was written at the start of the research process. It was developed throughout the study using iterative updates based on additional information arising from the data (Bogdan & Biklen, 2003; Kvale 1996). The purpose was to obtain as much information as possible on the research questions, while still being open to additional concepts or information that might influence the findings of the research.

The 18 gatekeepers received an invitation letter via e-mail (Appendix C, D, E, and F). All interviews were recorded on an Olympus digital voice-recorder in

order for the researcher to concentrate fully on asking questions and listening to the answers of the interviewees, as well as to maintain a level of accuracy and data richness and to ensure accurate examination of the interviews during the analytical part of the research. Out of the 55 interviews, 49 were transcribed by the researcher in full and six interviews were transcribed by a master's level student that had been highly recommended by experienced professors. To ensure confidentiality a written contract was made with the student and the interviews were only made temporarily accessible to the student through the University portal and deleted after they had been submitted as transcriptions into the portal. No e-mail correspondence occurred between the researcher and the student regarding the transcriptions. The researcher made sure the student deleted all working notes and partial transcriptions.

Miller and Glassner (2011) suggest that one strength of the qualitative interview is the opportunity it provides to collect and rigorously examine narrative accounts of social worlds. The interviews were all conducted within normal working hours, between 8:00 and 17:00, depending on the personal wishes of individual interviewees. Only one interview was conducted in a day, except for one situation where three interviews were conducted in one day, which the researcher found excessive. All interviews took place at the interviewees' places of work, either in a private office or in a meeting room. At the end of each interview, permission to seek additional information was obtained. The shortest interview was 28 minutes and the longest was 72 minutes. The 55 interviews totalled 2564 minutes.

The interviews were thoroughly transcribed with notes and comments written with the transcriptions. Each interview was then read several times with margin notes and initial coding based upon the research questions and additional categories that arose from the data. Memos were recorded for preparation before each interview and after the interviews in order to reflect upon the experience and make verbal comments on the information arriving from the data. In the notes, the researcher also tried to portray the environment of the interviewee, i.e., clothing and overall appearance, body language, possible nervousness or resentment towards the topic and visible interest or joy or even anger. During the interviews, the researcher listened carefully to the tone of voice, and how interviewees showed their feelings, and tried to understand the meaning of their words and reflect upon these in the notes.

Each interview was then analysed further by reading the transcribed texts repeatedly. Open coding was used to keep an open mind towards the data and identify new themes and categories (Esterberg, 2002, p. 159). The interviews were read line by line and then codes were assigned to the text that captured the experience and perceptions of the interviewees, using different colours to

highlight different segments and adding notes on the side (see examples in Appendix G and H). To manage such a large amount of data, the interviews were explored and compared in groups, by job title or responsibilities across cases, by group of interviewees within one case and, by interviewees belonging to either the first or second corroborative group, either *per se* within each group, or in comparison to the first group of six organizations. Once the initial coding had been conducted, the focus became the main themes that had been identified through the open coding (Esterberg, 2002, p. 160).

The following three themes were identified from the start: (1) how records professionals collaborated with training managers or human resource managers on PKR, (2) how the current status of personal knowledge registration was experienced by the interviewees and for what reasons, and (3) in what way personal knowledge was made accessible, and used. A fourth theme was added that turned out to have more weight than the theme of the financial benefits of PKR, which had been expected to be one of the main themes of the thesis. This new theme was (4) how EPS, and the simultaneous advent of GDPR, impacted the need and usefulness of personal knowledge registration.

It may be postulated that additional categories can be considered the emerging hypotheses of this thesis and plausible explanations for PKR challenges. These are: The responsibility for registration, inner-drive for offering or attending education and training, limited use of social media for PKR, lack of respect towards records professionals, the risk of academic snobbery due to open PKR, bottleneck syndrome in EPS implementation, and lack of time and money for highlighting PKR in accordance with general strategic intentions of being a knowledge organization, which were found during the analysis of the data. After the main categories had been identified the interrelationship between these categories, called axial coding (Creswell, 2013) were explored (see example in Appendix I). Themes and categories were then drawn on A3 and A1 sized paper in order paint an interconnected picture for the researcher. Examples of these categories and pictures were discussed with the research supervisor and committee members in order deliberate on different angles of the analysis (see example in Appendix J).

This method allowed for the establishment of patterns within cases and between different cases and groups of cases. It also allowed for discovering correspondence between categories initiated by the research questions and new ones that appeared from the data (Bogdan & Biklen, 2003). Slowly, the data collection became more organized and accurate and the analysis became more focused on each theme or category as it progressed through a within-case analysis to analyse what constituted each case, and then a cross-case analysis (Corbin & Strauss, 2008; Creswell, 2013; Yin, 2008).

3.4.2 Analysis of documentary material

Discourse analysts are interested in the content, function and organization of texts of any form. All discourse is occasioned in that it does not occur in a vacuum. Discourse is a social practice, constructed from particular interpretative resources, and designed for a particular context (Gill, 2000, p. 186). Prior (2011) argues that a document may firstly be analysed from what is written in it and or how it came to be. Secondly, the document should be looked at according to its use and function, i.e., how is it used as a purposeful resource by human actors to attain certain ends and how documents function in and have impact on social interaction. A discourse may be manipulative, it may contain commands or instructions, and it may hold power. It is, therefore, important not only to look at the content *per se* but also to consider the social setting of the document presenting the discourse, how it is used and, by whom and how it may influence interactions within an organization (Potter, 1996b). Strictly speaking, there is no one correct way of approaching the study of texts and many different styles lay claim to the title of discourse analysis (Gill, 2000, p. 172). Discourse analysis was used as a method on documentary material (Wetherell, 2001; Gee, 2014). The analysis requires that documents are examined and interpreted in order to elicit meaning, gain understanding, and develop empirical knowledge (Corbin & Strauss, 2008). The empirical analysis consisted of systematically reading the documents (Wetherell, 2001).

The analysis of the documentary material was interlinked with the analysis of the interviews. The purpose of discourse analysis in this research was to interpret the text at hand, and to better ensure the validity and reliability of the findings (Golafshani, 2003). Potter (1996a) argues for having ways to assess the reliability and validity of discourse analysis. One way is to use deviant case analysis where cases are examined in detail to identify those that go against existing patterns. Another is by examining the participants' understandings, by referring to analysed discourse in interviews and comparing reactions and responses to the discourse. Presenting the material being analysed for the reader to make an individual evaluation is the most important way to check validity (see further in Haraldsdóttir et al., 2018 and Haraldsdóttir, Paper IV). By using discourse analysis, the researcher had the opportunity to compare written statements, public policies, commentaries and evaluations of an organization against the social realities of the employees within that particular organization. The social realities are found in the actual words, experiences and values that are expressed in the written discourse and in the employees' interviews (Esterberg, 2002, p. 123).

To understand how PKR was used in the organizations, internal documents such as training strategies, and in their absence, HR strategies, were examined

(see Paper II). Internal documentary material and information available on organizational websites, were examined as supportive material (Gee, 2014). Studying the documents allowed identifying written strategic intentions, searching for patterns in the texts and to discover possible silences. These intentions, patterns or silences were interpreted by interviewees to how the organizations fulfilled their intentions regarding PKR (Wetherell, 2001).

The EPS was analysed in order to identify how documentation and registration of evidence were formulated in the text (see Paper III). Studying the documents allowed for the identification of written requirements of the standard. Also, for the comparison of the expectations, perceptions and experiences of the interviewees to the discourse in the EPS and to what extent the standard was functioning in the organizations according to the interviewees. Additionally, a total of 21 reviews that stakeholders had sent to the parliament for open discussion on the EPS were examined for corroborative purposes. The purpose of the analysis was to better test whether the perceptions of the interviewees in the participating organizations were mirrored in the textual discourse in and around the EPS (Haraldsdottir & Gunnlaugsdottir, Paper III).

Evaluations and verdicts from the Knowledge Company of the Year award were examined (Haraldsdottir, Paper IV). The verdicts from the award-winning organizations were studied in a similar manner as strategic documents, focusing on variability in the evaluations and consistency in the texts in regard to if, and in what manner, PKR was addressed, how the verdicts were interpreted by interviewees, and to what extent the organizations fulfilled their award evaluations.

In the process, some documents were easily obtainable from for example organizational websites, while others were more difficult to get. It was not possible to gain access to all the documents that were of interest for this research and, in some cases, documents had changed during the time period of the research. The documents were helpful in a number of ways. First, and most importantly, they were used as corroborative information that was compatible with the interviews and participant observations. They were also useful for tracing the history of the organizations and statements made by key informants in the organizations, such as HR and training managers. Third, the documents were helpful in counteracting some biases from the interviews.

3.4.3 Participant observations

Participant observations comprise the researchers entering the field of study, observing the participants in their settings and documenting their behaviours, practices and interactions (Creswell, 2013). It is a research method that enables the researcher to systematically observe and record behaviours, actions and

interactions of people (Hennink et al., 2011, p. 170). Observations simultaneously involve listening to the actual words of informants and watching their interactions while asking questions. The researcher needs to decide what to observe, what to ask and how to record the observation. As mentioned earlier in this thesis, there may be a difference between what people say they do, and what they actually do when using PKR for registering, searching or categorizing the knowledge of employees. Participant observations are very useful when trying to understand how people behave within their own social circumstances and when identifying their actions in a particular setting, how their theories-in-use are in reality as described by (Argyris & Schön, 1978). The idea is to identify discrepancies between what people say and what they actually do (Hennink et al., 2011, p. 173). In this research the participant observations were used to provide supplementary data for the other research methods, adding important information that could either confirm what had been expressed in an interview or written in documentary materials, or make room for a new viewpoint that had not been covered by the other methods.

The participant observations were particularly useful in comprehending the usability of the knowledge registration platforms, i.e., what sort of databases were in use. The researcher had the possibility to see the systems being used and observing their users. It was also an opportunity to witness any pitfalls or hindrances in the systems, for example regarding what sort of information was entered into the systems, and what reasons participants gave for entering particular information and not some other. In the participant observations conducted for this research, the participants gave their consent for the observation beforehand, usually as part of an interview. At this point, the topic of the research and reasons for the observation had already been explained to the interviewees. These observations were recorded and reflected upon verbally in a second recording. When possible, work procedures and methods regarding the registration of knowledge were observed while asking questions regarding particular work-related objects or actions.

During the research process several events were attended in order to capture the professional environment of the research. These events included ones held by the Icelandic Records Management Association (IRMA) and the Icelandic Association of Economists and Business Graduates, where the Knowledge Company of the Year award is presented. Other social and professional gatherings, such as at two forums for knowledge networking for experts, academics and professionals; the Association of HR managers in Iceland; and the Confederation of Icelandic Enterprises were also observed. These participant observations, which mainly involved social participation, listening and observing while taking notes, functioned as a way to better understand how different professionals addressed the topic of the personal knowledge of

employees, or information management in general among their peers and to establish a network for further research.

3.5 Ethical issues, reflectivity and the validity of the research

Principles of ethical conduct, which were initially developed for medical science, are used for all types of research, including qualitative studies (Hennink et al., 2011). In the *Belmont Report* (1979), published by the office for Human Research Protections three core principles are identified for ethical studies: respect for persons, i.e., the welfare of the participants should always take precedence over the interests of science; beneficence, which means to strive to maximize the benefits of the research and minimize potential risks; and justice, meaning ensuring that research procedures are administered in a fair manner. The following considerations should also be included in research: informed consent, self-determination, minimization of harm, anonymity and confidentiality. Principles and guidelines are the foundation of a code of ethics, but ethical conduct ultimately depends on the individual researcher (Neuman, 2011). Ethical codes formalize professional standards for the researcher who needs to consult with her own conscience before, during and after research. Since the relationship between the researcher and the research participants may involve an imbalance of power, building of trust is of the utmost importance in securing prior voluntary consent.

A brief narrative of the background of the researcher is useful in order to explain her standpoint. The researcher worked for the Department of Continuing Education at the University of Iceland from 2005 to 2015. Her projects concerned the coordination of training and development for targeted groups of employees, as well as tailored programmes for managers. The social network built in that period gave the impression that various professionals in organizations were trying as hard as they could to register the information they had on the educational activities of their employees to have an overview. Registrations were mostly focused on activities that occurred in-house, while people found it more difficult to cover the educational and training activities that occurred outside of the workplace. The researcher has also worked at the University of Iceland since 2006, teaching part-time within the faculty of information science, and in short courses within the Department of Continuing Education on, for example the implementation of EPS in organizations.

Familiarity with the research topic can be an advantage for the researcher. It may help to have former knowledge of the organizations being studied and their business sectors, and a connection to a variety of employees, some of whom acted as gatekeepers for this research, helping to open doors. On the other hand, the researcher needs to be reflective in taking her own beliefs, experience and

values into account (Esterberg, 2002). The position of the researcher in relation to the organizations or individuals under study may impact the research process and the analytic stance (Berger, 2015). In qualitative research the focus of objectivity is less obscure since the researcher becomes a tool in the research process (Creswell, 2013; Johannesson, 2006).

Still, Merriam (2009) explains how qualitative studies can be limited by the sensitivity and integrity of the researcher as the primary instrument of data collection and analysis. The researcher always strives to be as objective as possible and not to presume to know all the questions and answers beforehand. Consequently, researchers need to focus on knowing themselves and their sensitivities to better understand the role of the self in the creation of knowledge and carefully monitor the possible impact of their biases, beliefs, and personal experiences on the research (Berger, 2015). For that reason, and in line with grounded research the theory is generated during the research process and from the data being collected. Plausible hypotheses and concepts were worked out in the course of conducting the research and from the analysis of gathered data (Moustakas, 1994).

As pointed out by Esterberg (2002, p. 16), the writings of researchers are not made up; they are rooted in the actual lives of social actors. Still, the writings are interpretations of what the researchers think that their research subjects are doing or saying. Furthermore, an ethical researcher does not abuse or humiliate a participant or cause him or her any harm by proceeding with the research. According to Neuman, social research can harm a research participant physically, psychologically, legally and economically, affecting a person's career or income (Neuman, 2011, p. 145). Methodological expectations and guidelines are always followed and themes and categories from the findings correctly explained and interpreted from the data analysis (Taylor & Bogdan, 1998).

Qualitative research methods are interpretative and built on the notion that life is socially built (Bogdan & Biklen, 2003). The aim of research is, according to Hammersley and Atkinson, to produce true accounts of social phenomena (Atkinson & Hammersley, 2007). The objective is to conduct the research without being influenced by previous assumptions, fully respect the individuals involved, and not to damage the field for other possible research in the future. The researcher needs to be able to work impartially and to make sure that the informants from the field are not harmed in any way by her presence.

The paradigms of qualitative research and the research methods may also help the researcher in finding ways, guided by chosen methods. While the researcher may have an opinion on the subject being studied, or even some idea of the right answers to own questions, writing, and recording, notes, repeatedly

reviewing the data gathering, and analysis, and seeking peer consultation may help correct some biases. It may also be helpful for the validity of the research to get a distance from the data for a while and return back some time after the original analysis, as purposively done in this research. Time away offers an opportunity to view the same material in a new manner, add new information when needed, and identify where one's own experience or expectations interfered in the analysis. In peer consultation, colleagues and supervisors are helpful in offering feedback to questions, interview guides, identification of themes or uncertainties raised in the analytic process of the researcher (Berger, 2015).

The use of triangulation, as done in this study, adds to the validity of the analysis. This is done by applying different research methods to the research topic including semi-structured interviews, documentary analysis and participant observations. In addition, by using divergent ways such as purposive sampling and snowball sampling, as well as including both private and public organizations, from different business sectors, the limitations of each individual research method, or individual case, are largely taken out of play. Together the methods and the number and variety of cases supply a more inclusive picture of reality (Esterberg, 2002). Ultimately, the goal of the researcher is to act as an interface between the reality and the reader of the research results.

The use of interviews brings up ethical issues *per se*. Interviewees may be unaware of, or unconcerned, about protecting their privacy or other rights. Great care was taken while gathering and analysing data for this study. The interviewees gave their informed consent, recorded on the tape-recorder in the beginning of the interview after they were given clear information stating that they could withdraw from the research at any time. The aim of the research was shortly explained at the start of each interview. This entailed the researcher explaining that their personal information would not be revealed in the results and that questions were directed at their work environment and work related experience, not their private lives.

Anonymity protects the identity of specific individuals or settings from being known. The risk of revealing interviewees' identities was significant, in particular in the case of the award-winners (Haraldsdottir, Paper IV). Those had all been publicly associated with the award in the Icelandic media and elsewhere. It was anticipated that sensitive information could be revealed during the interviews in all cases as questions were asked about the interviewees' superiors and colleagues and their experience of support, successes and failures in PKR. It was appropriate to anonymize all individuals, and their workplaces as thoroughly as possible, as the study took place in a small society. Pseudonyms were used by either referring to the job title or simply

“interviewee” and all of the organizations were assigned a letter of the alphabet, as described earlier, to ensure that they could not be identified in the findings of the thesis (Table 1). Handling all information with strict confidence in order not to reveal the identity of the individuals or the organizations involved during the data collection was strongly emphasized (Esterberg, 2002; Kvale, 1996).

3.6 Limitation of the research

From the beginning of this research it was clear that the setting was going to be both a strength and a limitation. This research was conducted in Iceland and included 18 Icelandic organizations. The small size of the Icelandic community, and perhaps the cohesion of a small society when it comes to assisting a local researcher, as well as the keen interest of the gatekeepers in the research topic, helped in opening doors. Still, the location in which the research took place provided a perhaps one-sided, all-Icelandic, picture of the current status of PKR in organizational environment since it does not include a comparison between different countries or different cultures.

In the same manner, one could argue that the fact that the participating organizations were anonymous and given pseudonyms, limits the research. This decision, which took place at the very start of the research process, may have limited the value of the research findings. Many of the participating organizations are well known, both in Iceland and abroad, and considered prosperous in their particular sectors. Some of them have an international reputation as qualified and successful business partners.

Naming the organizations could have given the research added vigour in the scientific literature of information management. In comparison, if someone was studying Icelandic musicians, and their findings revealed both scholarly and practical implications for other musicians in the same genre, either in Iceland or elsewhere, knowing the real names of the musicians, or their bands, might advance the value of the findings. Hypothetically speaking, knowing that the participants of a study included Björk, Kaleo and Of Mice & Men¹, and not simply musicians A, B and C, might strengthen the reliability and value of the findings, also because the results could be traced back to their origins.

However, if it had been decided to reveal the names of the organizations taking part in this research process, they might not have participated at all. And even if they had agreed to participate, some of the interviewees might not have agreed to be interviewed.

¹ For further information on the Icelandic musicians, see <http://bjork.com>, <http://www.officialkaleo.com/> and <https://ofmiceandmenofficial.com/>

Again, as the research took place in Iceland with a large majority of the interviews, and the documentary material, being in Icelandic, some translation was necessary. Hennink et al. (2011) mention two approaches to translating a recorded interview either by, producing a verbatim transcript in the original language and then transcribing it again in the language of the researcher or by transcribing the interview one segment at the time directly into the language of the researcher, which they claim is more common. The former approach was used in this study, in particular when an important and informative interview took place in another language. This interview was at first transcribed in the original language (which the researcher understands very well), then translated and transcribed in Icelandic. Then a third translation took place from Icelandic to English. Quotes from this interview were used in one of the scientific papers and in a conference paper (Haraldsdottir, 2016; Haraldsdottir et al., 2018). This process of translation involved the risk of losing the style of the original language. However, if not translated the original transcription would have remained useless for the thesis.

The strategic documents, knowledge award verdicts and comments from stakeholders relating to EPS, that were sent to the parliament, were all in Icelandic and were translated for the thesis. The EPS and GDPR, was available in Icelandic and English so they were not translated by the researcher. The translation process was complex. The strategic documents and the award verdicts had many of the same Icelandic terms, but the use of those terms could have different meaning depending on the contexts in which they were used. Holmes (1988) stated that what the translator strives for is finding counterparts or matchings, i.e., words or segments of a phrase that are closely akin, though never truly equivalent, to the functions in the language of the translation (Holmes, 1988, p. 54). The translator, in this case the researcher, made every effort to compare and combine the use of terms to make the translation as equivalent as possible to the original texts (Appendix K).

Similarly, the length of the research period, which lasted eight years, included certain limitations and strengths. It is commonly known that information systems and social media, including those that affect PKR, develop quickly, and there was a certain risk that the data gathered in the beginning of the research period, might be outdated at the end of it. On the other hand, the time period gave the researcher a certain opportunity for longitudinal observations. As the first organizations were revisited at a later stage in the research process to confirm or add to prior information the research material did not run out of date and the reliability of the gathered data was enhanced.

The development of EPS from being a voluntary standard in 2012, through its discussion and debate in the parliament in 2017, and until it was made into

law in January 2018, added a new angle to the research process. Without the amendments no. 54/2017 of the Act on Equal Status and Equal Rights of Women and Men No. 10/2008 the third paper would not have come to existence.

Furthermore, knowledge management is defined by Jashapara (2011) as the effective learning processes associated with exploration, exploitation and sharing of human knowledge ... that use appropriate technology and cultural environments to enhance an organization's intellectual capital and performance (p. 14).

With that quotation in mind, it is worth mentioning that this research is limited to the personal knowledge of employees registered into a directory at their own or their organizations' request. This directory is then placed into a collaborative information system, whether a simple database, a HRMS or on some social media platform. It is not a research that analyses knowledge management in general, including all the explicit organizational processes, best practices, tools, tasks and guidelines that may be registered in a repository of documents, records, forms, diagrams and processes situated in the various hardware and software within an organization, nor is the focus on the management of customer relations or networking outside of the organization.

Davenport and Prusak (1998) once claimed that informational bricks only became completed and knowable when put into an understandable context which can be verified and recalled from human experience. This means that registered information only becomes knowledge when it meets a need. In the case of PKR this need may include helping with a project, getting a different view of an assignment or solving a problem. In line with this, it may be argued that information needs human interpretation through the interaction of the knowledge seeker with the knowledge owner to become knowledge (Ferne et al., 2003). The focus of this thesis was therefore limited to the registration of the knowledge of employees and its access and use for the benefit of the employees and their workplaces.

4 Collection of papers

Before presenting the papers, a brief summary of each paper is provided along with a description of how each paper relates to the objectives and research questions of this thesis.

The first paper is titled “The Missing Link in Information and Records Management: Personal Knowledge Registration” and was published in *Records Management Journal* (Haraldsdottir & Gunnlaugsdottir, 2018). It sheds light on the interrelationship between records professionals, HR and training professionals, as well as the views of management and quality managers on collaborative PKR. It aims to raise awareness of records professionals as specialists in information management, including personal knowledge. The objective of this paper is in accordance with objective A in Chapter 1 of this dissertation, which was to examine the collaborative aspects of PKR and the roles and responsibilities of different facilitators. The paper contributes to answering the first research question on the manner in which records professionals collaborated with other professionals, such as educational or human resource managers, on PKR.

The second paper is titled “Registration, Access and Use of Personal Knowledge in Organizations” and was published in the *International Journal of Information Management* (Haraldsdottir et al., 2018). The emphasis of the paper is on how different information management professionals access and use PKR. In it, strategic intentions for PKR are examined along with its collaborative tasks and qualities, which is reflected in objectives B in Chapter 1 of this thesis. The focus is on how PKR works and on examining how information on education, training and the skills of employees is managed in organizations. The second research question on the current status of personal knowledge registration in Icelandic organizations was used for this paper, as were aspects of the fourth research question of how the registration of personal knowledge was made accessible and usable, if at all, in the six participating organizations under study in the paper.

The third paper, titled “Complexity in Information Management: Personal Knowledge Registration in a Regulatory Environment”, was submitted to the *International Journal of Information Management* in September of 2018. The paper is on organizational preparations for EPS due to new auditing and legal requirements while balancing different, and perhaps opposing, registration and protection obligations regarding the personal knowledge of employees. The focus of this paper interrelates to objective C in Chapter 1 of this thesis, which was to examine how the Equal Pay Standard (Icelandic Standards, 2012) and

the Act on Equal Status and Equal Rights of Women and Men No. 10/2008 with amendments no. 54/2017, along with GDPR affected personal knowledge registration in organizations. The third research question pointed at the manner in which the EPS and GDPR impacted the registration, access and use of personal knowledge registration.

The fourth, and final, paper is titled “Knowledge Registration, Access and Use in Organizations: Are the Award-Winners Doing Better?” The paper was submitted to *Information & Organization* in November of 2018. It focuses on the criteria of the Knowledge Company of the Year award. It discusses, furthermore, whether winning a knowledge award entailed a more comprehensive overview of employees’ knowledge residing within an organization. The reasons the organizations had for their knowledge registration were also under study, as well as challenges for their registration, access and use. Whether the organizations experienced a financial gain through the registration of personal knowledge was also examined. This final paper connects to objective D in Chapter 1, which was to analyse in what manner organizations that had received a Knowledge Company of the Year award in Iceland were registering, accessing and using PKR in comparison to other organizations. The fourth research question of by what means, if any, did the knowledge award winners differ from organizations that had not won the award and for what reasons was central in this paper.

Paper I

The missing link in information and records management: personal knowledge registration

Personal
knowledge
registration

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Abstract

Purpose – The purpose of this paper is to present the findings of a research on collaborative personal knowledge registration (PKR). It seeks to explain the interrelationship between records professionals and human resource (HR) and training professionals, as well as the views of management and quality managers on collaborative PKR. It aims to raise awareness of records professionals as specialists in information management, including personal knowledge.

Design/methodology/approach – Qualitative methodology was used to conduct the research. It was a multiple-case study, covering 12 organizations in Iceland. In these organizations, 32 professionals were interviewed. The research sought to understand how PKR was being facilitated, as well as how personal knowledge was made accessible and usable for employees.

Findings – The organizations had not been as successful as anticipated in PKR. The role and responsibility of records professionals was limited in the PKR process. Different professionals seemed unaware of the possible synergy effect of collaborative PKR.

Originality/value – There is a lack of studies that explore the juxtaposition and collaboration of records professionals and HR and training professionals in organizations. The aim of this research was to bridge this gap. Its originality lies in how it approaches diverse professions and their collaborative PKR effort. This research provides a valuable practical and theoretical contribution to a rapidly growing interdisciplinary field of information and records management. It can lay the foundation for further research into the field.

Keywords Collaboration, Iceland, Information and records management, Personal knowledge registration, Records professionals

Paper type Research paper

Introduction

In an organization of 200-300 employees, it is possible for people to know one another “well enough to have a reliable grasp of collective organizational knowledge” but beyond this size, it becomes impossible (Davenport and Prusak, 1998, pp. 17-18). But, is a *reliable grasp* reliable enough?

Little is known about how information on employees’ personal knowledge, and their participation in training and development programs, is registered. It was, therefore, decided to study the current status of personal knowledge registration (PKR) in Icelandic organizations and to understand how this registration is accessed, used, and by whom. Furthermore, it was of interest to examine how records professionals and human resource (HR) and training professionals collaborated on PKR. Likewise, to study the role and responsibility of these records professionals in the registration process.

It may be argued that PKR has evolved from the disciplines of knowledge management (KM) and human resource management (HRM) because the registration of employees’ education and training originates in HRM theories on organizational performance, progress



and prospects. [Becker and Gerhart \(1996\)](#) linked this strategic and economically significant aspect of HRM to value creation in their comparison of high performance work systems. In it, training was categorized, measured and registered by the job descriptions and responsibilities of different employees. [Delaney and Huselid \(1996, p. 949\)](#) acknowledged the value of HRM practices, and systems of such practices, including the registration of extensive employee training into HRM systems. [Hislop \(2003\)](#) wrote that KM and HRM could be linked by focusing on human and social factors, such as how employees' levels of commitment influence the overall performance of organizations. According to [Saffady \(2016\)](#), KM incorporates the creation, storage, arrangement, retrieval and transfer of organizational knowledge. He maintains that records management (RM) operations and concepts promote KM and that "recorded information is an important embodiment of an organization's intellectual capital" ([Saffady, 2016, p. 34](#)). KM theories, in particular [Nonaka and Takeuchi \(1995\)](#) studies on the knowledge creating company, highlighted individual knowledge creation – and sharing – as a catalyst for organizational learning.

Many Icelandic organizations put an emphasis on knowledge sharing and conduct elaborate training programs for their employees. These programs are coordinated by the HR divisions and partially taught by employees themselves. Yet, a large part of all training in Icelandic organizations is conducted by external instructors. At times, the knowledge or expertise needed for a program exists within the organization, without the HR or training manager being aware of it. The first author of this paper has a long experience as a project manager in the continuing educational sector. Her perception is that the registration of employees' personal knowledge in Icelandic organizations is incoherent. Organizations were outsourcing their training needs to continuing education services, and the demand for external instructors was high. In two organizations included in this research, the training managers had requested specific programs from the continuing education service, unaware of the fact that the instructors in charge were employees of their own organizations. These training managers had no coherent database, intranet nor corporate social media where employees' personal knowledge was adequately registered.

A discourse of knowledge registration or the registration of intellectual capital among HR and training managers, the continuing educational sector and employees themselves has been ongoing in Iceland for a while. In it, the purpose of registration has been to gain better use of valuable knowledge, such as for in-house training, building interdisciplinary teams and for the employees' career development. The term personal knowledge registration and the abbreviation PKR is a consequence thereof.

Three elements affect an individual's inclination to share knowledge; positive attitude toward sharing, perceived benefits of sharing and self-efficiency of knowledge sharing ([Henttonen et al., 2016](#)). The fourth element could be added which is the opportunity and the platform to share.

The term personal knowledge (PK) is comparable to the information a person puts in a curriculum vitae (CV). It can also be associated with the creation of corporate knowledge directories (e.g. company yellow pages) and expert networks ([Andreeva and Kianto, 2012](#)). PK covers employees' education; language, information technology, writing or mentoring skills; participation in courses and conferences; teaching experience, former work experience and communication skills. In PKR, these elements constitute a set of information that the individual, in co-operation with his/her workplace, selects and considers of collaborative use while working for the organization. PKR refers to the registration process of the selected information into a centrally based database, an intranet website or a corporate social medium. The intention of PKR is to create an overview of accumulated knowledge embedded in the employees ([Macguire, 2005; Hase and Galt, 2011](#)).

The findings of this research revealed that Icelandic organizations were only randomly registering PK. Employees access to registrations was usually restricted to their individual profiles, thus limiting their usability. This paper seeks to understand why PKR was perceived unsuccessful and for what reasons records professionals seemed only partially involved in the PKR process.

This paper is organized into eight main sections. The first four review the role and responsibilities of records professionals, technological influences on this role and the organizational cooperation on PKR. Methodology is discussed in Section 5 and Section 6 presents the findings. Section 7 covers a discussion and a general summary and the paper closes with some conclusions.

A developing profession

RM is “the efficient and systematic control of the creation, receipt, maintenance, use, and disposition of records, including processes for capturing and maintaining evidence of and information about business activities and transactions in the form of records” (ISO 15489-1, 2016). Records professionals cooperate with IT divisions on the requirements for records management systems, implement and administer systems and monitor their use. Records professionals also coordinate access to records, both internally and from outside the organization. They develop a records strategy and a storage plan for short- and long-term retention of both physical records and digital information, such as e-mails, websites, cloud services, wikis, blogs and social media (Saffady, 2016; Franks, 2013). To do this, they must balance the requirements of business confidentiality, privacy and public access (Gunnlaugsdottir, 2015).

The modern work environment is found anywhere and at any time. Digital natives enter the labor market, while experienced and specialized employees retire (Evans *et al.*, 2014; Kallberg, 2013; Ball and Gotsill, 2011). Records professionals are faced with complex responsibilities (Foscarini, 2012; Goldsmith *et al.*, 2012). To survive in this environment, records professionals must deal with technological changes, command various devices, service requirements, quality standards and legal demands (Gunnlaugsdottir, 2012; Kallberg, 2013; Lappan, 2010; McLeod, 2012a).

Registration of personal knowledge

Information and records management interrelates with KM, not only the habitual task of handling documents and papers in the office, but as an overall systematization of information (Penn, 1994; Palmer, 2002; Gunnlaugsdottir, 2003). Furthermore, KM and RM are academically intertwined where codification and classification of knowledge into appropriate IT systems is debated (Davenport and Prusak, 1998; Hansen *et al.*, 1999; Slagter, 2007; Jashapara, 2011).

Despite having the required skills, and being responsible for most other data registration within an organization, records professionals are only marginally involved in PKR. The cause may be that records professionals are simply seen as managers of records systems, which are designed for the capture, use, search, retrieval, retention and disposal of corporate information and “not as service oriented work systems for knowledge workers” (Goldsmith *et al.*, 2012, p. 153).

On participation, access and use

Having a database is one thing, but involving users is another. The aim of computer-based system designers is “not the replacement of human beings with machines, but the development of socio-technical systems within which man-machine socio-technical

“partnership” is enabled” (Wilson, 1994, p. 344). A central concept of computer-supported cooperative work (CSCW) is the notion to humanize the system (Ackerman *et al.*, 2013). This is achieved by the active participation of key stakeholders within the organization, their socialization and involvement in the creation and development of the system. It is, therefore, important when developing and implementing a system, to give credit to the organizational culture to “take a much more realistic view of organizational life” and to “be able to develop strategies that facilitate rather than constrain” the systemization of information (Oliver and Foscarini, 2014, p. 25). The extent of access and use is a managerial decision which depends on information security, which again rests on the invisible backstage efforts of employees who build and maintain their own platform (Ackerman *et al.*, 2013).

A project dies if it does not proceed in ways that enable the involved partners to see their interest in it, become enthusiastic and carry the project through (Bradley and McDonald, 2011; Damodaran and Olphert, 2000; Morsing *et al.*, 1999). CSCW theories have recently focused on social practices involved in knowledge sharing, as well as the actual systems that might support this sharing of knowledge (Ackerman *et al.*, 2013). There is an increasing recognition of individual roles in knowledge management processes, and a greater interest in the people perspective regarding knowledge (Stenmark, 2001). Hence, the ability to allocate and effectively utilize organizational knowledge, relies substantially on its employees, who actually create, register, share and use knowledge (Andreeva and Kianto, 2012; Henttonen *et al.*, 2016).

According to Franks (2013), records management 2.0 is “a space that people proactively *want* to use because doing so makes *their* life easier!” It is important for users to see their benefit in using the system but:

The paradox is that at the same time as records managers are struggling to get users to add even the merest and simplest of metadata from a predefined list, numerous Web 2.0 services are thriving thanks to their users’ seemingly insatiable desire to voluntarily categorize and tag the information of interest to them (Franks, 2013, p. 24).

Web 2.0 services have gradually entered the KM and information and records management literature, making it possible to socially share knowledge within organizations (Nonaka *et al.*, 2000; Panahi *et al.*, 2013; Mäkinen, 2013). Yammer, Facebook, LinkedIn, Wiki, Instagram and Twitter are used to improve organizational processes (Treem and Leonardi, 2012; Vuori and Okkonen, 2012; Mäkinen, 2013) and create collaborative systems (Bradley and McDonald, 2011; Morrice, 2013).

Records professionals in collaborative environments

The socio-technical environment is challenging the records profession. The goal is “to develop the appropriate strategies to manage [...] information as evidence for accountability purposes” (Oliver and Foscarini, 2014, p. 6). To survive, records professionals need to stop “defend[ing] their turf against information technology incomers” and work collaboratively toward the mutual objective of managing information in a way that encourages participation from all stakeholders without being constrained by function (Oliver and Foscarini, 2014, p. 15; Foscarini, 2010).

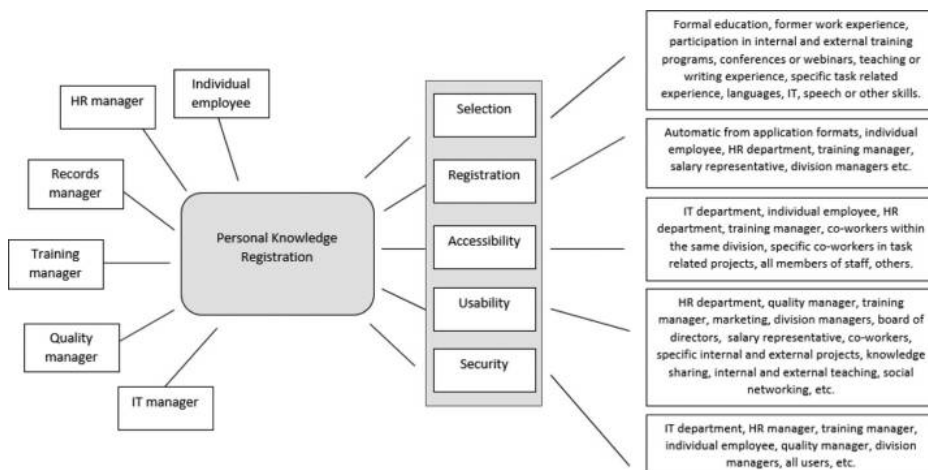
Key stakeholders of information include records professionals, knowledge workers and senior management (Goldsmith *et al.*, 2012). Records professionals “act[s] as *mediators* between the system developers, standards, and the system users” (Foscarini, 2010, p. 390). Knowledge workers “spend most of their time generating, applying or conveying knowledge” and “rely increasingly on RM systems to source corporate knowledge” (Goldsmith *et al.*, 2012, p. 154). These employees claim that the systems are too complex and

unattractive, too constraining and slow, which in turn hinders their general use (Gunnlaugsdottir, 2009; McLeod, 2012b).

Records professionals are adjacent to other professionals in organizations, such as HR, training, information technology (IT) and quality management professionals. Figure 1 shows a conceptual model of professional collaboration. It presents six possible facilitators of PKR and five key actions; selection, registration, access, use and security. Each action is further described on the right side of the model.

Figure 1 establishes PKR in the middle of different facilitators and their responsibilities. On the left-hand side are HR and training managers who are responsible for recruitment, professional development and training. IT professionals, lower left, are responsible for maintaining and securing IT systems, and quality managers for standardizing them. Other key stakeholders, employees, upper left, are responsible for maintaining the viability of the systems, being simultaneously producers and consumers. All facilitators may have a role in each of the five actions, the selection, registration, accessibility, usability and security of information (mid-figure). The expertise of the records professional is, however, of important use for the whole process. The particular role of records professionals is further explained in Figure 2.

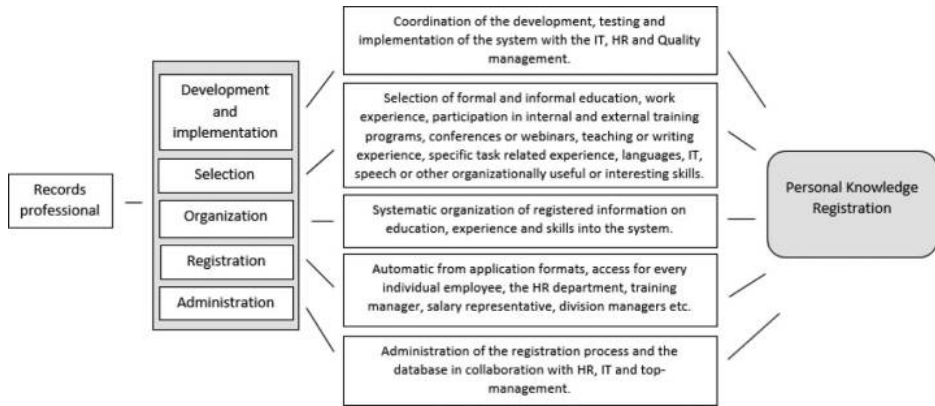
Figure 2, which shows records professionals providing strategic guidance at different stages of the process, is a continuation of Figure 1. Each stage is demonstrated on the left side of Figure 2. From the first steps in the developing phase, through implementation and toward administration, the selection, organization and registration of PK benefits from the expertise of records professionals in classification, indexing and content analysis (Franks, 2013; Saffady, 2016). Each action of the records professional is further described on the right side of Figure 2 and interconnected to PKR. In an increasingly digital environment, information is moving around in a variety of short-term databases. The organizational memory needs systematic registration of information for future use (Gunnlaugsdottir, 2003). To avoid “becoming an extinct species”, and “risk appearing increasingly irrelevant”, records professionals need to prove that their knowledge is appropriate and relevant (Oliver and Foscarini, 2014, p. 4 and p.15).



Source: Haraldsdottir (2016)

Figure 1. Organizational matrix

Figure 2.
The role and
responsibility of
records professionals



Methodology

The aim of this research was to provide an understanding of how different professionals collaborated on PKR, with focus on records professionals. It sought to answer the following research questions:

- RQ1.* What is the current status of PKR in Icelandic organizations?
- RQ2.* How do records professionals collaborate with other professionals, particularly HR and training professionals?
- RQ3.* What is the role and responsibility of records professionals in PKR?

The data collection took place during 2010-2012 and again during 2014-2016. Three organizations, A, B and C were studied during 2010-2012 to decide the scope of the research. At this point, the particular role and number of interviewees in each organization was determined. Then, preparation was made for further data collection in other organizations. In 2013, a thorough literature review took place, as well as an examination of internal documentary material and websites of the participating organizations to gain a more holistic view of the topic. During 2014-2016, data gathering was accomplished consisting of further nine organizations. Three were studied in detail, while six were studied for corroborative purposes. The first three organizations were revisited to verify former information. Data analysis was completed in 2016.

Qualitative methodology was used for conducting this research. It is well suited to obtaining data at the scene (Gorman and Clayton, 2005). Six organizations, named A, B, C, D, E and F, were studied in detail. Additional six organizations were selected as a corroborative interview group, named G, H, I, J, K and L. Open-ended interviews were used and interview guides were set up for different groups (Bogdan and Biklen, 2003; Kvale 1996). A hypothesis was developed during the research and from the analysis of the data (Moustakas, 1994).

This research was a multiple-case study (Silverman, 2013; Creswell, 2007; Merriam, 2009) containing 12 organizations where 32 interviews were conducted (See Tables I and II). The selection of the organizations and the interviewees was purposive in accordance with the needs of the study and the attributes that were considered likely to give informative findings for the research (Morse, 1991; Esterberg, 2002). Grounded theory was used as a method to analyze the interviews (Glaser and Strauss, 2012; Charmaz, 2006). Themes were sought in

In-depth analysis of interviews in six organizations							
	Private organizations			Public organizations			Total
	A	B	C	D	E	F	
Management*	1	1	1	1	1	1	6
HR manager	1	1	1**	1	1	1	6
Education and training manager	1	1	0	1	1	1***	5
Information and records manager	1	1	0	1	1	1	5
Quality manager	0	0	1	1	0	0	2
Employee working on quality control	0	0	0	0	1	0	1
							25
Corroborative analysis of interviews in six organizations							
	Private organizations			Public organizations			Total
	G	H	I	J	K	L	
HR manager	0	0	1	1****	0	0	2
Education and training manager	1	1	0	0	0	0	2
Information and records manager	0	0	0	1	1	1	3
							7
							TOTAL 32

Notes: *Interviewees with one of the following titles: head of department/division, Executive manager and Administrative Official; **An employee responsible for HR and education and training; ***an employee responsible for education and training and quality management; ****joint interview with HR manager and information and records manager

Table I.
The interviews. An overview

the data. They were coded and classified and indications found to merge the classification of the themes (Hennink *et al.*, 2011).

Interviewees were selected by systematically identifying employees with the same or similar position in each organization. Interviewees had the following responsibilities: management in various divisions, including IT; administration of in-house training; professional development of employees and HR strategies; implementation of international standards and quality strategies, and implementing and administering information and records systems. Table I gives an overview for the interviews.

The interviews were divided into two groups. First, an analysis of multiple interviews in organizations A-F, and second, a corroborative analysis in organizations G-L with one single interview in each organization. Both groups were divided evenly between the private and the public sector. The first group of six organizations was considered too narrow to paint a coherent picture for this research which led to a comparison with another group of six organizations. The corroborative group was chosen by using snowball sampling, so named because of the similarity to a snowball, which may begin small, but grows by accumulating additional snow (Neuman, 2006). Numerous interviewees from organizations A-F described limited success in implementing PKR while pointing repeatedly to organizations G-L which they had heard of or considered successful in PKR. As PKR had not been as effectively implemented and developed in organizations A-F as perhaps expected, it was decided to compare organizations A-F to G-L. The G-L group was thus defined by interviewees in organizations A-F and examined to find out whether it (G-L) had in fact been more successful in PKR than organizations A-F.

It was considered important to gain insight into the perspectives of different professionals. An advantage of using multiple interviewees was that information provided by one could be further validated by another (Neuman, 2011; Meyer, 2001). The topic was

Table II.
The organizations.
An overview

<i>In-depth analysis in the first group of six organizations</i>					
A	Financial private	B	Technology private	C	Industrial/ Consultancy private
Nearly 1,000 employees. Almost 800 users of EDRMS and eight employees in the information and records division	Over 1,000 in the beginning of the research. After major strategic changes, around 500 employees, 100 users of EDRMS. One records professional	Over 1,000 in the beginning of the research. After major strategic changes, around 500 employees, 100 users of EDRMS. One records professional	Totally, 300 employees 180 users of a new home-made RM system. No records professional. One quality manager in charge of records management	Over 250 employees. Most of them are users of EDRMS. Two employees in the information and records division	Industrial/energy public
					D
					Industrial/energy public
					E
				Nearly 200 employees and almost all users of EDRMS. Nine employees working on internal information and records matters and one records professional	Financial public
					F
					Surveillance public
					G
					Surveillance public
					H
					Industrial public
					I
					Industrial/energy public
					J
					Industrial/energy public
					K
					Industrial/energy public
					L
					Industrial public
<i>Corroborative interview group. One interview in each organization</i>					
G	Technology private	H	E-commerce private	I	Industrial/ Consultancy private
About 600 employees. No records professional. Interview with a training manager	Around 270 employees. No records professional. Interview with a training manager	Around 270 employees. No records professional. Interview with a training manager	About 350 employees. One records professional and an assistant for each division. Interview with the HR manager	Over 150 employees. One records professional. Joint interview with the HR manager and the records professional	Over 150 employees. One records professional. Joint interview with the HR manager and the records professional
					J
					Surveillance public
					K
					Industrial/energy public
					L
					Industrial public
					M
					Industrial public

examined from multiple perspectives, using several kinds of data and collecting it from various sources (Janesick, 1994; Kvale, 1996). The use of both purposive and snowball sampling, to select equally private and public organizations, from different business sectors, and by selecting different professional groups of knowledge workers, was intended to add to the reliability and validity of this research (Golafshani, 2003). The hope was to enhance the possibility of a holistic view and to ensure as authentic research as possible.

The participating organizations were selected because they operated in different business sectors (Statistics Iceland, 2016) such as finance, IT, energy, manufacturing, engineering, transport and telecommunication, and were at the forefront of their sectors. An overview of the organizations is presented in Table II.

It was important that the organizations selected were technically capable of implementing a functional database or social media for managing knowledge. It was also preferable that they had experience in implementing databases or social media for knowledge registering purposes, whether they were successful or not. The objective was to get a comprehensive picture of employees' actual usage of information systems for PKR, and to get a glimpse of the pitfalls and the success stories of their PKR use. The aim was to capture the perspectives of different participants and examine how and why their different meanings would shed a light on the topic of the research (Yin, 2014). The number of participants to recruit was guided by the theoretical principle saturation (Charmaz, 2006) and by the diversity in the information gained (Hennink *et al.*, 2011).

Iceland is a country of approximately 340,000 people. The risk of revealing the identity of the participants was considered higher than in larger communities. It was anticipated that sensitive information would be revealed during the interviews as questions were asked about the interviewees' work environment, their superiors and colleagues and their experience of support, work-habits, successes and failures. Thus, it was appropriate to disguise individuals and their places of work in all cases (Gorman and Clayton, 2005).

Findings

This research had three main research questions; on the current status of PKR in Icelandic organizations, on the collaboration of records professionals with other professionals at work and finally, on the role and responsibility of records professionals in PKR. The findings are intended to answer these questions.

Current status of personal knowledge registration

The findings indicate that the current status of knowledge registration in Icelandic organizations is generally inadequate, with only a few exceptions. In most organizations, different professionals had developed their own simple approach to gain the knowledge they needed, for the reason that "there is no magical system" as described by the HR manager in organization F. She maintained that the institution was not that large and employees were familiar with their co-workers and added that they relied more on experience than education, and used their personal network to gather information. Despite previous comments about experience and network, the HR manager added:

Still, I do not know much about the most recent members of our staff and a database on employees' personal knowledge might help, and also to get different reports in an easier manner. I just use Excel; I have a lot of Excel spreadsheets.

Excel seemed to be a popular tool to gather information on employees' PK. In organization C, a collaborative Excel document containing a list of employees' training participation had been kept on an open drive, accessible to all employees, but it was rarely updated and,

therefore, not considered reliable. In organizations A, B and F, Excel documents were kept on different managers' desktops or their personal drives, and not accessible to others. Five managers out of six from the A-F group mentioned Excel, saying that it was their way to stay on top of things. The exception was a manager in organization D who relied on his personal network after decades within the same company. He claimed that there had been a kind of PKR database in the past, which had been used for example to prevent knowledge gaps. He maintained that PKR was necessary especially during a generation change in organizations. PKR was furthermore, he stated, helpful when hiring employees, so that they got enough mentoring time with more experienced staff. Quality managers in organizations C and D agreed on the importance of PKR as a management tool to gather, read and measure the intellectual property of their organizations. They both said that an overview of necessary education, experience and skills of all employees was important to make the best use of internal knowledge, to put together inter-disciplinary teams and to answer various external inspections and internal issues. A manager in organization F, which did not have a PKR database, maintained, however, that using an Excel spreadsheet was the only possible way to summarize employees' education, work-related experience and skills in one place. He found it necessary to update his document regularly as he would otherwise lose a very necessary overview.

Furthermore, in the public organization J, the HR manager compared PKR matters to a "broken puzzle" as she and different division managers were registering various PK information into different databases. The reason was, according to her, that they had no central system, due to lack of funding. The databases (parts of older quality systems, one for each division) were accessible to those working on similar projects or within the same division. The HR manager repeatedly described her dream PKR scenario as a system where all PK was registered into one place, mostly accessible to all users, although some parts of the system would require limited access, such as information on employees' salary or health. Her dream involved an HRM system with the possibility of registering PKR. A manager in organization E had never even opened the existing database on employees' PK, or could not recall the last time, if ever, he had used it. He relied on memory as he had himself hired all his employees and knew how capable they were. All managers from group A-F, who used Excel for knowledge registration, were asked whether they perceived their registration useful for co-workers, such as in HR and training divisions. They agreed on the documents being useful, the idea of sharing them had simply never occurred to them.

Interviewees from the private organizations G, H and I differed from the first six organizations in group A-F. All had managers of HR and training while only one, organization I, had employed a records manager. In organizations G, H and I, much emphasis was put on gathering information regarding employees' formal and informal education and experience and much effort was put into PKR.

The HR manager in organization I maintained that it had taken "blood, sweat and tears" to register everything into the system:

I have thought a lot about ROI [return of investment]. It was hard to implement the system, but I am sure that there are both financial and qualitative benefits. The information from our database is standardized and we can quickly respond to our customers and send out proposals – in three languages!

She maintained that employees' knowledge was the most important sales product of the organization, and it had to be clear at all times that the sales team had access to correct and updated information regarding the education, skills and work-related experience.

The training manager in organization H agreed as he stated that using PKR contributed to strategic training in the organization:

We want our training to be linked to our organizational strategy and we want to manage it in accordance with our objectives. Education and training is not just something grasped out of the blue.

He had used Excel in “the old days” and had developed a simple spreadsheet for “training registration for dummies”. He was currently having technical problems regarding employees’ access to the system he was using, and said that he was getting annoyed with its service as the system needed certain adjustments. He stated that the point of implementing PKR, or “even an app”, was to offer open access to the registered information, to all employees. It was not intended for just to a small group of elite employees because “we all work in interdisciplinary teams and rely on the knowledge of each other”.

The training manager in organization G described the great value of PKR for his organization. He said that, in the technological environment that the organization was working in, the need to certify qualifications was inextricably linked to lowering operational costs for the organization. He said it was of the utmost importance to have an overview of the intellectual capital embedded in the employees. Having a functional PKR made it possible to foresee who and when individual employees needed to participate in continuing educational programs to fulfil internal and external demands. It was also necessary, he stated, to meet demands for being validated for proposals in international projects. The in-house PKR system was open to all employees and widely used to search for certain skills among employees. They also used an international database, for certain certificates, which was open for administrative access, while individual employees could only examine their own profiles. The interviewee in organization G maintained that when some of the older employees argued that certificates and registration thereof was unnecessary and were unwilling to participate, he would answer: “Would you ever go to a dentist that had never taken an examination but claimed to be really good at his job?”

To summarize, despite a positive experience of PKR in organizations G, H and I, other participating organizations were struggling to capture the PK embedded in their employees. In-house training was incoherently registered in five out of six organizations in the A-F group. In organization E, the HR manager had registered the latest degrees or diplomas into an Excel spreadsheet. She said that she would prefer to be able to “google for knowledge” but relied currently on sending e-mails to all employees when searching for particular skills among them. Participation in internal courses was not registered at the HR division in organization E, and members of staff were required to enter their own information on continuing education, work-related skills or participation in conferences into a database on the intranet. Their access was restricted to their own personal profile. This affected their interest negatively as they saw little purpose in using the database. Two private organizations, A and B, had some overview of their employees’ participation in internal courses, but little to none on external courses. Manual registrations, based on internal participation lists, were sometimes missing in organization B due to other ad-hoc projects in the HR division. The reasons for inadequate registration of PK are complex, as there are a few indications which may explain the current status.

In three organizations, D, E and F, registration of PK, other than formal degree, was dependent on the employees’ contribution to the database as there was no central registration service. Furthermore, each employee had solely access to his/her own personal profile, and therefore saw little purpose in entering any information. The gain of registering personal knowledge was invisible to interviewees in D, E and F as they could neither see

their colleagues' profiles nor make use of their own profile as for example for a CV. Neither HR nor the training and quality representative in organization F had any registration of employees' participation in in-house training. Both expressed hope to introduce PKR, but shared their concerns that the employees might find the registration process too intrusive. The training and quality representative in organization F said that her organization used an internal phone book on the intranet to find the right co-worker when needed, by looking up by divisions or specific projects. Still, the phone book did not have a search engine, which was unfortunate, especially as staff members would be replaced in the near future, due to generation changes.

In organizations B, C and F, registration of PK, gained from external courses, was dependent on how professionals from HR and/or training managed to gather receipts from the accounting department, or on the employees themselves delivering the receipts. Gathering of receipts or certificates was incoherent and untrustworthy. In organizations A, D and E, employees could write their own information regarding external courses into an existing database. But again, the purpose of registration was unclear to employees, access was restricted to their own personal profile and the usefulness of the database and their own registrations, therefore, limited.

None of the organizations in the A-F group allowed all members of staff to examine the whole database. Four out of six organizations, A, B, C and D, maintained that opening the database for full use was their future goal. Organizations G, H and I had already reached that goal although the interviewees agreed on the possibility and necessity to improve their systems further. Interviewees in organizations E and F expressed worries that open access might discriminate between those with lower education and those with higher education. They said it might cause problems in some divisions, for example where the manager was less educated than most employees, despite being recognized as the most experienced person in the division. The quality representative in organization E was the only interviewee, who was opposed to PKR. She expressed worries that educational information was both private and delicate and should not be laid out in the open for other members of staff to read. Interestingly, the training manager in organization E was the only one who pointed out that the registration of PK was a part of their HR and training strategy.

Records professionals' collaboration with other professionals

The second research question on how records professionals collaborate with other professionals, particularly HR and training professionals, was intended to examine their position at work. First of all, the records professionals interviewed expressed the importance of good communication and of being able to cooperate with different co-workers. The interviewee in organization B, for example, emphasized on the importance of belonging to an inter-disciplinary team to have a say in decision-making regarding different databases and management of EDRMS. The interviewee in organization D agreed and said that records professionals had to be able to work with anyone as it was important to "try to find a way in, which is not always easy, but to keep on going no matter what". When asked about their cooperation with specific professionals, such as HR, training or a quality manager, actual cooperation was little to none.

Records professionals in organizations A, C, E and F had no collaboration with HR or the training manager. They did not collaborate in the development, gathering or classification of PKR nor the registration process at all. At the same time, they claimed to be generally expected to assist HR or the training manager to find appropriate material for diverse internal courses or, as in organization E, putting occasional advertisements on the intranet. They described the same lack of collaboration when asked about quality matters. The

quality manager in organization C, who was also responsible for records management at his workplace, said that quality matters and the HR professionals did not cooperate unless it was about working on quality control in HR, such as hiring processes or similar.

Additionally, records professionals in the public organizations J, K and L confirmed earlier expressed experience from the A-F group. The interviewee in organization K claimed that she had prepared herself for the interview by visiting the HR manager to get information on PKR. She did not collaborate with HR on PKR. She said that information about formal education and internal courses was indeed registered into a database in the HR division, but information about external courses was randomly found in the accounting department and manually registered into the system. She could also report that the PKR database was in little use. Employees could only see their own profile but could contact HR if they needed to search for certain skills. According to her information, search requests were rare. In her opinion, employees were probably neither aware of the possibility of registration nor the search options and were, therefore, not using the system.

The records professional in organization L did not collaborate with HR on PKR. She said that there was no proactive work going on in her organization on PKR, neither regarding gathering nor registration of information on education, or even on managing employees' participation or costs in continuing education. According to her, all personal files were kept on paper with other HR-related material. Members of staff only had access to their own personal files by asking for them at the office. There was no procedure for registering information from CVs into a database or the intranet, and information regarding external courses was only found in accounting.

The records professional in the public organization J had a similar story to tell, although there was one main difference. She cooperated successfully with the quality manager at her workplace. She was involved in creating their quality handbook and worked on quality work-procedures alongside the quality manager. She claimed, however, not to have any real collaboration with the HR manager. PKR was not on her table, but participation lists from in-house courses were sometimes saved into the EDRMS.

The role and responsibility of records professionals in PKR

As regards the third research question on the role and responsibility of records professionals in the PKR process, the findings indicate that records professionals were even more marginalized than anticipated. The five records professionals in group A-F (organization C did not have a records professional) said that they were responsible for records management, including EDRMS, different databases and libraries. The records professional in organization D said, for example, that her job was “managing records and databases, reports, various technical data and library”, and the one in organization F “was hired to implement a new RM system and intranet [...] take care of quality matters [...] later library and museum [...] and the quality matters went elsewhere”. Still, none of them had a particular role in PKR and only one, the organization E professional, had some responsibility regarding the intranet. This professional said:

Yes, I am supposed to be responsible for the intranet but we recently got a new version and there is no knowledge in our division, we know nothing about the new system.

None of them had a specific role in the implementation or management of a website, social media or wiki pages. None of them were responsible for quality matters except the records professional in organization J. Some interviewees, as in organizations B, E and D, were not aware of a current system intended for PKR at their organization. The interviewed records professionals in J, K and L had no role in implementing an intranet or PKR. The records

professional in organization I, where PKR was perceived successful, was not involved in their registration process.

The quality manager responsible for records management in organization C was of the opinion that there should be a system for PKR. Despite having a considerable network, he expressed worries about its limitations and the lack of having a trustworthy overview of employees' PK. In organization A, the interviewee stated that "there is a system and employees are supposed to register themselves what they consider important, but since there is no follow-up, nobody really puts an effort into it". The interviewee in organization E stated that a group of records professionals, working for public organizations and municipalities, had discussed PKR, its current status and how records professionals might participate in the process, but none had found an appropriate reaction, nor taken the subject further with colleagues. The records professionals interviewed agreed that it was not their role to interfere with personnel information. They were in no position to instruct HR on how to strategically gather or register information on personal knowledge. PKR was currently "not on their table", and the systems for registering PKR at their organizations were totally detached from EDRMS.

Discussions and summary

The findings of this research suggest that a "reliable grasp", as presented by [Davenport and Prusak \(1998\)](#), is not enough to effectively access and utilize the personal knowledge of employees. The training manager in organization B and HR manager in organization A stated that a PKR system for internal knowledge had to contain a "Google factor" to work properly. For example, an HR manager in organization C noted that "our goal is for everyone to be able to enter 'German' into the system and easily discover who speaks, writes and understands German, and how well they do it". Training managers in organizations D and B maintained that the purpose of PKR was "not only to find an employee who can teach an in-house course, but also to learn what knowledge is still needed". The quality manager in organization C stated that, because his workplace was spread over several locations, people in one division were not aware of the specific skills of employees in another division. In his opinion, a social network or a "reliable grasp" was insufficient, as social networks reached only so far.

Icelandic organizations were struggling to capture their PK. Despite having different types of databases for formal education and participation in internal courses in organizations A-F, using an Excel spreadsheet was the most common method for managers to get their overview of employees' education, experience and skills. The present research shows that the limited information gathered for PKR is in most participating organizations kept in separate databases within the HR division or in Excel spreadsheets. This corresponds to what [Oliver and Foscarini \(2014\)](#) stated on information being registered and organized into multiple business systems – HR, finance and other management systems, and records professionals were no longer the only key stakeholders in managing information. For personal security reasons, lack of funding and inadequate technological development, the limited PKRs in organizations A-F, as well as K and L, were accessible only for employees to view their individual profiles and the HR or training manager in charge, which hindered their use. On the other hand, there is an increasing recognition of individual roles in knowledge management processes, and a greater interest in the people perspective of knowledge ([Stenmark, 2001](#)). This leads to the ability to allocate and effectively utilize organizational knowledge by the employees who create and share this knowledge ([Henttonen et al., 2016](#)). Organizations I, H and G seemed to have reached this recognition and were collaboratively working toward a functional PKR.

One of the objectives of this paper was to raise awareness of records professionals as specialists in information management, including PK. Despite their educational background and experience of systematic control of the creation, receipt, maintenance, use, and disposition of records and insight into the creation, management and storage of knowledge, they were excluded from the PKR process. Interviewed records professionals seemed to work primarily with organizational EDRMS and issues related to libraries. They had a limited role with organizational intranets. None of them had any involvement in the implementation or administration of Web 2.0 solution or PKR at their workplace. Their narrow collaboration with other professionals was notable in the interviews. Perhaps, the traditional perception of the records manager as a gatekeeper or as an archivist is true, and they have been left alone to deal with and defend their turf (Oliver and Foscarini, 2014). Another reason may be that records management systems have not been implemented as interactive social platforms for registering and sharing employees' PK (Foscarini, 2010; Franks, 2013; Bailey and Vidyarthi, 2010). The third reason may lie in the statements of interviewed records professionals who stated that PKR matters were "not on their table" which makes one wonder whether they were simply not interested in the matter or whether the blame could be found in their co-workers' limited awareness of their educational background and skills in information management. Records professionals need to work more collaboratively with other professions and bring their own particular expertise to the mix (Oliver and Foscarini, 2014). Perhaps, they need to be more open to alternative registration systems and see opportunities instead of problems in HRM systems or Web 2.0 services. Hopefully, records professionals will speak up, collaborate on PKR matters and demand their seat at the table.

Records professionals need to be equipped with a toolkit containing their particular expertise, as well as social, technical and collaborative skills to survive in the hybrid working environment of the twenty-first century (Franks, 2011; Oliver and Foscarini, 2014). Records professionals must accordingly be able to deal with technological changes, including social media, and understand and follow complex requirements of quality, service and legal matters (Gunlaugsdottir, 2012; Kallberg, 2013; McLeod, 2012a). The catch is that the regulative environment of records management is too complex and too constraining for the general employee, which in turn hinders collective use of records management systems (McLeod, 2012a, 2012b; Foscarini, 2012). The purpose of record management (RM) is primarily to manage information as evidence for business activity and for accountability reasons (ISO 15489-1, 2016). Thus, it could be argued that information on the PK of employees should be considered a matter solely for the HR division. PK of employees has neither been categorized as evidence in the same way as records have in the RM literature nor as something that the organization needs to be accountable for. In fact, "records management concepts and operations are less important for management of implicit knowledge" (Saffady, 2016, p. 34).

Still, the findings of this research seem to suggest changing needs as information about education, skills and experience needed to be evidence based. Organizations A, C, D, E and G, H, I and J collected certificates from employees as a proof of necessary qualifications. The same applied to organization B in specific divisions. Information on the participation of employees in internal training programs was registered up to a point for them to gain official units that were valued within the upper secondary school system. PKR created value for organizations, such as to fulfil legal demands as in organization J, or to be validated for proposals in international projects as in organization G. These registrations were seen as evidence, for the benefit of employees, and clients and to answer monitoring institutions. Interviewees in organizations A, C, D, G and I stated that clients, especially overseas clients,

expected Icelandic organizations to demonstrate that they were suitably qualified to undertake international assignments. In this way, PKR provided documentary evidence of PK in these organizations.

It is important to create collaborative systems (Bradley and McDonald, 2011; Morrice, 2013) where PKR can take place, whether by means of EDRMS, HRM systems, intranet or social media. Records professionals should widen their turf and administer the PKR process, participate in the implementation and “work collaboratively towards the mutually beneficial objective of managing information in a way that encourages participation from all stakeholders without being constrained by function” (Foscarini, 2012).

Conclusions

This research was about how PKR was being practiced in Icelandic organizations. Its main focus was on the collaboration of records professionals with HR and training professionals and on the role and responsibilities of records professionals in PKR. The views of management and quality managers on collaborative PKR were partly covered as well. Twelve organizations were studied using semi-structured interviews with 32 professionals.

The findings revealed the views and experiences of the professionals and their positive perception toward PKR as a much needed strategic and economically significant aspect of value creation in organizations. The key outcome is the limited participation of records professionals in the PKR process. These key findings are of concern as they raise questions on the educational background of records professionals, their technological skills, the respect of others of their specialization and perhaps their own interests, self-worth or stamina.

It is, therefore, of considerable interest to continue the research. Firstly, by examining participant observations in organizations A-F where professionals were observed while using PKR. Secondly, by using discourse analysis on collected internal documentary material such as education and training strategies from these organizations. It is also of interest to examine organizations that have won *The Knowledge Company of the Year* award at an annual celebration held by The Icelandic Association of Economists, which has been celebrated since the year 2000. Are these organizations better equipped at PKR than those presented in this paper? If so, who is in charge of the PKR?

This research bridges an important gap as it provides a multi-professional, empirical example of how and why collaborative efforts in PKR were not as successful as perhaps anticipated. It adds new knowledge on collaboration as it looks into how records professionals collaborate with other professionals in Icelandic organization. This research was intended to raise awareness of records professionals as specialists in information management, including PK. It painted a picture of records managers as key members in the professional collaboration of PKR (Figures 1 and 2) which has not been done before. Records professionals need to fight for their existence. They must convince their colleagues of their skills, and justify how their role could advance with twenty-first century organizations. Their opportunity may lie in collaborating more with other professionals concerning documents and records that do not necessarily belong to EDRMS. Their education, training and skills are useful in much wider sense. Hopefully, this research will help records professionals to speak up about their interests and capabilities, get them to collaborate on PKR matters and claim their seat at the table.

This research is not without limitations as it was conducted in 12 organizations in Iceland. However, the organizations and the 32 interviewees were purposively selected which advances the truthfulness and value of the findings. Thus, the research provides an important contribution to the rapidly growing academic field of information and records management.

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Registration, access and use of personal knowledge in organizations

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ABSTRACT

Organizations have managed information regarding knowledge of employees using processes such as codification, knowledge mapping, network analysis and personalization. Recently, personal knowledge registration (PKR) has become another way of managing this knowledge. Little is known about how organizations support PKR, and how PKR facilitates the flow of information and knowledge.

This paper examines how different information management professionals access and use PKR. It is a multiple case study, with 43 semi-structured interviews and an analysis of strategic documents. The purpose is to shed light on strategic intentions with PKR, its collaborative tasks and qualities. A conceptual model was built for this purpose. The aim is to better understand how PKR works and to examine how information on education, training and the skills of employees is managed in organizations.

The findings demonstrate that organizational strategies portray elaborate intentions regarding knowledge seeking and sharing, while less emphasis is put on knowledge registration or management. Interviewees expressed lack of appropriate actions to support PKR. Access and use of PKR is limited and the organizations still struggle to manage the PKR of their employees.

1. Introduction

Studies in knowledge management (KM), human resource management (HRM) and records and information management (RIM) are extensive and growing. Recently, personal knowledge registration (PKR) has become another way of registering and managing the knowledge of employees (Haraldsdottir, 2018). PKR has evolved from the disciplines of HRM, KM and RIM. The intention of PKR is to generate an overview of accumulated personal knowledge embedded in the employees (Gunnlaugsdottir, 2008b; Hase & Galt, 2011; Henttonen, Kianto, & Ritala, 2016; Macguire, 2005). The need to register intellectual capital has been addressed among human resource (HR) and training managers for some time (Delaney & Huselid, 1996; Haraldsdottir, 2018). The purpose of registration is to gain a better use of valuable knowledge, build interdisciplinary teams and to find instructors for in-house training, as well as for recruitment and development. The term personal knowledge registration and the abbreviation PKR is a consequence of this discourse.

PKR is a system of concepts, processes and methods that can be implemented in different software systems. PKR creates a community of

knowledge, as described by Sigala & Chalkiti (2007) where the acquisition and sharing of knowledge can take place. The term is comparable to the information a person registers in a curriculum vitae (CV), except the information belongs to an organization. PKR is similar to the creation of corporate knowledge directories, company yellow pages and expert networks (Andreeva & Kianto, 2012; Vuori & Okkonen, 2012). PKR is one type of a knowledge directory in a “cleverly constructed database” as described by Davenport & Prusak (1998). PKR covers a set of information that the individual, in co-operation with a manager, selects and considers relevant while employed (Haraldsdottir, 2016). As such, PKR is personnel records, often related to human resource management systems (HRMS), human resource information systems (HRIS), information registered into the learning and development module of talent management systems (TMS) or human capital management systems (HCM) (Kavanagh & Johnson, 2017).

Registering personal knowledge using PKR creates an overview of collected organizational knowledge and assists employees, in particular HR and training managers, to look for, and find, current and valuable knowledge among their staff.

The aim of this study was to understand in what way organizations

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support PKR and how its use impacts the work of its facilitators; managers of HR, training, information technology (IT), records and information, and quality. An interdisciplinary study was conducted as an analytical framework to enhance the understanding of PKR. The implementation of PKR was analysed by studying existing strategies and multi-professional interviews. Organizational intentions with PKR were identified. Furthermore, an analysis was made of how PKR was being accessed, by whom and how this access was perceived by employees. A conceptual model, demonstrating the above mentioned facilitators of PKR, was created for this purpose. In sum, the paper addresses the following research questions:

RQ1 – How is personal knowledge selected, registered and secured in organizations?

RQ2 – In what way is personal knowledge made accessible to employees?

RQ3 – In what way is personal knowledge made usable for in-house organizational training?

The paper is organized into seven sections. Section two reviews the theoretical background and examines relevant studies while section three introduces the conceptual model. Methodology is presented in section four. Section five contains the key findings. Discussions and summary is covered in section six. The paper concludes with a contribution to theory and practice and an outline for future studies.

2. Knowledge directories

KM theories focus on knowledge processes, (Argyris, 1999; Davenport & Prusak, 1998; Liebowitz & Beckman, 1998), best practices and sharing work-related experience with co-workers (Christensen, 2007). Optimal usage of work-related knowledge, experience and skills of employees is highlighted (Hansen, Nohria, & Tierney, 1999; Skyrme & Amidon, 1998, Skyrme, 2011). Emphasis is on finding ways to limit time-consuming information searches, redundant work, repetition of unsuccessful tasks or rediscovery of the wheel when employees leave the organization (Calo, 2008; Carmel, Yoong, & Patel, 2013; Leyer, Schneider, & Claus, 2016). Organizations that can efficiently identify knowledge within their ranks and apply it in their operations are more likely to have an edge over their competitors (Migdadi, 2009). A competitive edge is furthermore grounded in the way organizations manage to attract, select, develop and retain their talented employees (Stahl et al., 2012). Likewise, organizations tend to promote their employees' knowledge as their greatest advantage. Training of employees refers to a systematic approach to learning and development to improve individual, team, and organizational effectiveness (Goldstein & Ford 2002). Leyer et al. (2016) stated that the purpose of a process-based social knowledge system was to provide easy access to available knowledge sources, while the knowledge itself was not contained in the system. The same applies to PKR. It is a knowledge directory that includes information regarding knowledge origin, i.e. which employees possess the required knowledge (Leyer et al., 2016, p. 97).

Organizational knowledge is defined as either tacit among the employees or explicit when shared with others (Jashapara, 2011; Panahi, Watson, & Partridge, 2013; Sigala & Chalkiti, 2007). Knowledge mapping and organizational networking is helpful in externalizing knowledge (Chan & Liebowitz, 2006). Borgatti & Cross (2003, p. 433) claim that the probability of seeking information from another person is correlated with knowing what that person knows, "know-who", valuing the knowledge, having timely access to it and perceiving it not too costly. Nebus (2006) maintains that the person's choice of contact is influenced by existing relationships (what he terms an advice network). While known relationships, or what Granovetter (1973) terms strong ties, may be comfortable and easy to access, they may also induce hindrances and exclude the best possible and unknown contact persons (Ellison, Gibbs, & Weber, 2015). As stated in Borgatti & Cross (2003, p. 442), people may interact with a limited set of co-workers for knowledge seeking, which may be hindering if other people are better

sources. According to Nebus (2006), a partial reason may be that traditional knowledge sources, such as portals of best-practices, internal benchmarking or work-related know-how, need adaption from original use before re-use. Not knowing whom to ask is problematic if the knowledge network is only partially explicit. Moreover, trust and ownership and reciprocal relationships within the organization play a key role in facilitating knowledge sharing (Damodaran & Olphert, 2000; Drucker, 1993; Ford, 2003; Klamma et al., 2007; Newman & Newman, 2015).

Training in organizations produces clear benefits for individuals and teams, organizations, and society (Aguinis & Kraiger, 2009). Training strategies cohere with business strategies as they improve organizational value (Guthridge, Komm, & Lawson, 2008). Training strategies may therefore be considered a way to advertise the organization as a knowledge approving and supportive workplace. Organizations that use training to a greater extent report higher perceived organizational performance (Delaney & Huselid, 1996). On-the-job training is strongly related to transfer of training and firm performance (Saks & Burke-Smalley, 2014). In their comparison of high performance work systems, Becker & Gerhart (1996) linked strategic training to value creation in HRM. Training was categorized, measured and registered according to job descriptions. Delaney & Huselid (1996, p. 949) acknowledged the value systems of HRM practices, including the registration of employee training into HRMS, where information on individuals and hours could be evaluated. Registration of employees' participation in training originated in HRM theories where it was positively related to organizational performance, progress and prospects (Becker & Huselid, 2006).

3. A conceptual model for PKR

In order to better understand how PKR works a conceptual model was built. Based on the perception that managing knowledge is a multi-professional task, the model represents six facilitators of PKR in accordance with the main interview groups of the study (see Table 1) (Franks, 2013, Oliver & Foscarini, 2014; Saffady, 2015). These are employees working in HR and training (Becker & Huselid, 2006; Drucker, 1993), records management (Franks, 2013; Gunnlaugsdottir, 2003; Gunnlaugsdottir, 2008b; Saffady, 2015), IT (Damodaram & Olphert, 2000; Leyer et al., 2016), quality management (Brumm, 1996) and general employees (Goldsmith, Joseph, & Debowski, 2012). These facilitators select and register the personal knowledge. In order for PKR to function, access, usability and security of information are critical success factors. PKR relates to significant elements of knowledge sharing which are social practices and the actual systems that support knowledge sharing (Ackerman, Dachtera, Pipek, & Wulf, 2013; Damodaran & Olphert, 2000; Leyer et al., 2016). Access and usability of PKR is dependent on its purpose and platform as well as user involvement in the development phase (Bano & Zowghi, 2015). The ability to allocate and effectively access and utilise knowledge, relies substantially on its facilitators, who actually create, register, share, and use knowledge (Andreeva & Kianto, 2012; Goldsmith et al., 2012; Henttonen et al., 2016).

Fig. 1 represents the conceptual model of PKR. It demonstrates the six facilitators and their tasks and the three quality aspects of PKR; access, usability and security. Each task and quality is further described on the right side of the model and in Sections 3.1–3.5.

3.1. Selection

Selection is made by employees in cooperation with their manager or HR manager. It includes formal and informal education, work-experience, internal and external training, participation in conferences and webinars; language skills, IT and communicational skills; teaching or writing experience (Haraldsdottir, 2016). These qualifications constitute the knowledge (know-what) of employees registered in PKR. Verification of certificates or similar documents is in the hands of the

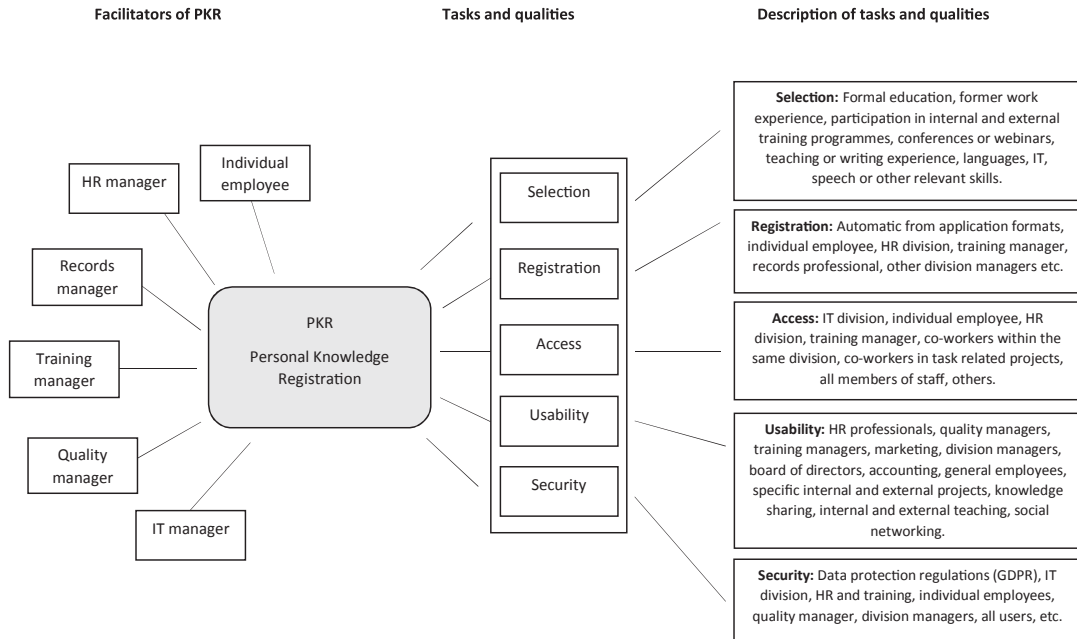


Fig. 1. Conceptual model.

HR manager.

3.2. Registration

Registration is partially automatic in HRMS. New employees may apply for a job on the website of the organization, adding files into a web-based application. The HRMS reads the application automatically and registers the information. Entering information as work experience grows is in the hands of individual employees, the HR or training manager or a supervising manager. The administration of the registration and classification of personal knowledge may be, as with other information systems, in the hands of a records manager (Franks, 2013).

3.3. Access

Access is managed in either the HR or IT division or by a records manager (Saffady, 2015). As the registration and use of information is collaborative, it is preferable that all employees have full access to PKR. Access may be limited to the HR or training manager, as it is their responsibility to find in-house knowledge and administer a needs analysis for further recruitment of employees.

3.4. Usability

Employees with access can use PKR. Usability of an interactive system captures how effective and efficient it is for users to carry out needed tasks and how satisfied they are while using it (ISO, 2017). It is also necessary to consider a PKR's utility, i.e. if it offers the right tasks (functionality) to the user. Johannessen & Hornbæk (2014) noted that utility depends on usability meaning that good utility of a system is only experienced if its usability defects have been mended. Utility and usability appears as critical success factors and two main causes of underutilization of an Electronic Information Management System (Damodaran & Olphart, 2000; Leyer et al., 2016). Lack of utility appears as inadequacies of the technology and lack of usability appears as lack of user-friendliness of the system. User-friendliness of PKR is vitally

interrelated with its usability.

3.5. Security

Security is in the hands of the collective group using PKR. PKR is intended for internal use, through a database, the intranet or a corporate social media as described by Ellison et al. (2015). External hazards are monitored by the IT division, while internal hazards may be reduced by standardizing work-processes, ensuring user guidelines, supervising access and audit log of the use of employees (Gunnlaugsdottir, 2008a). Legal demands, such as personal data protection regulations (GDPR) (IT Governance Privacy Team, 2016; Kristjansdottir, 2017), must be obliged.

4. Material and methodology

The aim was to provide an understanding on how organizations support PKR and how that support influenced the work of a predefined group of professionals. The data collection took place in Iceland. The interviews and data gathering were conducted in 2011–2016. Qualitative methodology was used for conducting the study. It is well suited to obtaining data at the scene (Gorman & Clayton, 2005; Silverman, 2013). The research was a multiple case study (Creswell, 2013; Merriam, 2009) containing six organizations, and a total of 43 interviews (see Table 1). The number of employees in each organization ranged from 150 to 1000. The organizations were evenly divided between the public and the private sector and considered in the forefront of their individual sector. These sectors were: A) Financial private, B) Technology communication C) Industrial consultancy, D) Industrial Energy, E) Financial public and F) Surveillance Institution.

The organizations were selected using purposive sampling based on the objective of the study and according to certain characteristics that were considered likely to give informative findings (Esterberg, 2002; Morse, 1991). These included existing organizational strategies on HR and training, experience of implementing PKR and experience of conducting internal training programmes. It was important that the

organizations were technically capable of implementing a functional database or corporate social media for managing knowledge and had former experience in PKR for knowledge registering purposes, whether they were successful or not. A hypothesis was worked out during the study and from the analysis of the data (Moustakas, 1994). The two following methods were applied.

4.1. Discourse analysis

In order to understand how PKR was used in the organizations, internal documents, such as training strategies, and in their absence, HR strategies, were examined (Gee, 2014). Studying the documents allowed for identifying written intentions and making a comparison of how these were interpreted by interviewees, and how the organizations fulfilled their intentions. The aim was not to uncover contradictions in the documents (Wetherell, 2001). The empirical analysis consisted of systematically reading the documents. Selection of words, repetitions and use of terms regarding intent, support, selection, registration, responsibility, collaboration, security, access, usability and sharing of knowledge, or actual lack of these terms, was examined. Examining the strategies was useful for understanding whether the organization were meeting their own requirements and whether the employees knew, understood and followed the strategies. The strategic documents were a foundation for further analysis of the interviews.

4.2. Semi-structured interviews

Interview guides were written for different groups (Bogdan & Biklen, 2003; Kvale 1996). The purpose was to capture the perspectives of different professionals and examine how and why their different meanings would affect the study (Yin, 2014). The interviewees were selected in a systematic manner and consisted of employees with similar positions in each organization. Grounded theory was used as a method to analyse the interviews (Charmaz, 2006; Glaser & Strauss, 2012). Themes were sought in the data. They were coded and classified and indications found to merge the classification of the themes (Hennink, Hutter, & Bailey, 2011). Interviewees had the following responsibilities: personnel administration and HR strategies; in-house training programmes and training strategies; implementation and administration of ERMS; implementation of international standards and quality strategies and management in various divisions, including IT. Organizations named A, B and C were private and organizations named D, E and F public. Table 1 gives an overview of the interviews.

The risk of revealing the identities of the interviewees was significant as the interviews took place in a small society (Gorman & Clayton, 2005). It was anticipated that sensitive information could be revealed during the interviews as questions were asked about the

superiors and colleagues of the interviewees, their experience of support, as well as successes and failures in PKR. It was, therefore, deemed necessary to disguise individuals and their workplaces in all cases.

5. Findings

This section presents the analysis of the organizational strategies and the interviews. A comparison was made between strategic intentions and subsequently the perceptions of the interviewees on how PKR was supported, facilitated, accessed and used.

5.1. HR and training strategies

Table 2 exhibits the six organizational strategies.

The six strategies demonstrated elaborate objectives regarding the education and training of the employees exemplified as “ambitious education and training plan” in organization A, “top-quality education” in organization B and “strategic education and training programmes” in organization D.

Statements such as “we are a knowledge community” as in organizations A, “human resource is the knowledge that resides in the team” as in organization C and “the training of employees is an investment for the future” as in organization E gave reason to believe that these organizations considered strategic value in the knowledge of their employees. Emphasis was on developing the knowledge worker for the benefit of both parties. The strategies portrayed the aim of having qualified employees that were encouraged to “maintain and develop” their knowledge “in order to be successful at work” as in organization D. The employees were expected to “show initiative”, seek educational offerings and share their knowledge through “open and honest communication” as in organization A and D. Good communication or “inner service” was considered “the drive that generates the best use of collective knowledge” as in organization F.

Organizational strategies of C and D used the term “foster” where they described how new employees were welcomed. New employees were provided with a mentor as in F that got the more experienced staff to “take on the role of instructors” for new employees. Employees in organization D were encouraged to share their knowledge with academic communities and assist one another with daily work.

Organizations A, B, C and D used the term “opportunity” and A, B, E and F used “encourage” repetitively in relation to training. The term “develop” was frequently used in the strategies. In order to develop within an organization, the individual employee had to take an “initiative” as in organizations A, B and E and be “responsible” for their own development as in organizations B, C and E. Organization F, however, used the term “possibility” in relation to training and the term “responsibility” was used to describe organizational responsibility.

The terms describing the tasks and qualities of the conceptual model were a rare find in the organizational strategies. The terms “use” or “usability” and “access” were hardly mentioned in the six organizational strategies. Organization E was the only organization that highlighted the need of managers and education representative to “have access to valid information regarding each and every employee” while organization C emphasised the necessity for new employees to get “useful information about their role and responsibilities on the first day” and organization F highlighted “the best use of collective knowledge”. The terms “selection” and “security” were not mentioned in the strategies. However, strategic “registration” was described once. Organization E expected employees to “assist managers, education and training representative, and an educational committee, and register themselves all additional knowledge and skills into a HR database”. Moreover, E’s organizational strategy was the only one that described training as a method to increase “happiness” of employees and its “intent for employees to fully use their skills”.

One organizational strategy was only visible to employees on the intranet and not on the organizations website. It was however the only strategy that had a date, an expiring date and a signature, revealing the

Table 1
Distribution of interviews.

Distribution of interviews	Private		Public			Total	
	A	B	C	D	E		F
	Management	2	2	2	2		2
HR manager	1	1	1*	1	1	1	6
Training manager	1	1	0	1	1	1**	5
Records manager	1	1	0	1	1	1	5
Quality manager	0	0	1	1	0	0	2
Employee working on quality control	0	0	0	0	1	0	1
Employees***	3	0	4	2	3	1	13
							43

* An employee responsible for HR and Training.

** An employee responsible for Training and Quality Management.

*** Chosen employees work in the same department as the interviewed manager.

Table 2
HR and training strategies.

A Financial – Private Nearly 1000 employees.	B Technology – Private Around 500 employees.	C Industrial Consultancy – Private Over 300 employees.
<p>A is a knowledge community of employees who have various experience and knowledge. We encourage work development and offer an ambitious education and training plan where all employees have the opportunity to increase their knowledge and skills. The objective is to stimulate and maintain employees' professional knowledge. We furthermore encourage employees to maintain their professional knowledge and give them the opportunity to develop and grow at their work. Training and education is on the one side an initiative of the training manager but no less an initiative of the employee or his/her manager. We welcome new employees and provide strategic training and education. When hiring, knowledge, experience, education and interests, are taken into account. We work strategically towards creating an environment where we can all grow at work and improve our skills. Emphasis is on good working environment with opportunities to share knowledge and information as appropriate.</p>	<p>B's strategy is to offer employees top-quality education in order for them to develop at work. Employees are responsible for maintaining their own knowledge and it is therefore necessary to follow current offerings. It is the strategy of B to give employees the opportunity to develop within the organization. It is a mutual benefit, the employees advance their experience and the organization is more likely to retain a long-term relationship with employees. Work development is a mutual task of employees and B, but the best chances contain outstanding performance and showing initiative at work. Signed by the HR manager.</p>	<p>The resources of C are embedded in the employees, their knowledge and significant experience. It is therefore the goal of C to hire, sustain and elevate qualified employees in every way possible. E puts great emphasis on having qualified and interested employees with significant experience and knowledge. C gives employees the opportunity to develop and attend courses. It is a mutual responsibility between the employee and his/her manager to follow-up on education and training for each and every employee. The reception of new employees must be systematic and in coherence with the organizational procedure. A new employee must be "fostered" with a more experienced employee until he/she has adjusted to daily routines at the office. A new employee receives useful information about his/her role and responsibilities on the first day. Human resource is the knowledge that resides in the team.</p>
D Industrial/energy – Public Over 250 employees.	E Financial – Public Nearly 200 employees.	F Surveillance – Public Almost 240 employees.
<p>We gain knowledge and we share it. We emphasize on constantly developing our employees' skills and talent and encourage them to continually seek ways to develop at work. In support we offer strategic education and training programmes, which ensures necessary knowledge and capabilities in order to become successful at work. D has a close relationship with academic communities on organizational matters and the employees share their knowledge with those communities as much as possible. New employees get strategic training from the first day. Good quality procedure for new employee reception is built on the collaboration of managers, HR division and fosters who have had special training. We seek to create an atmosphere of good information flow and knowledge allocation. Communication is open and honest and employees assist one another with daily work and thereby contribute to positive working environment.</p>	<p>The training strategy of E emphasises employees' opportunities to achieve training that increases their capabilities and happiness at work. Its purpose is to encourage employees to maintain their knowledge and have the opportunity to grow and develop at work, to assist managers, educational representative and the education committee, and to generally contribute to increasing abilities and skills. The goal of the strategy is to activate and encourage employees to take initiative and responsibility of their own knowledge and abilities in a changing environment and to maintain and inspire employees' knowledge and personal skills at work. It is important that employees themselves register all additional knowledge and skills into the HR database so that managers and educational representative have access to valid information regarding each and every employee. The intent of the training strategy is for employees to be willing and capable of increasing and fully using their skills. Employees are expected to develop constantly towards changing needs, both professionally and technologically, and be willing to train for new and changing projects. The cooperation between management and educational representative includes the analyzation and categorization of training needs but moreover to support and elevate employees to increase their knowledge and skills. The training of employees is an investment for the future of E.</p>	<p>Emphasis is on employees' possibility to acquire education and knowledge regarding their work. Employees are expected to have and maintain their knowledge as appropriate with the aim to proceed with their work in a professional manner as well as advantageously. An attempt is made to get more experienced employees to take on the role of instructors while a new employee is trained for a job and the job environment. Emphasis is put on inner service as it creates the drive that generates the best use of collective knowledge when searching for solutions regarding various projects that the institution is responsible for. Each division manager evaluates the need for education in cooperation with the employee and HR manager. Employees are also encouraged to seek other educational offerings, such as language courses or other courses that may be considered valuable at work and attended outside of regular working hours.</p>

HR manager as the author. The other five organizations had their strategies visible on their websites, yet without a date or an author. Organizations A and D put emphasis on using the plural personal pronoun "we" while the strategies of other organizations were objective, referencing the organization or the strategy itself as an authority.

All organizations had training managers or a training representative within their HR divisions. They were all conducting in-house training programmes on a grand scale, offering a variety of short courses for all employees. Terms that have a reference to in-house teaching such as "teach", "in-house training" and "internal programmes" were however absent from the organizational strategies although the term "training" was used in a broad sense.

5.2. Extracts from interviews

The purpose of examining the interviews was to understand the perception of the interviewees and their experience of PKR. Information was collected to answer the three research questions on current status of PKR, its access and usability.

5.2.1. Selection and registration in PKR

The interviews were in general characterised by the terms "would" and "should" as most interviewees agreed on PKR being necessary and showed interest in using interactive databases or social media for entering and accessing information on personal knowledge. None felt they had been entirely successful in its implementation.

Seven out of eleven members of management were using Excel for registering personal knowledge of employees. They claimed it was their way of "staying on top of things" as they needed overview of their employees' education and training to know what knowledge was still missing, which employees had attended last conferences abroad or had specific language skills. Different managers excused current status of PKR access and usability and expressed great interest in it. Some pointed out that someone else should already have taken the initiative to make "the dream of PKR come true".

HR managers agreed that although PKR had started with great interest and some managerial support, it had slowly died or ended-up among other unfinished projects. The HR manager in organization B stated that it was their goal to achieve better control over PKR. He

maintained that this information was of best use if it was available in a central database. The HR manager in organization A agreed and said that they had not yet achieved their goal of covering all PKR. They had started a lean-management group that was strategically registering knowledge networks within each division, although these networks were currently only available to individual groups and not in a central database. In organizations C and D, the HR managers were working on changing the training culture and attempting to work more in line with organizational strategies. The HR manager in organization C stated that their career development “had to be better adjusted to their organizational strategy”. The HR manager in organization D put emphasis on the organization being on a certain journey and that it was time for the next level, from being a traditional industry to a more market oriented knowledge organization. Their training programmes were being intertwined with their organizational strategies and much emphasis was put on more strategic choices using performance indicators as well as sharing their expertise externally, at all school levels.

The HR managers in organizations E and F, both public, were less optimistic on PKR matters. They described their fear of having managers exposed as having a more limited formal education than their subordinates or having kitchen employees, drivers or janitors required to enter personal knowledge into PKR. The HR manager in organization F stated that registration of formal education was not their top priority in regards to the more experienced employees. PKR was rather intended for newcomers and future registrations as the organization was expected to go through a generation change. The HR manager in organization E stated that the HR division was “not using the database much, as it was rather intended for the employees, so that they could register their education, courses and conferences.” This statement contradicts E’s strategy which was the only strategy mentioning “registration” in its text and emphasising the need for managers to “have access to valid information regarding each and every employee”.

Two quality managers described an urgent need for PKR for interdisciplinary teamwork. Quality managers in organizations C and D agreed on the importance of PKR as a management tool to gather, read and measure the intellectual property of organizations. They stated that this gathering of information was in accordance with ISO standard certifications. Having an overview of education, experience and skills was considered important. They claimed that optimal registration and use of internal knowledge to fulfil external inspections and internal audits and select the right individuals for interdisciplinary teams was valuable, particularly in dispersed organizations. The quality representative in organization E was the only one opposed to PKR. She put emphasis on security of information and said that in her opinion “people’s education and training was private and should not be open for everyone to read”. She stated that employees with little formal education might experience a discriminating comparison.

Records managers in all six organizations found themselves only marginally involved in PKR (Haraldsdóttir, 2017). Their efforts were primarily focused at ERMS. Interviewees in organizations B, E and D, claimed that they were not aware of a system currently intended for PKR. The records managers in organization A, C and F were on the opinion that there should be PKR, as it was of utmost importance to have an overview of the knowledge of the employees.

5.2.2. Access

Several interviewees from all organizations showed an interest in taking a personal responsibility for PKR. A number of interviewees from different professions expressed that managerial encouragement was needed for PKR to be more successful. While some were unsure whether all employees would be willing to share their personal knowledge, due to perhaps limited education, most interviewees maintained that employees should have an “inner drive” to register everything they found important about themselves in a collaborative system. A manager in organization A estimated that over 70% of her employees would willingly enter information into PKR in order to make it visible to co-

workers how they had gained their experience. She stated that those with little formal education were the most willing to register information about their participation in courses or conferences. Most managers approved of PKR as a socio-technical system that should be open for everyone in the organization or as a manager said: “Knowledge is our most valuable asset and it should be possible to implement a system like Facebook or LinkedIn, or some similar social network, as a base for an organization, and people should see the benefit of putting themselves out there and share work-related information with colleagues.”

In organizations A, B and C the interviewed training managers stated that there was PKR and employees were supposed to register what they considered important. There was no follow-up on the system and nobody really put an effort into it. The HR manager in organization E compared the registrations in the database to “black holes” and claimed that neither the HR division nor the managers were using it. The HR manager in organization F stated that education and training was never really discussed in connection with the organizational strategy. She also claimed that the collection of information on the personal knowledge of employees had been her personal project. She stated that they had an actual example of having hired an employee with specific knowledge needed among other employees, but since nobody really knew about it, they had used an external instructor for training, unaware of having an even better instructor in their staff. This experience had been, according to her, disturbing and encouraged her to start using PKR.

5.2.3. Usability of personal knowledge for in-house organizational training

According to interviewees, formal education, i.e. most recent university degree, was registered in five organizations out of six. Some interviewees expressed difficulties gathering certificates from the more experienced members of staff. “Asking someone who graduated in 1972 to deliver the certificate, is almost considered insulting” said the training manager in organization E. These five organizations were able to confirm certain degrees among employees. Organizations A and B had a reasonable overview of their employees’ participation in internal courses while organizations C, D, E and F had incomplete listings of course participation in internal short courses. The HR manager in organization A said his division had approximately 90% of their employees’ formal education registered into their database and most internal courses. In organization B the course registration was manual from internal participation lists, although the registration process was sometimes left forgotten due to other ad-hoc projects. In organizations C, D and E the registration of short courses was dependent on individual contributions to the database, but nobody followed up on who attended each course. In organization F, neither the HR manager nor the individual in charge of employee training had any registration covering employee participation in internal courses. Both expressed hopes to implement PKR but shared their worries that employees might find the registration process too intrusive.

Employees’ participation in external courses, conferences or webinars was not systematically registered. Training managers in organizations A and B described these registrations as „that is ... I must admit ... that is way out of order” or “by mere chance”. The HR manager in organization C agreed and stated „we have absolutely no control over this information.” In all six organizations, registration of external courses, was dependent on employees’ registrations and their delivery of copies of certificates to the HR division. HR or training managers also gathered receipts from the accounting division to confirm external courses. In organizations A, C, D and E employees could write their own information regarding external courses into central databases but there was no follow-up on their registrations. All interviewees agreed on the advantages of PKR and gave various reasons for its necessity, such as it being „cost-effective” and „a matter of quality control”. An IT manager had registered employees’ personal knowledge into Excel instead of PKR. When asked whether the training manager might find her registrations useful for in-house training, the reply was: „Oh yes, sure, I have

never really thought of it that way.” In an interview with the training manager, a few weeks later, the IT manager had not shared the existing registrations.

All training managers expressed urgent need for information about their colleagues’ interest in contributing to in-house training. They claimed that most courses on domestic IT, regulations, products and service was taught by internal staff while more complex and specified courses were typically taught by external instructors. A training manager, oblivious of a colleague’s vast experience and interest in teaching, exclaimed when his name came up in an interview: „Really, does he work for us, oh please don’t tell anyone I didn’t know!”

6. Discussions and summary

This section presents a discussion of the key findings of the study. The three research question are summarized in the following sub-sections.

6.1. On selection, registration and security

The analysed strategies seemed to demonstrate great organizational interest in offering appropriate training programmes, as well as encouragement for maintaining and developing of the knowledge of employees. Selection, registration and security of added knowledge was, however, limited to one single use of the term “register.” These findings contradict to how Becker & Huselid (2006) describe knowledge sharing as a beneficial influence on organizational performance, prospect and progress. The findings suggest that HRMS, knowledge mapping, corporate directories on intranets or interactive databases, had been tried in the participating organizations but without great success. The causes seem to be linked with a lack of managerial support, unclear responsibility of tasks and qualities and a lack of added value to the users. Furthermore, interviewees claimed that they were not involved in the development phase of PKR. Bano & Zowghi (2015) maintained that while there are many positive effects of involving users, in this case employees, in system development there are also challenges. These include motivation and expectations of users, managerial challenges and time constraints. The experience of both managers and employees in all six organizations, confirm these hindrances and may have influenced why employees were not more involved.

Damodaran & Olpert (2000) stated that one reason for limited success of information management systems was lack of user-friendliness, poor design, inadequate training and absence of added value. These barriers mirror the responses of the interviewees. While different employees described similar subjective goals of using PKR, which was having an overview over employees’ knowledge, their motives differed. Responses from management described a need for overall systemization of knowledge, HR managers focused on career development and recruitment of employees. Training managers lacked an overview to find instructors for in-house training. They expected that their colleagues might be willing to instruct, if their knowledge was only known. Quality managers stated that PKR should be inherent in all quality procedures to constantly secure the participation of the most qualified employees in every project. General employees also described their perception of being ignored or “forgotten” as they were not requested to register their personal knowledge and nobody had asked for their specific skills. The needs of employees correspond to significant elements of knowledge sharing which are social practices and the actual systems that support knowledge sharing (Leyer et al., 2016).

The tasks described in the conceptual model were not fulfilled. Nobody seemed to have a clear role or responsibility for PKR. The selection and registration of information was in the hands of whoever accepted the task. Categorization of registered information was unclear and described as chaotic by the interviewees. This seemed to lead to interviewees preferring to use Excel spreadsheets over existing PKR. For those in management who had access, it was not in their work-habit to

look for the expertise of co-workers in PKR. An interactive system, such as PKR, without managerial support, clear goals and common source of information, does not survive (Ackerman et al., 2013).

6.2. On access

The general perception of interviewees suggested that their PKR barriers were rather technical than social. This is contrary to the findings of Damodaran & Olphert (2000), where cultural barriers, knowledge ownership and attitudes towards knowledge sharing were considered much higher inhibitors to the uptake of electronic knowledge management systems (EIM). Access, and thereby the opportunity to use and benefit from the system, seemed to be a pragmatic success factor for the uptake of PKR in all organizations. Most employees could only access their individual profiles and not their colleagues. Their personal registrations had also limited usability as they could not be used for writing a CV. Yet, the fact that they could not search for knowledge among co-workers, was their strongest inhibitor. Social barriers seemed, however, significantly minor as 40 interviewees out of 43 stated that a corporate PKR should be open for everyone. As stated in Leyer et al. (2016) the idea of PKR was “to indicate which employee is the knowledge owner” and “to motivate employees to indicate their areas of expertise” (2016, p. 97). Interviewees claimed that the information registered was no secret and the benefits of having an overview had the upper hand of privacy.

The three interviewees who questioned the use of PKR were worried about how an open PKR would impact those with little formal education. They also claimed that some employees were not interested in exposing their expertise, as they might be asked to do undesirable tasks. One interviewee, a manager in organization D, confirmed these worries and claimed to be willing to register personal information into PKR, but anticipated to be bothered by co-workers and was simply too busy to assist.

Because of employees’ restricted access to PKR and thereby limited usability of registered information, PKR did not create added value for employees nor the participating organizations. The conceptual model, demonstrating six facilitators of PKR, their tasks and the system qualities postulated that PKR had been accomplished with the collaborative effort of different professionals and their shared goal of PKR. The findings suggest otherwise. Each facilitator, demonstrated in the conceptual model, attempted to have an overview of existing knowledge, while collaborative efforts were limited. Interviewed records managers were only marginally involved in the implementation of PKR. The same applied to quality managers and IT managers who had put the development and implementation of PKR aside for other ad-hoc projects. Management did not act as a role model as they preferred to use Excel while claiming that there was a will and a need for a functional PKR. According to them the responsibility of the current status of PKR laid elsewhere.

6.3. On usability

HR and training managers were trying their best to collect and register employees’ personal knowledge, focusing on being able to confirm formal degrees to supervising institutions and having an overview of employees’ in-house training participation. They urgently lacked information on their participation in external training and conferences, and they missed having a sufficient overview to involve employees in instructing in-house programmes. They had to rely on their personal network and stated that they repeatedly scheduled the same instructors despite thinking that more qualified instructors existed among their staff. Their experience resembles how Borgatti & Cross (2003), Nebus (2006) and Ellison et al. (2015) describe the risk of building a narrow network and not being aware of unknown expertise among co-workers. The interviewed training managers all stated that they wished for a functional PKR but the strategic decision to develop

and then implement a system was not on their table.

PKR is used as a directory, not a repository, as it does not contain the knowledge itself but points to the knowledge holder (Leyer et al., 2016). And since PKR consists of information on the personal knowledge of employees, while employed, registered information remains searchable, trustworthy and applicable. PKR has the possibility to enlarge employees social network as it opens the possibility to seek knowledge from someone outside of an individual's current network. As pointed out in Ellison et al. (2015) knowing one's network can help colleagues find common ground and locate experts in a particular domain within the organization. In their analysis of enterprise social network sites (ESNS) they discovered that a greater network transparency within organizational context increased knowledge sharing (2015, p. 112). Borgatti & Cross (2003) emphasized the significance of knowing who knows what in an organization. They maintained that the decision to seek information from a specific someone was depended on the relationship between the seeker and the knowledge holder. Still, PKR needs constant updates and participating efforts from all stakeholders in order to function (Goldsmith et al., 2012). Thus, loss of knowledge cannot be avoided if necessary information is not registered or when employees leave the organization – unless it has been successfully transferred through on-the-job training as described by Saks & Burke-Smalley (2014). For that to happen, the knowledge owner needs to be known.

The main reason for PKR failure, according to the interviewees, was on the one hand the limited access to the personal knowledge of employees, and on the other hand the uselessness of registered information due to lack of support, user guidelines, supervision and strategic intent. Additionally, user involvement in the development of PKR was none. Finally, employees in IT divisions were too busy with ad-hoc matters and did not prioritize necessary updates on PKR software which did not help with its user-friendliness.

7. Conclusion

The findings represent elaborate objectives regarding the education of employees and training in organizational strategies. These documents gave reason to believe that participating organizations considered knowledge of great value. Repetitive use of the term “knowledge” indicated an emphasis on developing the knowledge worker. Registration of knowledge, as in PKR, was however only described in one strategy out of six. Despite apparent lack of PKR use, expressed views and experiences of interviewed professionals and their positive perceptions towards PKR indicated that education and training, and the registration thereof, was considered urgent and economically significant for value creation in organizations.

This study has a few key contributions to theory and practise. First, the findings suggest that inadequate PKR use caused training managers to seek external knowledge for in-house training programmes as they lacked an overview of knowledge and experience within the organization. Secondly, lack of managerial support and user-guidelines for employees negatively influenced the use of PKR. Consequently, a lack of added value of using the system and unfinished software development added to the experience of poor user-friendliness. Another outcome of the study, and the most influential requirement for successful PKR according to interviewees, was employees' limited access to PKR. All participating organizations had tried one form or another for PKR, most often HRMS but with limited success. The findings show that access of PKR was usually restricted the personal profile of the employee despite there being technological and social solutions for further access. Use of PKR was limited and in coherence with its constrained access. These barriers give good reasons for further study in other organizations with the purpose of examining whether and for what reason the conceptual model may have been applied more successfully.

Future research may also include another practical implication of this study. The European Personal Data Regulations (GDPR), due in

May 2018, is anticipated to have impact on how organizations are allowed to collect information on employees and their personal knowledge (IT Governance Privacy Team, 2016; Kristjansdóttir, 2017). Simultaneously, the Icelandic standard on equal pay management system, and a legislation thereof, is expected to have influence on how PKR is perceived by management and employees (Icelandic Standards, 2012). The standard and its legislation, gives organisations an opportunity to improve their management of equal wage affairs and obtain certification that women and men working for the organization enjoy equal wages for the same jobs or jobs of equal value. A fully functional PKR may verify the education and training factor of employees and play a key role in finding a correct outcome when calculating wages. In the light of apparent unsuccessful PKR use in this study, it is interesting to study further how Icelandic organizations are preparing to meet obligatory and necessary registrations of the personal knowledge of employees. It is furthermore of interest to study how organizations are going to combine the need for PKR in compliance to GDPR. This promises to be a fruitful area for future research.

This study is limited to only six organizations in Iceland. Still, the participating organizations and the 43 interviewees were purposively selected which advances the truthfulness and value of the findings. Despite its limitations, this study bridges an important gap in a rapidly growing interdisciplinary field of information management. It provides a multi-professional, empirical example of how and why efforts in implementing PKR were not as successful as anticipated. It adds new knowledge on the importance for organizations to portray clear strategic intent, define responsibilities and act accordingly with managerial support, when implementing PKR. This study can become the basis for further research in Iceland and lay a foundation for similar research in other countries. Despite all possible technological and social solutions available, and the apparent keen interest of the interviewees in PKR matters, the findings suggest that organizations are still struggling to know what they know.

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Paper III

Manuscript Details

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Title	Complexity in information management: personal knowledge registration in a regulatory environment
Article type	Research Paper

Abstract

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Complexity in information management: personal knowledge registration in a regulatory environment

Abstract:

Equal pay is an emerging topic in many countries. The Icelandic *Equal Pay Standard (EPS)* affects the registration, access and use of personal knowledge. This paper examines organizational preparations for *EPS*. The purpose is to shed light on in what manner information on personal knowledge was registered, due to new auditing and legal requirements. Also, to understand how organizations balanced different, and perhaps opposite, registration and protection obligations of personal knowledge, due to requirements of the General Data Protection Regulations (GDPR). Moreover, to find out who is responsible for the registration process. An interdisciplinary study was conducted in Iceland. The analytical framework covered multiple-cases and semi-structured interviews with professionals from human resources (HR), education and training, and information and records management, and a comprehensive documentary analysis. The findings indicate that organizations were not properly prepared for the implementation of *EPS* and were hesitant as regards further personal knowledge registration due to GDPR. Documentary analysis also revealed critical attitudes. The *EPS* legislation puts added pressure on organizations to ensure that documentation on the formal and informal education of employees and skills is authentic, traceable, of use and secure.

Keywords: Information management, Information and records management, Personal knowledge registration (PKR), Equal pay standard, General data protection regulation.

1. Introduction

Gender equality is a dominant discussion throughout the world. The principle of equal pay derives from the 1957 Treaty of Rome which founded the European Union. Still, 60 years later, a gender pay gap continues to exist across all EU countries (Hall, 2015; Amado, 2018). Furthermore, the American workforce struggles with a gender pay gap 55 years after their Equal Pay Act was signed into law (Connley, 2018). According to the *World Economic Forum Index*, Iceland is the top runner for the ninth year in a row, closing more than 87% of its overall gender gap (World Economic Forum, 2018; Marinisdottir & Erlingsdottir, 2017). With the first democratically elected female president (Henley, 2018), Iceland has even been described as “the world’s most feminist country” (Bindel, 2010). However, Iceland is no feminist paradise. It seems to be equal on paper, but not in practice (Rudolfsdottir, 2014; Rudolfsdottir & Johannesdottir, 2018; Olafsdottir, 2018).

Iceland is the first country to require that all organizations obtain a verified certification of their equal pay systems (Sigmarsdottir, 2018; Gender Equality Act No. 10/2008 with amendments, Article 19). The *Equal Pay Standard (EPS)* was first published in 2012 as a voluntary certification. *EPS* includes a “toolbox” for correct evaluation of a number of key elements relating equal pay, including the documentation of employees’ education (Icelandic Standards, 2018; Ministry of Welfare, 2018). In January 2018, a bill was passed in the Parliament making it illegal for organizations with 25 or more employees to pay men more than women for work of equal value (Gray, 2018; Icelandic Ministry of Finance, 2018).

Personal knowledge registration (PKR) is a part of personnel records (Kavanagh & Johnson, 2017; Haraldsdottir et al., 2018). Registering personal knowledge using a knowledge directory like PKR creates an

overview of collective organizational knowledge (Leyer et al., 2016). PKR creates a community of knowledge where the acquisition and sharing of knowledge can take place (Sigala & Chalkiti, 2007). The legislation of *EPS* requires organizations to document information on employees' qualifications as records of evidential value. PKR may therefore play a key role in fulfilling the requirements of *EPS* (Haraldsdottir, 2017; Gender Equality Act No. 10/2008, Article 11; Icelandic Standards, 2017; Ministry of Welfare, 2018). Simultaneously, personal data must be protected in accordance to the General Data Protection Regulations (GDPR) (IT Governance Privacy Team, 2016).

There are minimal empirical studies explaining organizational preparations for *EPS*'s requirements of knowledge registration while complying with GDPR. This study seeks to address this research gap by examining what preparations organizations have taken to implement *EPS* and what information on personal knowledge is being registered, due to the registration requirements. The intention is not to politically analyse *EPS* nor to delve in theories on feminism. Nevertheless, the Icelandic context is explained through examination of documentary material and critical discussion. The aim is to understand the required registration of traceable information on the education and experience of employees and, the value of PKR while complying with restrictions concerning the protection of personal data. This is done from the standpoint of information, records and quality management. To summarize, the paper addresses the following research questions:

RQ1. What preparations have organizations made to fulfil the registration requirements of *EPS*?

RQ2. How is PKR being registered, due to recent auditing and legal requirements?

RQ3. In what way does added PKR comply with GDPR?

RQ4. In what manner have *EPS* and GDPR affected the role of information and records managers?

The paper is organized into eight sections. After the introduction, sections two to five focus on the theoretical background of this research. Methodology is presented in section six. Section seven contains the key findings based on the research questions. Finally, a discussion, including an outline for future research and conclusive remarks, is covered in section eight.

2. Equal Pay – Background and attitude

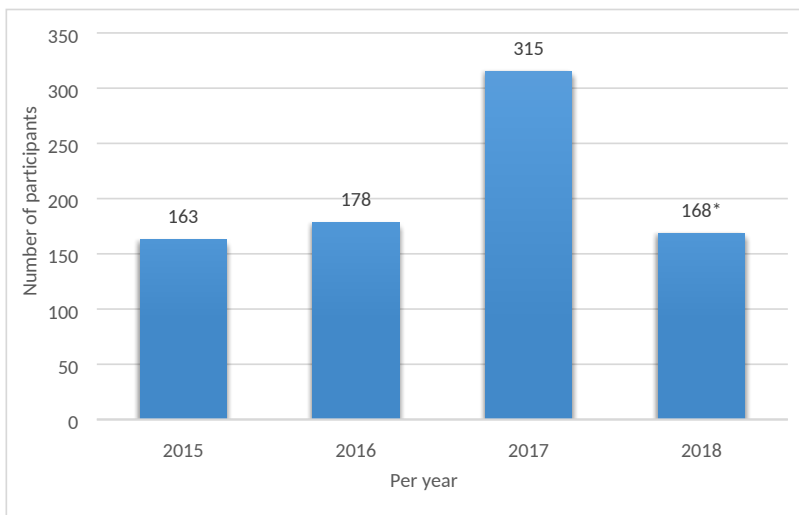
In two recent Icelandic polls where respondents were asked about their attitude towards legalizing *EPS*, the majority or 60-61% were positive (Haflidason, 2017; MMR Market and Media Research, 2017). In a third poll, made by the Icelandic Federation of Trade, 52% of the responding members agreed that legalizing *EPS* could increase the equality of pay in the labour market, while 8% completely disagreed. When asked whether legalizing *EPS* would benefit rather than harm organizations, 24% were positive (Icelandic Federation of Trade, 2017).

In August 2018 a total of 30 organizations had been legally certified according to *EPS*. Of these organizations, eight were public and 22 private. Prior to *EPS* becoming law, a small pilot group took the lead in 2012. One of these was the Directorate of Customs (Tollur.is, 2018) where the HR manager claimed that "implementing the [Equal Pay] standard was pure quality management" (Kristjansdottir, 2017). A senior advisor from the Ministry of Welfare, stated that "[t]he pilot was an eye-opener" and said the experience of the pilot

group had revealed that “[n]o employers want to discriminate, but the structures exist in such a way that they do – it is simply a result of the unconscious gender bias in our societies” (Erlingsdottir, 2017). The participants of the pilot group agreed that the implementation had been a challenging commitment but their gain was worthwhile, i.e. a transparent and fair payroll (Althingi.is, 2018, p. 2). A predecessor of the EPS certification, called the Equal Pay Certification of VR (the Commercial and Office Workers’ Union) was established in 2012. Documentary material from VR revealed that a total of 29 organizations, mostly private, chose to be evaluated and received the VR certification from 2012 to early 2017. Of those, 13 have now been legally certified by EPS.

Two Icelandic certification services audit organizations according to EPS (Ministry of Welfare, 2018). A register of certified organizations is furthermore maintained by the Centre for Gender Equality (Jafnretti.is, 2018). Business Iceland (SA) (the federation of employers) and the organizations of the social partners (the organizations involved in collective bargaining on both the employee and the employer side) have access to the register (Government Offices of Iceland, 2018; Ministry of Welfare, 2018, Eurofound, 2014). Further monitoring takes place through rectification measures. Should an organization fail to act in accordance with the required implementation, the Centre for Gender Equality is authorised to impose per diem fines (Ministry of Welfare, 2018).

In order to assist organizations, the Ministry of Welfare in cooperation with the Educational Training Centre for Public Employees (smennt.is, 2018) developed short courses. The courses included an introduction, the formulation of an equal wage policy, methods to determine equal wage criteria, classification of jobs, work procedures, quality management and records management. Figure 1 shows the number of participants per year.



*This column represents only the first three months of 2018.

Figure 1: Participation in courses for the *Equal Pay Standard*

The courses started in the spring of 2015 (smennt.is – Annual report, 2015, 2016, 2017). Documentation from the Educational Centre showed that over 800 employees, mainly HR managers, division managers, salary representatives and information and records managers had participated. The number of participants almost

doubled from 2016 to 2017. Figure 1 represents only the first three months of 2018. Documentary material included additional 120 registrations for courses scheduled in April and May 2018. It may therefore be roughly estimated that the total registration for the year 2018 will be around 600 employees.

3. Records as evidence – Good governance

EPS has the possibility to change the way work is done in organizations, not only as regards equal pay, but on information governance in general. Information governance has been explained as the “strategic, cross-disciplinary framework of standards, processes, roles and metrics that hold organizations [...] accountable for the proper handling of information assets” (ARMA International, 2016, p. 28). Information and records management is considered “an essential building block” of information governance (ARMA International, 2016). The purpose of information and records management is primarily to manage information as evidence for business activity and for accountability reasons (ISO, 2016; Oliver & Foscarini, 2014). Almost anything that has information of evidential value can be managed as a record (DML Forum Foundation, 2010, p. 24). Thus, to document information on the education of employees, expertise and skills as in PKR is a pursuit of information governance.

International management system standards, for instance *ISO 9001* and *ISO 27001*, interrelate with *ISO 15489* standard for information and records management due to their documentation requirements (Brumm, 1996; Gunnlaugsdottir, 2012) and the same applies to *EPS* which is “in substance and form similar to international management standards” (Icelandic Standards, 2018, p. 5). Standards as defined by *ISO/IEC Guide 2* may be mandatory or voluntary (International Organization for Standardization, 2016). Still, standards are in their essence a “document approved by a recognized body, that provides, for common and repeated use, rules, guidelines or characteristics for products or related processes and production methods” (World Trade Organization, 2018). *EPS* is a tailored standard that “provides a model for setting up a management system for a business or organization” (Icelandic Standards, 2018). Icelandic standards are made when interested parties find it necessary, due to particular circumstances or due to the fact that there are no previous European or International Standards that cover the circumstances (Icelandic Standards, 2018).

Transaction of the activities of organizations, such as in PKR, are recorded in multiple business systems (Franks, 2013). The main components of such systems are computer hardware and software, telecommunication systems, databases, human resources and procedures (DML Forum Foundation, 2010, p. 217). Furthermore, there is a rapid adoption of social media, both in people’s personal lives and in the organizational context (Limaj et al., 2016). As described by Leyer et al. (2016) the platform for knowledge sharing is to create a social knowledge system where one can find the owner of necessary knowledge or expertise when needed. The selection, registration, accessibility, usability and security of PKR was described in Haraldsdottir et al. (2018). Different facilitators, including records professionals, senior management and other knowledge workers were responsible for maintaining the viability of PKR, being simultaneously producers and consumers (Goldsmith et al., 2012; Haraldsdottir & Gunnlaugsdottir, 2018). The use of PKR is for the employees themselves to observe their personal progress, find important knowledge among co-workers when needed, or even to increase their personal prestige by projecting a knowledgeable image to co-workers as described by Sutanto and Jiang (2013).

As claimed by Anderson et al. (2017) the tension between expected benefits and potential security risks in information sharing exists in many domains, including business. As with information on personal health, “security controls must be sufficient” to protect data but “not restrictive to the point that they impede interoperability” (Anderson et al., 2017, p. 1085). The intention of PKR is to create an overview of accumulated knowledge embedded in the employees (Hase & Galt, 2011; Henttonen et al., 2016). With Anderson’s (2017) framework in mind, Figure 2 represents an example of how PKR may be maintained.

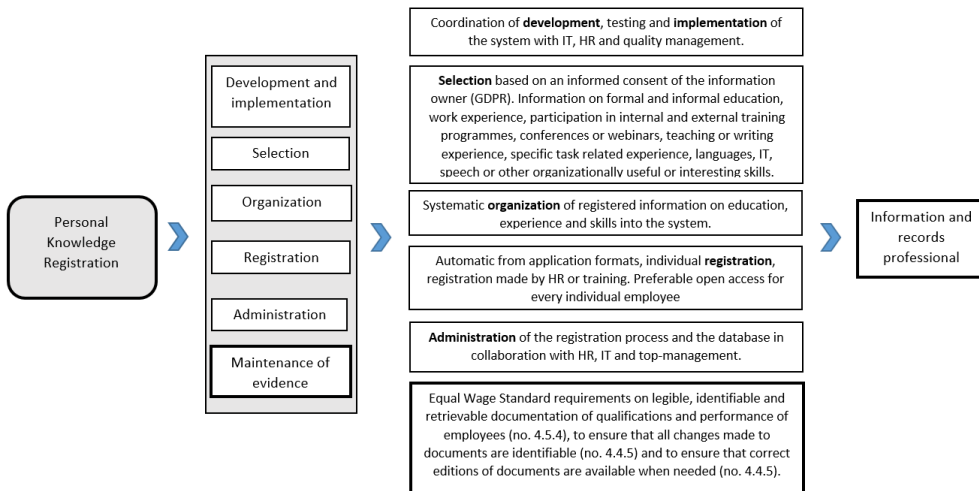


Figure 2 - PKR conceptual model

The conceptual model presented here is built on a previous model (Haraldsdottir & Gunnlaugsdottir, 2018). An addition to the original model is the last stage, maintenance of evidence, which is interrelated to the registration requirements of *EPS* and *ISO 15489*. Each stage is further described on the right side of Figure 2 and connected to an information and records manager far right. The model demonstrates how the PKR process may benefit from the expertise of an information and records manager in classification, indexing and content analysis (Franks, 2013; Saffady, 2016) who “act as mediators between the system developers, standards, and the system users” (Foscarini, 2010, p. 390), cooperate with IT on the requirements for PKR, implement and administer the system, and monitor the use.

4. Registration requirements of *EPS*

EPS requires organizations to make, document, implement, sustain and continually optimize their equal wage management systems. As stated in the standard: “The legal provision does not preclude taking account of personal factors, group factors or specific qualifications of an employee in the determination of wages, as long as this also takes into account objective viewpoints which do not entail direct or indirect gender-based discrimination” (Icelandic Standards, 2018, p. 5).

Organizations determine whether and how personal factors or group factors are to be compensated, i.e. what object criteria are used. A prerequisite for implementing equal wage management system in

accordance with the standard is to ensure that “all decisions on wages and employment terms are documented, reasoned and traceable” (Icelandic Standards, 2018, p. 7). Documentation ensures the transparency of the equal wage system, which is a prerequisite for equal wage certification. Job qualifications required of an employee include for instance education, practical experience and responsibility.

In section 4.4.2 on competence, training and awareness it is stated that the organization shall ensure that all employees “involved in the decision on wages [...] are qualified [...] in terms of appropriate education, training and experience”. It is expected that the organization “maintain[s] appropriate records on the subject”. It is furthermore required that the organization not only identifies the need for training but fulfils those needs and maintains appropriate records on the subject.

Section 4.4.4 contains a list of necessary documentation for the equal wage system. This includes an equal wage policy and its objectives, the scope of the system and its main components. Also, the wage formation system, i.e. the criteria on how wages are evaluated “relating to qualifications and performance”, all decisions on wages and terms, together with all related data on which decisions are based, such as job classifications, job descriptions and “sources of information on the evaluations of individual jobs or employees” and changes to the wages of particular employees or groups of employees following audit (Icelandic Standards, 2018, p.11). The wage analysis must be included and the development of wages for employees or groups of employees as well as records that the organization deems necessary in order to ensure organized, operational and manageable processes related to its equal wage system.

Section 4.4.5 describes the control of documents and states, for instance, that the organization shall maintain procedures to approve that documents are satisfactory prior to issue as well as to review and reapprove documents as necessary. The *EPS* also requires that all changes made to documents are identifiable, that correct versions of documents are available, legible and identifiable. It is required that the organization ensures that external documents that the organization deems necessary for organizing a functioning wage system are identified and to prevent the use of outdated documents.

Section 4.5.4 deals with the control of records and includes the requirement that organizations must “establish and maintain all records necessary to demonstrate compliance with the requirements of the equal wage system and the Equal Wage Standard and the results achieved” (Icelandic Standards, 2018, p. 12). The organization must implement and maintain “procedure(s) for the identification, preservation, safeguarding, recovery, retention time and disposal of records”.

In Annex B of *EPS* on guidelines for the classification of jobs, it is stated that jobs must be evaluated against each other and weight assigned to each. This includes a criterion of competence which is the cognitive and physical competence that a job requires. This can include “knowledge obtained by education or experience, cognitive skills, initiative and independence and communication skills”. This competence may consist for instance of experience, training and education. The relative weight of the criteria is based on the importance of each criterion. The criterion of competence has the greatest impact on the job assessment according to the example in Annex B or 40%, while responsibility has 30%, strain has 20%, and working conditions 10% (Icelandic Standards, 2018, p. 18).

5. Not a perfect system – Different views

SA, as a member of the technical committee of *EPS*, expressed serious doubts in its review of the parliamentary bill (Althingi.is, 2018). Their reasons were first that a standard in itself should not be mandatory, but voluntary. Second, the implementation of the standard did not include a comparison between different workplaces in a similar sector, i.e. people might have equal work of equal value within organization A or B but as they were not compared between the two (or more) their pay differed. Third, the smallest organizations might delay further hiring, i.e. outsource certain projects instead of implementing the standard. The reason was not that they were against *EPS*, but lacked the infrastructure to carry out the “complex and expensive task” of implementation (Hardardottir, oral reference, March 1st, 2018). Fourth, not everything was included in the wage criterion, such as pension, assets in funds and so on. Finally, there were serious doubts on how Icelandic supervisory authorities could regulate the standard due to lack of funding and staff. Iceland has received a lot of international attention due to *EPS*. It is therefore crucial to do things right from the beginning as “we have been bragging about this all over and if this turns out to be a fiasco, then why go ahead to begin with?” (Hardardottir, oral reference, March 1st, 2018). Former experience from the financial collapse of the Icelandic economy in 2008 may partly explain this criticism as it showed that a domestic supervisor, in that case the Central Bank and the ministries in charge of economic affairs, were understaffed and lacking in experience in how to manage a large financial sector (Benediktsdottir et al., 2011).

A total of 21 reviews were sent to the Parliament when the bill for legalizing *EPS* was under discussion. One stated for example that *EPS* was an important tool to implement an equal pay system and ensure the same pay for men and women for jobs of equal value. However, it was not a correct procedure to mandate organizations to implement the standard. “Organizations should rather be rewarded with benefits of some sort for implementing [the standard] (Althingi.is, 2018, p. 45). Reviews were inconsistent on the monitoring role. While some celebrated their new role as a monitoring partner, others stated that it was not in their interest to take on the role of a monitoring partner due to a complex process and lack of financial support (Althingi.is, 2018).

6. Methodology

This paper represents one aspect of an ongoing larger research project on PKR. The aim of this part of the research was to provide an understanding of what actions organizations had taken to prepare for *EPS*, with focus on whether PKR was being registered differently due to recent auditing and legal requirements. Furthermore, to shed light on how Icelandic organizations balanced added registration obligations against the upcoming protection requirements of GDPR. Finally, to examine whether the regulative environment had affected the role of information and records managers.

The data collection, interviews and gathering of documentary material, took first place during 2010-2012 and again during 2014-2016 in six organizations, here named A, B, C, D, E and F. Additional six organizations were studied in 2014-2016 as a corroborative group, named G, H, I, J, K and L. While the selection of the first six organizations and the interviewees was purposive (Morse, 1991; Esterberg, 2002; Merriam, 2009) the latter six organizations were chosen by using snowball sampling (Neuman, 2006). In January 2018 it was decided to revisit

eight out of twelve organizations as further clarification was needed on the subject of *EPS*. Table 1 gives an overview of the participating organizations of this part of the research.

A	B	E	F	H	I	K	L
Financial Private	Technology/Communication Private	Financial Public	Surveillance Public	E-commerce Private	Industrial/Consultancy Private	Industrial/energy Public	Industrial Public
Nearly 1000 employees.	Around 500 employees.	Nearly 200 employees	Almost 240 employees.	Around 270 employees.	About 350 employees.	460 employees.	50 employees.

Table 1 - Organizations

Organizations A, B, E, F, H, I, K and L were contacted by e-mail and/or by telephone and additional interviews were conducted. Documentary material was collected simultaneously. Examination of interviews and of documentary material was completed in June 2018.

Qualitative methodology was used as it is well suited to gather data at the scene (Gorman & Clayton, 2005; Silverman, 2013). Grounded theory was chosen as a method for analysing gathered data (Glaser & Strauss, 2012; Charmaz, 2006). A hypothesis was developed during the research and from the analysis of the data (Moustakas, 1994). The number of participants recruited was guided by the diversity in the information gained (Hennink, Hutton & Bailey, 2011). Discourse analysis was used as a method on gathered data (Wetherell, 2001; Gee, 2014). The *EPS* was examined as reference in order to identify how documentation and registration of evidence were formulated. Documentary material provided by interviewees was also examined for this purpose. Studying the documents allowed for identifying written requirements, as well as expectations, attitudes and intentions of the standard and its legislation. A total of 24 interviews are included in this study. See table 2 for an overview of the interviews.

First interviews in twelve organizations in 2010-2012 and 2014-2016													
	Private							Public				Total	
	A	B	C	G	H	I	D	E	F	J	K		L
HR Manager	1	1	1*			1	1*	1	1				5
Education and Training Manager	1	1		1*	1		1*	1	1**				5
Information and Records Manager	1	1					1*	1	1	1*	1	1	6
Quality Manager			1*				1*						0
													16

Second interview in January 2018 in eight out of twelve organizations													
	Private							Public				Total	
	A	B	C	G	H	I	D	E	F	J	K		L
HR Manager						1			1				2
Education and Training Manager								1					2
Information and Records Manager	1	1									1	1	4
													8
													24

* Interview not included in this paper

** An employee responsible for Education and Training and Quality Management.

Table 2 - Interviews

All groups were divided equally between the private and the public sector. The eight additional interviews were purposefully selected. It was important that the interviewees had knowledge and experience of *EPS* and could evaluate if and how PKR had changed since preparations for *EPS* began. The objective was to get a

comprehensive picture of the current status of PKR with a particular view on obligatory registrations according to *EPS* and restrictions of GDPR. The topic was examined from multiple perspectives, using various data from different sources (Janesick, 1994; Kvale, 1996). The hope was to enhance the possibility of a holistic view and to ensure as reliable findings as possible.

Iceland is a small community. The risk of revealing the identity of the participants was considered high. Thus, it was appropriate to disguise individuals and their places of work (Gorman & Clayton, 2005).

7. Findings

This section presents the analysis of the interviews. The examination of *EPS* as documentary material has been covered (see section 4). The aim of the interviews was to understand in what way *EPS* and its legalization impacted the work of PKR facilitators. The purpose was to understand the perception of the interviewees and their experience of *EPS* and GDPR.

7.1 Preparations for the *EPS* and its legislation in relation to PKR

All organizations had started to prepare for the implementation of *EPS*. Organizations A and I had already been certified by a predecessor of the standard. The HR manager in organization I stated that the organization had already an extensive PKR database in their HR system. Their preparations involved extracting the files they already had in order to be able to calculate the “correct” wages of employees in accordance with their predefined jobs. “The process is quite difficult” said the HR manager as the protocol available for such classification of jobs, such as the ISTARF95 (an Icelandic classification of jobs) which is based on the international standard, ISCO-88 (Classification of Occupations), is highly limited (Statistics Iceland, 2009, International Labour Organization, 2018).

The information and records manager in organization A stated that the organization had already implemented *EPS* in 2015 [as a voluntary standard] which she said would make it easier for them to adjust to the new certification. All documents and records regarding their policy on equal wage was registered into the ERMS. The information and records manager in organization L stated that *EPS* had been presented to the staff in early 2017. Two representatives were selected among staff members to manage the preparations but one had since resigned and the other was not able to finish the project. After hiring an external advisor, the process had begun again in 2018. The information and records manager in organization L stated that they would start by “reviewing procedures regarding records management in general as well as focus on records regarding quality management and internal audit”. In organization E the HR manager claimed that necessary preparations for the equal pay system had just recently begun, processes were being reviewed as well as procedures and records management of related documents. The training manager in organization H agreed and said that their preparations had just started. “We have been very busy, hiring 15 new employees just this week! There is a lot to be done to prepare for the standard!” Despite not having 250 employees they were interested in having their equal wage system audited by the end of 2018. The information and records managers in organizations B and K claimed that they had no particular role regarding the preparations for *EPS*. They both said that these matters

were in the hands of the lawyers and HR managers within their organizations and referred to them for further information.

7.2 Changes in the PKR process due to the EPS and its legislation

The registration of personal knowledge had not changed due to the legalization of *EPS* according to the HR manager in organization I. Knowledge and experience of the employees was already considered a valuable asset and they had therefore made sure to register everything. “We must know what we are capable of in order to sell our service” she said. The information and records manager in organization A stated that *EPS* and its legislation had pushed the PKR process forward. She said that employees were better aware of the value of their educational documentation and more willing to have their documentation registered into the HR system. She claimed that the requirements on managers to monitor their employees with regard to education, skills or experience, was greater than before. She stated that these changes were due to the registration requirements of *EPS*. She also stated that PKR was no longer simply preserved on paper, but put into electronic information systems, but only accessible to those who necessarily needed access.

“We have recently implemented a new HR system and our PKR registrations for the past 8-12 months are better than before” said the training manager in organization H. He continued and said “we have not changed much in the procedures and still use a scanner to paste information on formal and informal education based on certificates produced by employees”. He stated that it would be better if this information was properly registered into the system, not simply scanned, as it would help with the overview. He claimed: “We are still struggling to gather all information regarding the personal knowledge of our employees” and explained that employees had been using e-learning without registering it into their PKR system. “It was by mere chance that I found out when obtaining a username to this e-learning website [...] and I had no idea about it.” Despite the lack of registrations, the training manager found it very positive that the employees were seeking the knowledge they needed.

The interviewed information and records manager in organization L stated that the legislation of *EPS* had not yet changed how they handled employee knowledge. Registrations were still lacking and copies of university diplomas were only kept in a locked drawer in the HR office. She said that they had recently started to scan existing documentation and link it to the personnel files of employees but the project had just begun. The HR manager in organization F stated that the preparations for *EPS* had only just begun and the PKR process was still lacking. She said that they were expected to register more information than before on PKR, but not only due to the standard. She described requirements originating from general wage agreements which included a pay raise in accordance with formal education. She continued and gave an example of an employee who was given a pay increase after obtaining a new degree [from B.Sc. to M.Sc.], despite the fact that the job description did not require a second university degree. Being a public organization, organization F was also required to register certain information on the educational background of employees into their payroll system, for this they needed documentation.

The HR manager in organization E claimed that their registration of the personal knowledge of employees had been “in an organized form” for a while. Still the requirements of the equal wage system called

for an even more structured form. Organization E had decided to implement a new HR system and the HR manager was expecting to be able to manage PKR more effectively in the new system. Interviewed information and records managers in organizations B and K did not provide further information.

7.3 Preparations for GDPR and the balance between evidence requirements of EPS versus regulations to protect personal data

When asked about preparation for GDPR the HR manager in organization I said that there were a few things to consider. She stated: “We need our employees to sign an informed consent in order for us to use the information we have gathered in our PKR database outside of the organization” and continued “but, I have just realized that we still need to have their informed consent for using the same information within our organization.” She said that most employees already had access to the PKR database in their organization and could therefore look for specific knowledge. “It took years to get this to function as we wanted it to” she said. “The point of having it all in the open is for the employees to kind of sell their own experience, education and skills” and thereby get more interesting projects.

The interviewee in organization A maintained that their information processes were in accordance with the legislation. She maintained that employees gave their informed consent, for the collection of personal data, and knew for what reasons it was collected. The HR manager in organization F had not been aware of there being any preparations for GDPR in her office. She claimed not to be involved in the process and had not “looked into the matter well enough to have an opinion”. The interviewee in organization L said that a lawyer and the information and records manager in organization L had both attended courses on how to implement GDPR but the process of registering how they processed personal information at the office had not started. Personal files were kept on paper in the HR office, but most files were also kept with very limited access in their records management system.

“The GDPR process is ongoing for sure”, the training manager in organization H stated. The work is mostly in the hands of our legal division and as in organization L the HR manager was not yet involved in the process. He had thought about the balance between the legislation of EPS and GDPR requirements and said he expected that issues might arise as experience would grow. Still, he stated that he experienced the legislation and GDPR in a positive way as it encouraged disciplined work processes. “We need more discipline in the HR division” he stated, “although not as much as in legal, IT or compliance.” Organization E had started their preparations for GDPR according to the HR manager. They had put together a work-group on the subject and appointed a data protection officer. They had already an overview on personal data processing at the organization. Regarding the balance between the PKR and GDPR she claimed that “this is one of those aspects that we are looking into. She added: “We foresee that we need to have permissions from our employees to register their personal knowledge.”

7.4 The employees that were responsible for the registration process of PKR

Information and records managers were not more involved in the PKR process due to the advent of EPS and its legislation. Four information and records managers were interviewed, two of them, from organizations B and K, preferred not to answer and referred to other knowledge workers, such as from the legal or the HR division. An

information and records manager in organization A claimed to be involved in the preparations and implementation of *EPS*, but PKR was in charge of the HR division. The information and records manager in organization L had taken part in meetings with an external advisor for the preparation of the equal pay system. She expected to be involved in the implementation process as she was in charge of the overall information management of the organization. The HR managers in organizations E and F expected to be in charge of their PKR process. The HR manager in organization E added that she expected her colleague, a training manager, to cooperate with her on the registration process. The training manager in organization H claimed to be hoping to be able to hire new employees for the project, one for information and records management and another one in charge of organizational training. He stated that current “office buzz” prevented him from being proactive enough in PKR.

8. Discussions

Former research showed that PKR had been generally inadequate, with only a few exceptions (Haraldsdottir et al., 2018). Still, there were indications for changing needs. This section presents a discussion of the key findings.

8.1 Organizational preparations for *EPS*

HR or training managers collected certificates from employees as proof of necessary qualifications. These registrations had evidential value for the benefit of employees and for organizations to provide answers to monitoring institutions, such as the Financial Supervisory Authority or the Centre of Gender Equality. In this way, PKR provided documentary evidence of personal knowledge. Organized registration of employees' knowledge was still lacking, despite the requirements of *EPS* and its legislation.

Organizations A and I, that had the experience of a voluntary certification, had started the implementation of *EPS* in a serious manner. HR and training managers in organizations E and H stated that they were planning to implement a new HR system or had recently done so. They were not properly prepared for *EPS* as their former registrations needed adaptation to the standard. Organization L was at the starting point and had recently acquired an external advisor for help. In organizations E, H and L the interviewees confirmed a current lack of registrations but hoped for a more structured PKR in the near future.

The status of organizational preparations for *EPS* indicated that the organizations had not taken the necessary steps to prepare for the implementation of the standard and were hesitant as regards further registrations due to GDPR. This hesitation is of concern as around 1200 organizations in Iceland must have the certification by the end of 2021.

8.2 Changes in the PKR process due to *EPS*

The standard and its legislation has pushed the process of PKR forward. Additional motives were identified. First, the requirements of labour unions regarding wages based on formal education and second, the requirement to register educational information of employees into a public payroll system. Moreover, the four sections of *EPS*, as well as guidelines for the classification of jobs in Annex B, confirmed the legal obligation of registration made by the Gender Equality Act. No. 10/2008 with recent amendments no. 56/2017. Also, *EPS* requires that the equal wage system shall include all records. Examples of such records can be identified in section 4.4.1 where it is

stated that the top management must ensure documentation on necessary resources, such as human resources and expertise. The same applies to section 4.4.2 where the organization shall ensure that all employees who are involved in its decisions on wages are qualified, with appropriate education, training and experience, and maintain appropriate records on the subject. Thus, the evidential value of documentation regarding education is rich.

Former results of this research had identified that HRMS, knowledge mapping, corporate directories or interactive databases, had been tried for registering personal knowledge but without great success (Haraldsdottir et al., 2018). The causes seemed to be linked to a lack of managerial support, unclear responsibility of tasks, lack of access and thereby added value to the users. Again – the purpose of registration was unclear to employees, access was restricted to their own personal profile, with exceptions in organizations I and H, and the usefulness of the data was therefore limited. These findings relate to Sutanto and Jiang (2013) where they claim that the success of a KMS (in their case) depended on people contributing content to the database as well as seeking knowledge from it, sort of an as you saw, so shall you reap ideology. Their findings also indicated that a dedicated administrator was necessary to encourage knowledge contributions (2013). The findings of Sutanto and Jiang are furthermore supported by Anderson et al. (2017) where it was maintained that the stability and championing of top leadership balanced an organization's ability to both protect and share information when "information sharing is governed by strict laws due to the specifically sensitive nature of the information" (Anderson et al., 2017, p. 1107).

8.3 Organizational preparations for GDPR

The implementation of GDPR and act no. 90/2018 on Data Protection and the Processing of Personal Data, concerned all interviewees. The participating organizations were preparing for a more effective information governance, i.e. strategic framework of standards, roles, processes and metrics that hold organizations answerable for proper management of information assets (ARMA International, 2016). Interviewees in organizations H, E and A stated that they expected more conformity and structure aligned with the implementation of GDPR and welcomed such changes. However, the overall preparation of the participating organizations was still at its starting point. The information and records manager in organization L had attended an introduction to GDPR. Organization L still lacked a needs-analysis for the GDPR process in order to know what personal data was being collected, how it was organized, where it was registered and who had access to it. Organization E had hired a data protection officer but were still looking into the aspect of PKR, such as informed consent. The HR manager in organization I had just realised that she needed a consent for sharing personal data with other employees within the organization, as it was their interest to have "it all in the open". The interviewee in organization A stated that the organization obliged to GDPR. She did not, on the other hand, fully confirm that the employees had given their consent to PKR, and their platform was only open for those with necessary access.

Organizations were not fully equipped to implement and maintain procedures as required by *ISO 15489* (ISO, 2016) and GDPR. Therefore, the organizations were at risk for receiving rectification measures from the Icelandic Data Protection Authority, or other data protection authorities in Europe. If Icelandic organizations fail

to comply to GDPR, they may (in a worst case scenario) expect a fine of 4% of yearly revenue or up to 20 million Euros (The Icelandic Data Protection Authority, 2018). The stake is therefore high.

8.4 Information and records managers and the responsibility of EPS and GDPR

The conceptual model (Figure 2) did not reflect the findings in regards to the role of information and records managers. Only one out of the four claimed to have a role in the preparation process for *EPS*, but none was particularly involved in PKR or GDPR. The model demonstrates how PKR could benefit from professionals in classification, indexing and content analysis (Franks, 2013; Saffady, 2016), as well as mediators between the developers, the regulatory environment and the end-users (Foscarini, 2010). Still, HR and/or training managers, as in organizations B, K, I and H, were more likely to be involved in the PKR process than information and records managers. The same applied to the preparations for GDPR where the subject was in the hands of the legal department as in organizations B, K and H. This is of surprise as the purpose of records management is among other things to manage information as evidence for business activity and for accountability reasons (ISO, 2016; Haraldsdottir & Gunnlaugsdottir, 2018).

8.5 Critical attitudes

The legislation of *EPS* had been met with criticism as it mandates a large number of organizations, thereof approximately 560 organizations with only 25-49 annual staff, to implement *EPS* (Althingi.is, 2018, p. 38). Criticism had been pointed at how Icelandic supervisory authorities may regulate the standard due to a lack of funding and paucity of staff. The Centre of Gender Equality had been criticised and described as “weak and toothless” as a check point on discrimination (Halfdanardottir, 2015).

In comments on the parliamentary bill it is clear that interested parties are concerned about the lack of experienced staff and financial status of the Centre of Gender Equality. This criticism may be grounded in the financial collapse of the Icelandic economy when supervisory authorities failed to monitor the rapid expansion of the banking system following its privatization (Benediktsdottir et al., 2011). This criticism has also been aimed at the audit and certification services. In a parliamentary review the situation is compared to a “bottleneck”. Obligatory investigation from accredited audit services was deemed incompetent due to the fact that there were only two Icelandic services qualified to audit *EPS* and both were understaffed, lacked experience and had time-limited permits (Althingi.is, 2018, p. 12).

8.6 Conclusion

The Icelandic *EPS* legislation and GDPR gave ample reasons to examine their impact on PKR. This study has a few key contributions to theory and practice. First, as pointed out by Limaj et al. (2016) social information systems have changed the way organizations, and thereby the employees, interact, communicate and collaborate. These systems allow individuals to “search for, acquire, edit, or share relevant information [...] and communicate via message with specific co-workers or everyone in the organization” (Limaj et al., 2016, p. 382). However, the regulatory environment and legislative requirements, as made by *EPS* and GDPR, puts constraints on social knowledge systems, such as PKR (Leyer et al., 2016). Individual contributions and the viability of PKR are perhaps unconsciously made inoperable by restrictions (Anderson et al., 2017). Second, interviewees gave indications

that they expected some collisions to occur. Thus, further examination of how the requirements of *EPS* complies with GDPR, as experience grows and longitudinal comparison can be made, is important. Third, all *EPS* records shall remain legible, identifiable and retrievable which relates to *ISO 15489* whose purpose is primarily to manage information as evidence. Still, information and records managers are underestimated as facilitators of PKR. Fourth, it seems clear that the organizations lacked further support in order to be better prepared for the implementation of *EPS* and GDPR. It is therefore important that governmental officials, for instance at the Ministry of Welfare, and other interested parties, such as Statistics Iceland, SA and the organizations of the social partners, improve work procedures to minimize the complexity of the implementation process. These measures could also benefit other countries that choose to follow Iceland's lead in the struggle against the gender pay gap.

The process of implementing, auditing and then monitoring *EPS* in Iceland is an uncompleted project and this research is conducted at its very beginning. Hence, theoretical framework and practical experience is still emerging. Despite limitations, this research bridges an important gap in a rapidly growing interdisciplinary field of information management. It provides a multi-professional, empirical example of how and why organizations were not as prepared for *EPS* or GDPR as perhaps anticipated. It adds new knowledge on the importance for organizations to generate a way, supported by top management and administrated by a predefined key stakeholder, to implement PKR. The challenge is to fulfil the requirements of *EPS* while complying with GDPR. While the *EPS* has only been established in Iceland so far, it may be expected that other countries, will show interest in implementing a similar standard. Furthermore, this research sheds a light on the borderline between user experience on the one hand, and data protection on the other. GDPR has been established in most European countries. The balance between employees' access to PKR and thereby possible benefits of contributing knowledge to a social platform, and the necessity to protect personal data as required by GDPR, is an ongoing challenge for organizations all over.

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Paper IV

Manuscript Details

Manuscript number	INFORG_2018_251
Title	Knowledge registration, access and use in organizations: Are the award-winners doing better?
Article type	Research Paper

Abstract

Worldwide organizations are chosen to receive awards for their outstanding performance, for instance for their best use of knowledge. The question remains how knowledge award-winning organizations distinguish themselves from non award-winning organizations, when it comes to the registration, access and use of the knowledge of employees. This multiple-case study takes place in Iceland. The contextual framework covers 18 organizations, of which six have won the Knowledge Company of the Year award. A total of 35 semi-structured interviews were conducted and an analysis of six award-winning verdicts. The criteria of the award were examined as well as whether winning it entailed a more comprehensive overview of the knowledge residing in employees. The reasons the organizations had for their knowledge registrations were also under study, as well as which challenges their registration, access and use entailed. A conceptual model was developed for this purpose. Whether the organizations experienced a financial gain in the registration of knowledge was also examined. The findings indicate that the award-winning organizations had received the award for outstanding success. Still, the interviewees claimed to be experiencing adversity regarding costs, time, limited access and use, which challenged the process. Most interviewees stated that the registration of knowledge had a financial gain but found it difficult to measure and hard to confirm.

Knowledge registration, access and use in organizations: Are the award-winners doing better?

Abstract

Worldwide organizations are chosen to receive awards for their outstanding performance, for instance for their best use of knowledge. The question remains how knowledge award-winning organizations distinguish themselves from non award-winning organizations, when it comes to the registration, access and use of the knowledge of employees.

This multiple-case study takes place in Iceland. The contextual framework covers 18 organizations, of which six have won the *Knowledge Company of the Year* award. A total of 35 semi-structured interviews were conducted and an analysis of six award-winning verdicts. The criteria of the award were examined as well as whether winning it entailed a more comprehensive overview of the knowledge residing in employees. The reasons the organizations had for their knowledge registrations were also under study, as well as which challenges their registration, access and use entailed. A conceptual model was developed for this purpose. Whether the organizations experienced a financial gain in the registration of knowledge was also examined.

The findings indicate that the award-winning organizations had received the award for outstanding success. Still, the interviewees claimed to be experiencing adversity regarding costs, time, limited access and use, which challenged the process. Most interviewees stated that the registration of knowledge had a financial gain but found it difficult to measure and hard to confirm.

Key words: Personal knowledge registration, Information management, Knowledge management, Intellectual assets, Knowledge award.

1. Introduction

It has been widely accepted that knowledge is a key factor of production and competitiveness (Wasko & Faraj, 2005; Hansen, Nohria, & Tierney, 1999; Skyrme, 2011). Organizations are becoming more interested in assessing, managing and developing their intellectual assets, the knowledge of their employees (Buenechea-Elberdin et al., 2018). Many organizations have implemented knowledge management systems (KMS) to enable their employees to store the knowledge they have, and to make it available for wider use (Sutanto & Jiang, 2013). Despite the notion that information, for instance on intellectual assets, is considered valuable (Sundquist & Svård, 2016), few organizations have a way to systematically track the skills of their employees or to estimate what skills they lack (Hesse, 2017; Haraldsdottir et al., 2018).

Organizations invest in information systems (Wang, 2010) and focus heavily on capturing, categorizing, storing and reusing knowledge (Wallace et al., 2011; Venkitachalam & Willmott, 2017). The objective is to enhance effective reuse of codified knowledge, best practices and procedures with emphasis on “people-to-document connections” (Venkitachalam & Willmott, 2017). Studies have mainly focused on the quality or practicality of these systems without much considering direct contact to the knowledge owner (Leyer et al., 2016).

New aspects of knowledge sharing and reuse have entered the information management literature. Personal knowledge registration (PKR) has become a way to register and manage the knowledge of employees (Haraldsdottir et al., 2018). PKR is a directory of current knowledge residing within an organization. Instead of focusing on capturing and documenting know-how or best practices, with rising emphasis on knowledge leakage caused by a generation change, retirement or when the knowledge owner leaves the organization for different reason (Calo, 2008; Carmel, Yoong, & Patel, 2013; Leyer et al., 2016), PKR connects the knowledge seeker directly to the knowledge owner. Moreover, PKR, as a social knowledge system, holds information on the formal education, former work experience, participation in internal and external training programmes, conferences or webinars, teaching and writing experience and language, IT and communication skills of existing employees. This knowledge, which is selected and registered in the interest of individual employees, and in accordance with organizational knowledge sharing strategy (Haraldsdottir et al., 2018), is documented into a directory. Leyer et al. (2016) stated that the purpose of a social knowledge system was to provide easy access to available knowledge sources, while the knowledge itself was not contained in the system. The same applies to PKR, whether a KMS, a human resource management system (HRMS) (Kavanagh & Johnson, 2017) or an organizational social media platform. It is a directory to knowledge origin, i.e. which employees possess the required knowledge (Leyer et al., 2016, p. 97). Another aspect that distinguishes PKR from other forms of knowledge repositories, is its emphasis on personal interaction, whether face-to-face or face-to-interface

(Christensen & Pedersen, 2018) or face-to-phone. PKR may help employees find common ground and locate experts in a particular domain as pointed out in Ellison et al. (2015). The knowledge is characterised as personal as information regarding the knowledge owner is retrievable in the PKR, and the reuse by the knowledge seeker occurs through direct communication. PKR may therefore be described as a “people to directory to people” connection.

This study represents one aspect of a larger research on PKR currently underway (Haraldsdottir and Gunnlaugsdottir, 2018; Haraldsdottir et al., 2018). 18 organizations provided an extensive empirical framework for examining PKR from different angles, for instance from the perspective of awards. Awards are one popular way of acknowledging extraordinary efforts within certain domains. Thus, awards may be one proxy for achievement within KM, for instance on PKR. Departing from the idea, that awards identify outstanding practices, the article focuses on what distinguishes six knowledge award-winning organizations, from other organizations in terms of PKR. The goal of the article is then to learn from these award-winners by answering the following research questions:

- RQ1) In what manner, if any, do knowledge award-winning organizations practice PKR?
- RQ2) What are the reasons for applying PKR within the knowledge award-winning organizations compared to others?
- RQ3) What financial benefits do organizations reap from practicing PKR?

The paper is organized into seven sections. Section two reviews the theoretical background and examines relevant studies while section three discusses the award winning environment. Methodology is presented in section four. Section five contains the key findings. Discussions and summary is covered in section six. The paper concludes with a contribution to theory and practice and an outline for future studies.

2. A directory of knowledge – personal knowledge registration

The purpose of knowledge management (KM) has been to find ways to limit time-consuming information searches, redundant work or rediscovery of the wheel (Carmel & Patel, 2013; Leyer et al., 2016). The processes in KM include knowledge creation, capture, distribution, application and reuse (Alavi & Leidner, 2001). Knowledge reuse has been considered a major justification for KM (Majchrzak et al., 2004) and an important factor for achieving business goals. Examples of knowledge reuse include “transfer of best practices from one part of an organization to another” (Majchrzak et al., 2004). In a knowledge driven and competitive economy many organizations have implemented KMS or knowledge repositories (Fadel & Durcikova, 2014). Studies indicate that by using KMS organizations enable their employees to store the knowledge they “carry in their minds and make it available for wider use” (Sutanto & Jiang, 2013, p. 258). This part of KM has been described as the “less tangible phenomena” as it usually concerns tacit knowledge which is related to the “expertise and experience” of employees (Choo et al., 2006, p.493). Knowledge sharing practices of this kind have been difficult to facilitate due to the sticky nature of knowledge, and the great deal of effort needed for it to transfer (Szulanski, 2003; Leonardi & Meyer, 2015).

Personal knowledge registration is one type of a knowledge directory in a “cleverly constructed database” as described by Davenport & Prusak (1998). PKR covers a set of information on the education, experience and expertise of employees that is considered relevant to the organization while employed (Haraldsdottir, 2016). PKR has proved useful in daily business for organizations, such as recruitment, in-house training and team-working, as for the employees themselves to observe their personal progress and find important knowledge among co-workers when needed (Haraldsdottir et al., 2018). Also, registration of knowledge into a centred platform helps increase the personal prestige of employees by projecting a knowledgeable image to co-workers as claimed by Sutanto and Jiang (2013). While a repository serves as a way to reuse codified knowledge processes and best practices (Davenport & Prusak, 1998) or to share work-related procedures with co-workers (Christensen, 2007), a knowledge directory does not contain the knowledge itself but points to the knowledge owner (Leyer et al., 2016).

Knowledge packaging in a directory takes place in a similar manner as in a repository. It includes filtering, organizing, and indexing content in a systematic manner so that users can evaluate their search results and see if they meet their needs (Kankanhalli et al., 2011). Since PKR consists of information on the personal knowledge of employees, while employed, registered information, if regularly updated, remains searchable and applicable.

3. Award motivations - rhetoric or reality

To win an award has numerous benefits for organizations for various reasons. Ceremonial criteria of worth are useful, they legitimate organizations internally, with stockholders, the public, the state and they demonstrate socially the fitness of an organization (Meyer & Rowen, 1977, p. 351). Motivations such as awards, financial incentives and recognition are a powerful force that encourages organizations and their managers to strive for interpersonal knowledge sharing activities (Brachos et al., 2007). In addition, financial rewards, promotion and improved self-image, tend to have a positive impact on organizations (Chae & Bloodgood, 2006, Kankanhalli et al., 2011). Meyer and Rowen (1977) maintained that there was a sharp distinction between formal structure of an organization and its actual day-to-day work activities. That organizations did not necessarily function in accordance with their formal blueprints, that rules might be violated, decisions might not be implemented, technologies might be inefficient and inspection systems too vague to provide coordination (Meyer & Rowen, 1977). The findings of a recent case-study on two organizations described as “prominent in innovations and innovation activity” demonstrate that the two organizations only loosely organized the storage and documentation of their knowledge and a formal strategy of data and information preservation was lacking (Grimsdottir & Edvardsson, 2018, p. 5).

So-called management fashion setters, such as “consulting firms, management gurus, business mass-media publications, and business schools” may affect organizations. They sense emergent preferences for new management techniques (Abrahamson, 1996). An IT fashion, for example, is the collective belief that a certain information technology is the newest and at the forefront of practice. These beliefs support that following a fashion, such as trending IT technology, can legitimize organizations and their leaders regardless of performance improvement (Wang, 2010). There is a competitive market where fashion setters identify and highlight widespread problems with organizational performance, or performance gaps, and promote the use of certain techniques to help narrow this gap (Wang, 2010). The organization may appear rational after having completed the restructuring process and implementation of the latest fashion manoeuvres (Kieser, 1997). Similarly, some might believe that engineers solve specific problems, or secretaries perform certain tasks, without knowing who these engineers or secretaries are, or exactly what they do (Meyer & Rowan, 1977, p. 349). In the same manner some might presume that knowledge award-winning organizations manage knowledge in a certain way, without knowing exactly what they do. A respectable status or public fitness of an organization, such as a knowledge award, may legitimize an organization, regardless of the reality of their processes. Similarly, Podolny stated that “the greater [...] uncertainty about an underlying quality of a producer [...], the more the market participants will rely on the producer’s status to make inferences about quality” (Podolny, 2005, p. 18). Rhetorical success, such as status, unused blueprints or strategies, unsuccessful implementation of an IT software or inconsistency between the expectations from having received a knowledge award, and actual day-to-day work, may stimulate defence routines if performance gaps are revealed. Organizational defence routines are actions or policies that prevent individuals or segments of the organization from experiencing embarrassment or threat. Simultaneously, they prevent people from identifying and getting rid of the causes of the potential embarrassment or threat (Argyris, 1990). It may even occur, that organizations unintentionally impede knowledge transfer by making it difficult for employees to find knowledgeable others within the organization (Zack, 2002), for instance by limiting their PKR access to their own personal profiles, and not allowing access to the knowledge and expertise of their co-workers (Haraldsdottir et al., 2018).

Managers of organizations strive to incorporate the right building blocks to be considered “proper, adequate and rational”, and to avoid illegitimacy (Meyer & Rowen, 1977, p. 345). Management techniques must appear “progressive and accepted as the most efficient means to important ends” and at the forefront of management progress (Abrahamson, 1996). And, many of the, perhaps fashionable, policies, programmes and procedures of organizations, are enforced by public opinion, by social prestige, and by the laws among other things (Meyer & Rowen, 1977, p. 343). While former studies have indicated that the registration of the knowledge of employees was lacking in Icelandic organizations (Haraldsdottir & Gunnlaugsdottir, 2018; Grimsdottir & Edvardsson, 2018) this kind of registration has recently been enforced by law due to the legalization of the Equal Pay Standard (Haraldsdottir, 2018). A conceptual model representing six facilitators of PKR (Haraldsdottir et al., 2018), portrayed KM as a multi-professional task (Franks, 2013; Saffady, 2016, Oliver & Foscarini, 2014). In it, the success factors of PKR were first introduced; access, usability and the security of information, as well as the selection and registration of information. Former studies indicated that utility and usability in PKR, as in other systems, act as critical success factors and main causes of underutilization (Damodaran & Olphart, 2000; Leyer

et al., 2016; Haraldsdottir et al., 2018). PKR system, as with other trending or enforced IT systems, may thus turn out to be just another management fashion rather than an instrumental knowledge management tool.

4. Methodology

This study represents one aspect of a larger research project currently underway on PKR (Haraldsdottir et al., 2018). The aim was to provide an understanding of what a knowledge award entailed and how receiving it had effected the award-winners, with a particular attention to personal knowledge registration of employees in comparison to other non-winning organizations.

Qualitative methodology was used as it is well suited to obtaining data in the field (Silverman, 2013; Gorman and Clayton, 2005). The data collection took place in Iceland. This is a multiple case study (Creswell, 2013; Merriam, 2009) containing 18 organizations, divided into three groups of six organizations each. The number of employees ranged from 50 to 2000, with an average of 445. The organizations of the first group and the first corroborative group, here named group A, B, C, D, E and F (A-F) and group G, H, I, J, K and L (G-L), were evenly divided between the public and the private sector. The second corroborative group, here named M, N, O, P, R and S (M-S), were all working in the private sector. The interviews and data gathering were conducted in three phases, first in late 2010 to mid-2012 when organizations A, B and C were visited and the scope of the research was established. Simultaneously, and in 2013, a thorough literature review took place. During 2014-2016, data gathering in further nine organizations, as well as an examination of organizational documentary material, was accomplished. Organizations D, E and F were studied in detail, while G-L were studied for corroborative purposes. The first three organizations were revisited to verify former information. Interviews and gathering of documentary material from organizations M-S were conducted in 2017-2018. Data analysis was completed in June 2018. For an overview of the participating organizations, see table 1:

In-depth analysis in the first group of six organizations. 6-8 interviews in each organization.	A Financial Private Nearly 1000 employees.	B Technology Private Over 500 employees.	C Industrial/ Consultancy Private 300 employees	D Industrial/energy Public Over 250 employees.	E Financial Public Nearly 200 employees.	F Surveillance Public Almost 240 employees.
First corroborative interview group. One interview in each organization.	G Technology Private About 600 employees.	H E-commerce Private Around 270 employees.	I Industrial/ Consultancy Private About 350 employees.	J Surveillance Public Over 150 employees.	K Industrial/energy Public Around 460 employees.	L Industrial Public Just over 50 employees.
Second corroborative interview group. Award winners of the <i>Knowledge Company of the Year Award</i> . One interview in each organization.	M	N	O	P	R	S

Table 1 – Overview of the organizations

The first six organizations were selected using purposive sampling based on the objective of the study and according to certain characteristics that were considered likely to give informative findings for the research (Morse, 1991; Esterberg, 2002). The participating organizations were considered either unique, or in the forefront of their individual sector. It was important that the organizations were technically capable of implementing a functional directory for managing their personal knowledge and had former experience of PKR for knowledge registering purposes, whether they were successful or not. Prior to the interviews, existing organizational strategies on HR and/or training, as well as organizational websites, were studied, in order to get a more comprehensive picture of each case. The first corroborative group was selected using a snowball

sampling (Neuman, 2006) as numerous interviewees from organizations A-F stated that organization G-L were more prominent regarding PKR. The main characteristic of the second corroborative group M-S was that they were all recipients of the *Knowledge Company of the Year* award. All eight award-winners of the time period 2010-2018 were invited to participate in the research, one declined the invitation and one had won the award twice. Particular focus of this study was set on examining the knowledge award verdicts for each award-winning organization. A hypothesis was worked out from the analysis of the data (Moustakas, 1994). Two following methods were applied.

4.1 Discourse analysis

Discourse analysis was used as a method on documentary material (Wetherell, 2001; Gee, 2014). The analysis requires that documents are examined and interpreted in order to elicit meaning, gain understanding, and develop empirical knowledge (Corbin & Strauss, 2008). In order to understand how PKR was being applied in the organizations, evaluations and verdicts from the *Knowledge Company of the Year* award were examined. Internal documents were studied as supportive material, as well as information available on organizational websites. Studying the verdicts allowed for identifying written evaluations and making a comparison of the manner PKR was addressed, how the verdicts were interpreted by interviewees, and to what extent the organizations fulfilled their evaluations. The empirical analysis consisted of systematically reading the documents (Wetherell, 2011). Selection of words, repetitions and use of terms regarding knowledge, knowledge management, knowledge sharing, training, education, responsibility, collaboration, registration, access, use or reuse, or actual lack of these terms, was examined. Examining the documents was useful for understanding whether the organizations were meeting internal anticipations assigned to the award and how the award evaluation was mirrored in organizational knowledge procedures. The combination of the award verdicts with transcripts from the interviews was intended to minimise bias and to establish credibility.

4.2 Semi-structured interviews

The interviewees were selected in a systematic manner and consisted of employees with similar positions in each organization. Grounded theory was used as a method to analyse the interviews (Glaser & Strauss, 2012; Charmaz, 2006). Interview guides were written (Bogdan & Biklen, 2003; Kvale, 1996) with the purpose to capture the perspectives of the interviewees and to examine how their experiences and meanings would explain the study (Yin, 2014). Interviewees had the following responsibilities: personnel administration and HR strategies; in-house training programmes and education and training strategies, information and records administration, and management. Table 2 gives an overview of the interviews.

	Private			Public			Total
	A	B	C	D	E	F	
Management*	2	2	2	2	2	1	11
HR Manager	1	1	1**	1	1	1	6
Education and Training Manager	1	1	0	1	1	1***	5
							22

	Private			Public			Total
	G	H	I	J	K	L	
HR Manager	0	0	1	0	0	0	1
Education and Training Manager	1	1**	0	0	0	0	2
Information and Records Manager	0	0	0	1	1	1	3
							6

Interviews in award-winning organizations - *Knowledge Organization of the Year*

	Private						Total
	M	N	O	P	R	S	
Management	0	1	0	0	1	0	2
HR Manager	1	0	1	0	0	1	3
Education and Training Manager	0	0	1	1	0	0	2
							7
							TOTAL
							35

* Interviewees with one of the following titles: Head of department / division, Executive manager and Administrative Official.

** An employee responsible for Human Resources and Education and Training.

*** An employee responsible for Education and Training and Quality Management.

Table 2: Distribution of interviews

The interviewees were divided into three groups. First, an analysis of multiple interviews in organizations A-F, and second, a corroborative analysis in organizations G-L with one single interview in each organization. The second corroborative group consisted of HR and/or training managers and records managers as one part of the wider research focused on their collaboration in the registration process of PKR. Both groups were divided evenly between the private and the public sector. The third group consisted of a single interview in each organization, except in organization O where the HR manager and the training manager jointly took part in the interview. All organizations in the third group were private as the *Knowledge Company of the Year* award only covers private organizations.

The risk of revealing interviewees identities was significant, in particular in the case of the award-winners. Those had all been publicly associated with the award in the media and elsewhere. It was anticipated that sensitive information could be revealed during the interviews as questions were asked about the interviewee's superiors and colleagues, their experience of support, successes and failures in PKR. It was therefore appropriate to cover the identity of individuals in all cases, and their workplaces as thoroughly as possible, as the study took place in a small society.

5. Findings

This section presents the analysis of the award verdicts for the *Knowledge Company of the Year* award and the three research questions stated in the introduction. The selection criteria of the knowledge award were examined as well as whether winning the award entailed a more comprehensive overview of the knowledge residing in employees in comparison to non-winning organizations.

5.1 Evaluation and verdicts of the knowledge award

The *Knowledge Company of the Year* award stems from the year 2000. It is rewarded by the Icelandic Association of Economists and Business Graduates and is presented by the President of Iceland. The award was originally portrayed as a means for organizations to develop methods to effectively and successfully create, sustain, collect, share and use available knowledge and skills (Óladóttir, 2001). These methods were to include learning processes empowered by knowledge management. The success of the award-winners was defined in the way they made use of their collective knowledge in order to seize arising opportunities and resolve occurring operational difficulties. Table 3 shows the six knowledge award verdicts.

The Knowledge Company of the Year Evaluation and verdicts					
M	N	O	P	R	S

<p>The organization is being awarded for human resources in a broad sense. As described in the jury's results; the organization has a solid education and training programme for their employees and has been a pioneer with certain programmes which has been a great success. They have also succeeded in creating job security in the organization in a short time after the financial crises in 2008.</p>	<p>The organization has gained noteworthy success in its operations and increased their productivity and efficiency by implementing and developing digital solutions. This implementation has increased in the efficiency of their operations and active management of their organization, as well as optimized their utilization in proportion to the more valuable products. This way, the technology has given the organization the possibility to deliver their production process straight into consumer packages which saves transport, and transport packaging, which again is a huge step to decrease the carbon footprint.</p>	<p>The organization is exemplary in good governance and has, for example, received the Equal Pay certificate from VR [the Union of Office and Commercial Employees] last year as they work on balancing gender ratio in the workplace. They monitor job satisfaction four times a year by survey and the results have been positive. In regard to social responsibility they have hired a society manager working on social matters. Last year they had 100 projects connected to social responsibility, for example on environmental matters and social matters.</p>	<p>The selection was made with consideration to how future vision, strategy and values mirror the success that the organization has gained in recent years. Social responsibility and good governance was also considered. Measurable performance in finance, customer satisfaction, efficient inner processes and success in human resources was also evaluated.</p>	<p>It is a true knowledge organization which is exemplary in most areas. The diverse origin of employees has been applied to building up an interesting cultural unity which encompasses the values and objectives of the organization. At the same time the organization has created itself a special status on the market, strong brands and a solid knowledge base. It is seldom that such an organization has such strong Icelandic roots as evident in this case.</p>	<p>The organization is a pillar in the Icelandic labour market which has created great value for the country and the nation. The organization has persisted and delivered real value for the Icelandic economy despite adversity. The organization has in the past few years implemented large changes and adjustments but simultaneously moved forward.</p>
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Table 3: Award verdicts

The terms “*knowledge*” or “*knowledge sharing*” was hardly mentioned in the six verdicts. Organization R was the only one described as a “true knowledge organization” as it was exemplary in most areas, including having “a solid knowledge base”. The term “knowledge management” was not mentioned in the verdicts, but the “active management” of organization N was mentioned as it got more efficient due to the implementation of digital solutions. The value of human resources was portrayed in statements such as “being awarded for human resources in a broad sense” as in organization M and “efficient inner processes and success in human resources” as in organization P. The terms “training” or “education” were only mentioned once in the six verdicts. Organization M was evaluated on the basis of having “a solid education and training programme for their employees”. The term “responsibility” was mentioned twice in connection to “social responsibility” as in organization O where their responsible attitude towards various social and environmental matters was rewarded. Social responsibility and good governance were interconnected in the verdicts of both organization O and P. Organization P was furthermore evaluated by their “measurable performance in customer satisfaction”.

The term “collaboration” did not occur in the verdicts of the knowledge award-winners and neither did the term “registration”, whether of intellectual assets, personal knowledge, valuable information or any other data. The participating organizations seemed to receive the award for successful, but different, processes, like “developing digital solutions” as in organization N which increased the efficiency and “decreased the carbon footprint”. Similarly, organization O was credited for having received an equal pay certificate (this certificate is a predecessor of the Icelandic Standard of Equal Pay 85/2012 that has now been legalized in Iceland) (Haraldsdottir, 2018; Ministry of Welfare, 2018). And finally, organization S was evaluated on the terms that it had delivered “real value for the Icelandic community” as a “pillar in the Icelandic labour market” despite adversity.

5.2 Knowledge award-winning organizations' practice of PKR

It was of interest to cast light on to what extent the award-winning organizations were applying PKR in their practice.

"We are focusing on formal education" said the HR manager of organization M who was interested in seeing how many of their employees had a university degree, "we are now at 67%". The organization purposely used in-house teachers for most of their training, for which they were among other things rewarded. "It started in the financial crises" he stated. He was not on the opinion that his organization had managed to set up a perfect system as they were not registering other skills; "we are not there yet". He continued and said "we may be overlooking someone who might be better, since we do not have this overview". In a joint interview with the HR manager and the training manager in organization O they described their overview of personal knowledge; "it may be improved, registration and information of employees' knowledge was zero when we came". They continued and said; "we are juggling this between us [...] to improve this foundation like the registration of knowledge". They had just begun using a new HR system and there was no added information registered, like language skills or other skills. They registered formal education as presented in the CVs of employees at the start of the job as well as in-house training, such as security and sanitation courses, which meant that they could provide a print-out of employees' participation if needed. Before the implementation of the HR system this sort of information had been registered into an Excel spreadsheet by a former HR manager.

The training manager in organization P claimed that the organization had "expanded faster than I don't know what" and that they had not managed to adjust properly to PKR. Employees' participation in in-house programmes were registered manually and external programmes that the employees attended were not registered at all. She thought, while unsure, that there was some overview of employees' formal education in an old HR system. The local manager in organization R claimed that they were implementing a new global HR system into their organization, it included information on "your past, information on just your position in the organization, your team, which manager you belong to and your development here you know [...] and you know, education, courses and other things that you attend". She said that they had been implementing this system for a year and a half and were still in the implementation phase. She continued and explained that they needed to "eat the elephant one bite at the time" as that there was "room for improvement, especially in education and training". The HR manager in organization S said that they had developed a very functional system for a part of their employees, those that had to comply with certain international standards. They knew everything about the employees' experience and participation in training due to obligatory registrations, certifications and security prerequisites for certain parts of certain jobs. As the job certificates of these employees was based on particular training, the HR manager had no information whether these employees had different education as well, for example a university degree. In regards to his co-workers at the office he wasn't sure whether it would matter whether he knew that a colleague had finished a university degree in sociology or philosophy, just that he had a university degree.

5.3 A comparison of the reasons behind the application of PKR between knowledge award-winning organisation and non-winning organizations

By analysing the underlying reasons for applying PKR, the hope was to uncover possible best-practices of PKR, most likely within award-winning organizations.

To begin with; the award-winners stated that they were obligated to register certain education, training or knowledge of their employees. It is this "school of shrimp in education" that we must register said the HR manager in organization S. The HR manager in organization N stated that they conducted an obligatory training programme for their employees. She said: "we must register their participation, also because participation is directly linked to the payroll and they get higher rate per hour." Organization P was registering security, first aid courses and similar. "Our security officers must pass certain hours of first aid and this is regulated externally", said the HR manager. Knowledge registration is necessary due to compliance, said the HR manager in organization M as he described that there were certain requirements for certain jobs. The HR manager in organization S agreed and claimed that "this [obligatory training] is holier than the Pope for us". Organization S had built a knowledge centre with many classrooms in order to fulfil their training needs locally, to comply with rules, standards and regulations and safe costs. The training manager in organization O claimed that they had obligatory training on security, sanitation and so on. The two interviewees suspected that a lot of expertise

were missing from their registrations and they were, therefore, trying to make their management better understand the importance of registration, such as driving or forklift licence and so on.

From these registrations, the HR manager in organization O had actually found a person, hired for different reasons, who turned out to be exactly what they were looking for. It was also considered important to be able to change shifts on specific projects if necessary, if an employee got ill or was on leave. The HR manager in organization P and the local manager in organization R had both experienced such scenarios, for instance where it was immensely valuable to have mechanics with specific training, and searchable registration thereof, available on short notice. The local manager claimed that these registrations had a legal effect as well, "like forklift licence or whatever". Another HR manager said that the reason for the registration was mostly for the individual employee so that they could see how they had developed through the years while working for the organization. The HR manager continued and said that if and when employees decided to work for someone else, they would be asked "What is your story? What have you been doing to improve yourself professionally at work?" and then the organization needed to have their story documented and retrievable.

Secondly, the non-winning organizations A, B, C, D, E and G, H, I and J collected certificates from employees as a proof of necessary qualifications. The HR manager in organization A stated that they had not yet achieved their goal of covering all PKR but they were registering approximately 90% of their employees' formal education into their database. Different managers in group A-F expressed that they had not been entirely successful in the implementation of PKR. The HR manager in organization B maintained that PKR was of best use if it was available in a central database which was not entirely the case for them. Interviewees from the private organizations G, H and I put much emphasis on gathering information regarding formal and informal education and experience of the employees and much effort was put into PKR. The HR manager in organization I maintained that it had taken "blood, sweat and tears" to register everything into the system, but as employees' knowledge was the most important sales product of the organization, it was of great significance. The training manager in organization G stated that the registrations were of utmost importance as their database of certified education and training of employees was directly interconnected to lowering their operational costs. Organizations F, K and L, all public, were not as successful with PKR and had a limited overview. Their PKR consisted primarily of certificates on paper or scattered registrations in Excel spreadsheets. Still, PKR created value for most non-winning organizations, such as to fulfil legal demands as in organization J, or to be validated for proposals in international projects as in organization G and I. These registrations were seen as evidence, for the benefit of the employees, organizational clients and to answer monitoring institutions. Thus, PKR provided valuable documentary evidence for organizations A, B, C, D, G, H and I as clients, especially overseas clients, expected them to demonstrate that they were suitably qualified to undertake international assignments.

5.4 Financial benefits of PKR

When interviewees were asked whether, and then how, they had experienced a financial gain, or return of investment (ROI) in managing their intellectual assets using PKR, their answers were mostly positive. There is an investment in registering employees' personal knowledge according to the local manager in organization R, it "really is about having good overview of human resources, including their knowledge", she claimed. She furthermore stated that if one wants to develop knowledge, one has to document it, it's not "at your fingertips" as people seem to think. Even though a knowledge directory "does not catch knowledge leakage" she said, we should register current knowledge into our systems, it's really "kind of a substitute strategy". The HR manager in organization S said that PKR had obvious benefits and saved time, "it's somehow so evident!". He said the purpose was to get better use of employees' knowledge which could also have impact on commitment and job satisfaction. He continued and said: "It happens here like anywhere else that you might hire an external advisor at great expense, and then someone sits beside you [at work], that knows things even better." The interviewees in organization O claimed that by using PKR, one could set an objective [for recruitment or training for example] and measure hours of training, participation in training, and specific or necessary [obligatory] experience or expertise. By this means, they would know how far they had reached, for comparison and adjustments internally, but also for comparison with other organizations. The training manager in organization P was convinced that there was a financial and knowledgeable benefit in registering. She said that registration of employees' knowledge and training, gave people the opportunity to grow and by that, enlarge the possibility of holding on to employees. Plus, through registration "you know what you lack and what you can do better".

There were different views on the subject. "It's not visible in the income statement" said the HR manager in organization M, but "that's a norm for HR matters". PKR was a "nice-to-have" he said, but not a priority. Still, he found it important to measure how many employees had a university degree, which would give the organization certain credibility. They had also decided to register and monitor the training of certain advisors, again for credibility reasons. Whether "it has a financial gain [he said laughing] I don't know, but hopefully better service". The HR manager in organization S compared PKR to a "two-edged sword" and said that they made sure to register obligatory training and expertise of certain staff members very carefully, but otherwise they did not put much effort into it. They were not willing to hire 2-3 employees to keep the directory up to date, he claimed.

Interviewees in organizations A and E were convinced that there was a financial gain in PKR. Money could be saved by having access to interactive databases for PKR with open access for all employees. In organization E an interviewee connected the dots between time and money and stated that it was timesaving to find necessary information on colleagues in a functional PKR database, and therefore financially beneficial as well. The HR manager in organization C said that they had spent money on external advisors and training, not knowing that the knowledge needed existed among their staff. Interviewees in organizations J, K and L were all of the opinion that there was a financial benefit in accumulating information into a database, whether for documents and records or for PKR purposes. A quality manager in organization C, describing the benefits of a new system, claimed to have legitimate information which showed financial benefits. He stated that management pointed to the lesser amount of time being spent on searching, which allowed more time to be spent with customers. The training manager in organization G claimed that certification of employees' qualifications was inextricably linked to lowering operational costs in his organization. In organization B the interviewee stated that it was necessary for management to calculate long term profit, instead of looking solemnly at the current financial status in the EBITDA, in order to have more faith in the financial gain of PKR.

6. Discussion and summary

Organizations are becoming more interested in assessing, managing and developing their intellectual assets (Buenechea-Elberdin et al., 2018). Knowledge reuse has been considered a major justification for KM (Majchrzak et al., 2004) and an important factor for achieving business goals. PKR resembles Choo's et al. definition of the less tangible phenomena of KM, the expertise and experience of employees (2006). Sharing of such intangibles remains difficult due to the sticky nature of the knowledge itself (Leonardi & Meyer, 2015). The participating organizations had registered their knowledge into HR systems, organizational intranets or cleverly constructed databases, as described by Davenport and Prusak (1998) with dissimilar success (Haraldsdottir et al, 2018). The purpose of codification had been to have an overview of the collected knowledge of the organization, to optimize its wider use, and to gain an advantage in a competitive business environment. Some of these organizations had received the award the *Knowledge Company of the Year* for their best-practices of knowledge and thereby gained a ceremonial criteria of worth which endorses their social fitness (Meyer & Rowen, 1977). But, does that mean that the award-winning organizations are going better?

The verdicts demonstrated considerable success in a wide area of best-practices of knowledge. Organization M was a pioneer in offering solid education and training programmes for employees while securing job security at a difficult time. Organization N had increased their productivity by implementing digital solutions, resulting in the optimization of knowledge use, where the utilization and transport of valuable products decreased the carbon footprint. Organization O was exemplary in social responsibility at the same time as job satisfaction was rising, and organization P was awarded for their future vision, measurable performance and successful inner processes. Organization R was described as a „true knowledge organization“, with its diverse origin of employees, cultural unity and solid knowledge base. Finally, organization S was rewarded for creating value for its country while facing adversity. Knowledge is a key factor of production and competitiveness according to Wasko & Faraj (2005). Award-winning organizations were correspondingly making use of their collective knowledge to seize arising opportunities and resolve occurring operational difficulties (Oladottir, 2001) as stated in the award criteria. Still, their success did not include an overall registration of employees' knowledge. The term "registration" was not mentioned once in the verdicts, whether of intellectual assets, personal knowledge of employees, valuable skills or any other information. Three out of six award-winners claimed that they were possibly overseeing someone, or had hired an external advisor at great expense, as they lacked the overview of employees' knowledge. Terms concerning collaboration, access, use or reuse of knowledge of any kind was likewise missing from the verdicts. While the verdicts portrayed a positive and patriotic picture of

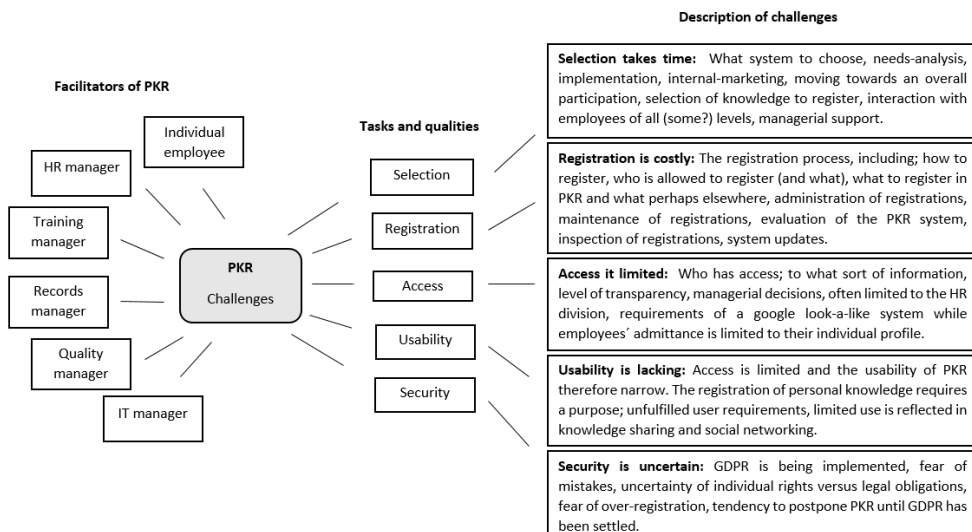
persisting organizations, that had experienced success to some extent and able were to share and use available knowledge and skills (Oladottir, 2001), their registrations were limited to a *need-to-have* basis.

Studies indicate that by using KM, organizations enable their employees to store the knowledge they “carry in their minds and make it available for wider use” (Sutanto & Jiang, 2013, p. 258). This study reveals that the award-winners’ registration of personal knowledge was narrowed to a) obligatory registrations, b) measurable registrations, such as university degrees or c) as a means to project credibility towards clients, monitoring institutions or the community as such. Further registration of knowledge, what one might term *nice-to-have*, such as language skills, particular type of a university degree, external training and other skills, were not perceived as a priority, and the reason was that they “were not there yet”.

The financial benefits of PKR were somewhat unsure. While most interviewees agreed that the ROI of implementing PKR was considerable in terms of overview, wider use of knowledge and to answer the demands of clients, some found PKR as just another intangible HR matter that had no value in the income statement. Interviewees mostly agreed that the information registered in PKR was in fact not “at your fingertips” and that it was, therefore, necessary to have it registered. These registrations were a part of a substitute strategy, they had evidential value and were positively connected to operational costs. Despite fear of transparency, or academic snobbery, the social contribution of PKR had the upper hand of privacy.

All organizations, whether award-winners or not, were faced with challenges in the PKR process. In order to better understand these challenges a conceptual model was developed from a previous model (Haraldsdottir et al., 2018). This model has the same six facilitators as the original (see section 3), who represent the interviewees in the overall research, their tasks and the three critical success factors for PKR, access, usability and security. The model (see figure 1) emphasizes the challenges faced by organizations described on the right side of the model.

Figure 1 – The conceptual model – description of challenges



The six facilitators on the left side of the model represent the main interview groups of the study. Different managers and employees have described how various tasks and qualities of PKR, situated in the middle of the model, must cohere in order for an overall success. The tasks and qualities, along with their challenges, are situated on the right side of the model.

First, the selection, on top right, is considered time-consuming. The choice of data to register and selection of a system that works is perceived complex. Implementation of the system, internal marketing among employees, confirmed support of management, and an overall participation pose another challenge. Secondly, the registration is costly, especially if situated centrally, and also due to unclear roles and lacking support. Third,

most employees could only access their individual profiles. While only three organizations out of 18 had opened their PKR database to all employees [G, H and I], interviewees in organizations M, O and S were of the opinion that managers should have access to their staff, for regulation and recruitment purposes, and found it important that the database was kept up-to-date for managerial reasons. Fourth, the usability of the PKR was limited due to a number of reasons, such as the employees not being able to have a ready-made CV out of the system. The strongest usability challenge was the fact that employees could not search for needed knowledge among co-workers. Most interviewees claimed that for this reason, PKR did not create added value to them as employees, nor for their organizations (Haraldsdottir et. al, 2018). The fifth and last challenge concerned the security of information. The interviewees intertwined the three qualities of PKR; access, usability and security. They said they were preparing for a more vigilant information governance, i.e. processes and regulations that would hold their organization answerable for proper management of information assets. Thus, the interviewees were hesitant towards; a) the registration of the personal knowledge of employees, b) the transparency of an open PKR, and c) the threat of the General Data Protection Regulations (GDPR) litigations and the financial cost thereof (Haraldsdottir, 2018).

The PKR databases were in none of the award-winning organizations open for everyone. A number of interviewees agreed that allowing everyone to access PKR was a delicate matter and that employees were not necessarily willing to “open up their life” as claimed in organization S. The HR manager in organization M was also worried about transparency and said that even if they could search for training and education in their system, he was “not sure [they] would want that, because you know [...] we could get close to academic snobbery if we did”.

Sutanto and Jiang stated that the registration of knowledge into a centred database may increase employees' personal prestige by projecting a knowledgeable image to co-workers (2013). Five out of 35 interviewees mentioned the fear of having personal knowledge exposed to co-workers. Most interviewees were on the opinion that implementing a PKR system was most useful if open to everyone. Managers in organizations A, B, C and E stated that such a system should have a “Google factor” in order to work properly and the interviewees in the non-winning organizations G and I, who were those furthest ahead in the PKR process, claimed that the openness of the system was inextricably linked to its use. The local manager in organization R confirmed this notion when describing their future vision: “we are categorizing and analysing the value of our jobs due to the Equal Pay Standard, trying to avoid discrimination with respect to gender, religion, disability or skin-colour” and “we need to have those key background factors on the table, for example education and former experience, so I cannot see how this information can be seen as a taboo”.

7. Conclusion

Organizations are sensitive to external criteria of worth, for instance ceremonial awards (Meyer & Rowan, 1977). Interestingly, the award-winners were not necessarily better at PKR than non-winning organizations.

This study has a few key contributions to theory and practise. The findings indicate that organizations G and I, from the second corroborative group, had the upper hand in PKR regardless of not having won the award. Their motivations for registering the personal knowledge of employees was beyond best-practises, work procedures, obligatory codification or a need-to-have basis. Their purpose of registration was according to the interviewees of utmost importance for an overview of the intellectual assets embedded in the employees, to foresee who and when employees needed training, and to fulfil a combination of customer demand and financial gain, which corresponds to Wasko & Faraj (2005). The PKR was furthermore helpful to quickly respond to customers and send out proposals in different languages. The social significance of PKR, the nice-to-have attribute, which cultivated a platform for direct personal interaction between the knowledge seeker and the knowledge owner, was considered of great significance.

Still, it cannot be claimed that the award-winners were simply following a management fashion, directed by fashion setters or management gurus as described by Abrahamson (1996), regardless of performance improvement. The verdicts portrayed considerable success. While there was a distinction between the formal evaluation of the award-winning organizations and their actual day-to-day work activities, when it comes to the efficiency of their PKR, they were first and foremost unintentionally impeding knowledge transfer and making it difficult for employees to find knowledgeable others within the organization. This may be due to unfinished

implementation of new HR systems. Despite it being in the best interest of the organizations, knowledge remained stuck with particular persons. Their future vision was to have those background factors on the table.

Finally, the financial gain of PKR was intangible. It may be a concern if the registration of the knowledge of employees is only deemed financially favourable when it is visible in an income statement or the EBITHA of organizations, or measurable in a climbing percentage of university degrees as described by interviewees.

The insights into the PKR process, its pitfalls and challenges have practical implications for organizations to reflect and better prepare for the implementation of PKR platform. Davenport once wrote that [organizations] “don’t know what they know or what they need to know” (Davenport, 1997, p.7). For that reason, and for the reason that the organizations were faced with the challenges of time, costs, limited support, access and use of PKR, they need to develop a collaborative understanding of what sort of information on the knowledge of employees and how much of it, is to be registered and where. It is furthermore of utmost importance to pin down the purpose of the registration, whether managerial or as a social knowledge platform, as without a clear purpose and consequently, hesitant actions, the PKR remains underutilized, tentative and without any financial or social value for the organization or its employees.

This research is limited to 18 organizations in Iceland. The findings indicate that despite their sincere wish and multiple ways - and in some cases, a knowledge award, 16 out of 18 organizations were still struggling to encompass the knowledge of their employees. Theoretical implications are that the social interaction between the knowledge seeker and the knowledge owner is a key success factor for PKR. This interaction is dependent on an open PKR access. While PKR does not prevent knowledge leakage when employees retire or leave the organization for different reasons, their personal knowledge remains accessible and retrievable for wider use if registered into a collaborative PKR. The reuse of the personal knowledge of employees occurs through social interaction in a “people to directory to people” connection, whether face-to-face, face-to-interface or face-to-phone. Future research should include for instance; a) a comparative analysis of organizations in other countries, b) a further examination of the motivations behind the success of PKR in organizations G and I, and c) how to implement the motivations of G and I in other organizations. Finally, to find ways to overcome the challenges faced by the organizations in the PKR process in order to reduce complexity and ensure a functional, and a valuable PKR.

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5 Discussion

In an organization of 200-300 employees, it is possible for people to know one another “well enough to have a reliable grasp of collective organizational knowledge” (Davenport & Prusak, 1998, p. 17-18). Beyond this size, it becomes impossible (Davenport & Prusak, 1998). The aim of this research was to provide an understanding of how organizations support PKR and how the use of PKR impacts the work of different employees. Research questions directed at the manner in which different professionals collaborated on PKR, in particular records professionals with other professionals, and at the status of personal knowledge registration at the time of the research. The research questions also examined the advent of EPS and GDPR and their impact on the need to register, access and use PKR, as well as how this access and use differed between knowledge-award winners and others.

The organizational context consisted of 18 organizations. The selected organizations operated in different business sectors such as energy, engineering, finance, IT, manufacturing, telecommunication, tourism and transport. The participating organizations were considered either unique, or in the forefront of their individual sector and six of the organizations had received an award for outstanding success as the Knowledge Company of the Year. It was important that the organizations were technically capable of implementing a functional system for managing knowledge, whether they were using an ERMS, HRMS, an interactive database, the intranet, social media or otherwise. It was also preferable that they had actual experience in implementing and using a platform for knowledge registering purposes, whether they were successful or not. By selecting these particular organizations, the hope was to get a holistic view of the pitfalls and the successes of the experience of PKR in Icelandic organizations.

In short, the findings of this research support Davenport and Prusak’s (1998) statement up to a certain point, as the results indicated that the smaller organizations were better able to practise personal face-to-face networking and communication. Hence, it was easier for the employees in smaller organizations to have a partial overview of the particular expertise or skills of their co-workers than for those in larger organizations. This was most evident within small intra-organizational networks, particularly when these networks were used to get supplementary knowledge to proceed with projects. Then again, the findings indicated that, in organizations with as few as 50 employees, this reliable grasp was not enough to effectively access and use the knowledge of employees for recruitment, internal training, productive teamwork or to ensure

the best possible people for organizational projects. A reliable grasp was also not considered enough to enhance the personal development of employees within the organization or to benefit the organization financially (Haraldsdóttir et al., 2018; Haraldsdóttir, Paper IV).

The research was, among other things, intended to find ways to better understand the purpose of implementing PKR in organizations as stated in objective B and to explore in what manner those intentions were put into practice. The concepts of selection, registration, access, use and security of personal knowledge, as presented in the conceptual model of PKR (Figure 2), were of particular interest in this respect. Also, and in line with the assumption that the collaborative effort and willingness to use PKR was, as stated by Henttonen et al. (2016), paramount to the success of such systems, the intention was to examine in what manner different facilitators co-created and used PKR (Hwang et al., 2018). Likewise, the research was meant to shed light on how PKR impacted the roles and responsibilities of records professionals in the workplace (Haraldsdóttir & Gunnlaugsdóttir, 2018).

In addition, the advent of the external factors presented in the EPS and the amendments No. 54/2017 on the Act on Equal Status and Equal Rights of Women and Men No. 10/2008, as well as the added data protection requirements of GDPR, gave ample reason to examine how the external environment (Figure 1), of legal requirements had consequences for the implementation and use of PKR. Objective C was intended to analyse the registration requirements of the standard and the legislation and correspondingly to examine the experiences and perceptions of interviewees of these requirements. An underlying objective was to find out in what way, if any, the organizations had obtained financial benefits from using PKR.

The three surrounding circles of the theoretical model (Figure 1), consisting of people, organizations and legislation, and the conceptual model as it is presented in Figure 2, have been partly united in Figure 3. The purpose of this union is to portray a graphical synthesis of the several threads running through the thesis. In addition, to demonstrate the internal challenges of each of the tasks and qualities of PKR and the external challenges encountered by the participating organizations, see Figure 3.

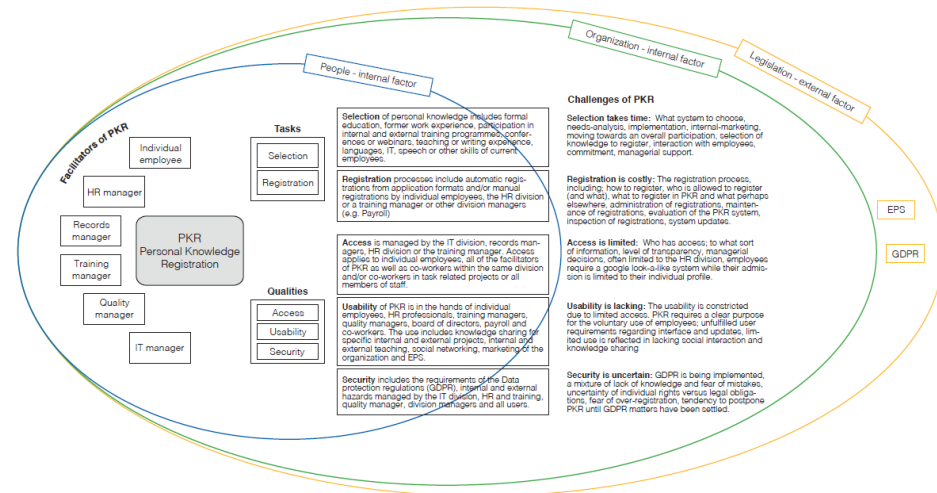


Figure 3 - Internal and external challenges of PKR

All of the participating organizations encountered some challenges in the PKR process portrayed within the green circle and written on the right side of this model. The collaborative tasks of selecting and registering PKR, that were perhaps anticipated to be carried out by the facilitators portrayed within in blue circle of Figure 3 and presented as an internal factor of the system, were not successful according to the findings of the research.

Collaborative use, the possibility to search for, find, and engage in personal interaction between the knowledge seeker with the knowledge owner as described by Sigala and Chalkiti (2014), was, however, successful in the two organizations that had advanced their PKR process the most (Haraldsdottir, Paper IV). Collaborative registration, i.e., each employee entering his or her personal information into the system, was in, some cases, not possible because employees had no access or, in other cases, only used randomly. The most plausible reason for this random use was, according to the results of the study, that employees lacked a clear purpose for their registration, i.e., their input into the system lacked a clear output such as a CV or access to further information, for the benefit of the employee or the organization (Haraldsdottir et al., 2018).

The qualities of PKR, introduced in the conceptual model as access, usability and security, and portrayed as part of the organizational environment of PKR in the green circle in Figure 3, were consequently challenged by this lack of registered knowledge. These qualities were characterized by hesitant actions and a lack of joint interpretation of the purpose of PKR, which is reminiscent of the comparisons of early repositories with “information graveyards” in Barley et al., (2018). This lack of purpose hindered the systems

in becoming successful as collaborative directories of personal knowledge. While HR managers and training managers were doing their utmost to collect and register necessary information on the education, training and skills of employees for a centralized PKR, different managers preferred to use other means to register and gain a personal overview of their employees' knowledge, which they did not share with HR or training managers.

The consequences of these fragmented efforts of different facilitators mirror what Davenport (1997) once wrote. Organizations “don't know what they know or what they need to know” (Davenport, 1997, p.7). For that reason and for the reason that the participating organizations were faced with limitations based on time, cost, limited managerial support, access and use of PKR, they were not in the position to further develop their collaborative understanding of what sort of and how much information on the knowledge of employees was to be registered and where.

The majority of the organizations were, at the time of the study, learning how to manage the knowledge embedded in their employees due to the impact of different external factors presented in the yellow circle of Figure 3. This learning process applied to award-winning organizations in the same manner as other organizations which was perhaps not anticipated in the beginning of the research process. The award winners were considered more likely to be “pursuers of best practices ... and some of the most intellectually curious, performance-oriented organizations in [Iceland]”, as once described by O'Dell and Grayson (1998, p. 155).

These external factors, changes in legislation regarding EPS and GDPR, were a new challenge for the PKR process for the participating organizations and comprised mandatory registration requirements and the management of intellectual assets (Harvey, 2017; Icelandic Standards, 2012). A third external factor was the Knowledge Company of the Year award. This particular factor is not portrayed in Figure 3 as it only affects a part of the organizations participating in the research.

The research questions, and the objectives of this thesis associated with them, will be further elaborated on in the following sections.

5.1 Records managers were not key players

In line with Franks (2013) work on records and information management the information on the personal knowledge of employees was registered and organized into a variety of information systems in the participating organizations, including HRMS, KMS and organizational intranets. The use of ERMS for PKR was, however, limited to scattered documentation of certifications. The first objective of this research, objective A, was to examine

the collaborative aspects of PKR. The use of multiple business systems for the registration of the education, training and skills of employees, supports the notion that records professionals were not key players in the management of personal knowledge (Haraldsdottir & Gunnlaugsdottir, 2018; Oliver & Foscarini, 2014). Information and records management is an essential building block of information governance (ARMA International, 2016) and the purpose of information and records management is primarily to manage information as evidence of business activity and for accountability reasons which relates to the requirements from EPS (IST, 2012; ISO, 2016; Oliver & Foscarini, 2014; Packalén, 2015). The findings of this thesis support the vicious cycle pointed out by McLeod (2012a) that the regulative environment of records management is too complex and too constraining to fulfil the requirements of user-friendliness for the general employee. This, in turn, hinders the collective use of records management systems for this and other types of documentation (Foscarini, 2012; Gunnlaugsdottir, 2012; Haraldsdottir & Gunnlaugsdottir, 2018).

In line with this concern, Bailey (2013, p. 24) pointed to the paradox that “at the same time as records managers are struggling to get users to add even the merest and simplest of metadata from a predefined list, numerous Web 2.0 services are thriving thanks to their users’ seemingly insatiable desire to voluntarily categorize and tag the information of interest to them.” The following excerpt supports this paradox. In it, the interviewee pointed at the usability weaknesses of the PKR at his workplace and to the fact that only HR had access to the registered data

knowledge is our most valuable asset and it should be possible to implement a system like Facebook or LinkedIn, or some similar social network, as a base for [the organization], and people should see the benefit of putting themselves out there and sharing work-related information with colleagues

The desire to interact directly and “google” the personal knowledge of employees as can be done in social media platforms was a recurrent theme in the interviews from the beginning.

This mirrored the arguments of McFarland & Ployhart (2015, p. 1654), who say that Facebook and LinkedIn are among “the most popular social networking platforms.” Criticism on the complexity and limitations of current information systems used for PKR was likewise apparent in the interviews. These results are again substantiated by McFarland and Playhart (2015), as it appears that the utility and usability of electronic information management systems, as once described by Damodaran and Olphert (2000), were critical success factors for

the collaborative use in this research as well and were among the main causes of underutilization of PKR.

Yammer, Facebook, LinkedIn, Wiki, Instagram and Twitter have been used to improve organizational processes, although not for PKR in particular (Treem & Leonardi, 2012; Vuori & Okkonen, 2012), and to create collaborative systems (Bradley & McDonald, 2011; Morrice, 2013). The above media seem to be the “space[s] that people proactively want to use because doing so makes their life easier!” (Bailey, 2013). It was, therefore, no wonder that the ERMS were not the first choice for PKR.

The purpose of this research was not to argue that records professionals should have undisputed administration of PKR, but to examine the collaboration of different professionals in the PKR process. The present research has the potential to raise awareness of records professionals as key facilitators in information management. In light of EPS and GDPR, it was somewhat of a surprise that the particular skills of records professionals were scarcely put to use for PKR despite their educational background, experience and insight into the creation, management and storage of knowledge (AIIM, 2018). These results are confirmed in the information and records management literature (Cox, 2005; Gunnlaugsdottir, 2016; McLeod, 2012a) where the possible benefits of the education, training in the systematic control, maintenance and disposition of records as evidence of records professionals is discussed.

The findings showed that records professionals felt burdened with workload and had limited time for proactive work. In some cases, records professionals experienced a lack of respect for their work and their expertise. In one case the records professional noted that it had taken two years for the top management to confirm a records management policy, which the records professional interpreted as a lack of respect for the profession and for the effort being put into the job.

In addition, responses from colleagues regarding records management matters were quicker and more accurate when someone from the legal division was copied in e-mails. The feeling of disrespect was further substantiated by the fact that the support of the legal team seemed fundamental in giving the records professional the necessary weight to pursue the work. One interviewee expressed her worries that respect was missing due to the perception that the records managers were guardians of old records and using ERMS as a platform was “where you just throw your things in and you never look at them again.”

The first objective of this research, objective A, was to examine the collaborative aspects of PKR and, in particular, the roles and responsibilities of records professionals and their co-operation with HR and training managers. The findings support the idea that records managers were seen as gatekeepers or

archivists of old records with legal and historical value (Cox, 2005; Oliver and Foscarini, 2014). Records professionals need to be more open to alternative registration systems and see opportunities instead of problems in HRMS or Web 2.0 services (Bailey, 2013; McLeod, 2012a). As stated by Lemieux et al. (2014) records professionals do have something to say, and it is important that they do so. Their opportunities may lie in collaborating more with other professionals concerning documents and records that do not necessarily belong to ERMS (Cox, 2005; Lemieux et al, 2014; McLeod, 2012a). It is as important today as it will be for the organizations of tomorrow to raise awareness on the expertise of records professionals. They, too, must be willing to collaborate with other information professionals and engage in a collaboration with visual analysts, data scientists, business analysts, policy makers, information technology designers and software engineers (Cox, 2005; Lemieux et al., 2014, McLeod, 2012a). If not, they will be left alone to deal with and defend their turf (Oliver & Foscarini, 2014).

5.2 Current status of PKR

It has been widely accepted that the knowledge of employees is a dynamic source of competitive advantage for organizations (Argote & Fahrenkopf, 2016; Fadel & Durcikova, 2014; Fernie et al., 2003; Hwang et al., 2018; Migdadi, 2009; Skyrme, 2011; Wasko & Faraj, 2005;). This competitive edge is, furthermore, grounded in the way organizations manage to attract, select, advance and retain talented employees (Stahl et al., 2012).

This acceptance is projected in the analysis of the HR and training strategies of the first group of organizations (A-F) which demonstrated great organizational interest in offering appropriate training programmes and encouragement for maintaining and developing employee knowledge (Haraldsdottir et al., 2018). These results mirror objective B that focused on organizational strategic intentions with PKR and in what manner those strategic intentions were put into practice. The same applied to the published award verdicts of the third group of organizations (M-S). Those portrayed a positive picture of the outstanding success that the award-winning organizations had experienced due to how they made the best use of their employees' knowledge (Haraldsdottir, Paper IV).

While organizations were becoming more interested in assessing, managing and developing their intellectual assets, the knowledge of their employees, (Argote & Fahrenkopf, 2016; Buenechea-Elberdin et al., 2018) they still struggled to “know what they know,” as once described by O'Dell and Grayson (1998). Only two out of 18 seemed to have succeeded in implementing PKR of some sort. Thus, the results indicated that a large majority of the organizations

continued to lack a way to systematically track the skills they had, or estimate what skills they lacked (Ferne et al., 2003; Hesse, 2017; Sundquist & Svärd, 2016). The manner in which the organizations practised their strategic intentions was, therefore, not as advanced as perhaps expected.

One plausible reason may be that the knowledge of employees appeared to be mainly tacit and intangible, as it “cannot be easily copied and substituted” (Sigala & Chalkiti, 2014, p. 800). This problem could, therefore, be grounded in the sticky nature of knowledge itself as it needed a great deal of effort to transfer (Ferne et al., 2003; Leonardi & Meyer, 2015). These results indicate that directories for the accumulation of the personal knowledge of employees, as in PKR, are more dependent on the individual efforts of individual employees for knowledge sharing to occur than in a repository, or a people-to-document connection, where the reuse of codified best practices and procedures is enhanced without the interaction of the knowledge seeker with the knowledge owner (Christensen & Pedersen, 2018; Venkitachalam & Willmott, 2017).

Another reason for limited registration may be that despite the fact that smart organizations, as defined by Bernstein (2016, p. 10) are said to be constantly observing their employees by collecting “unfathomable sets of digital breadcrumbs” it seems that they were not including the registration of the education, training and skills of their employees in that development. The reason may also be that the registration of knowledge was simply never considered a priority until the advent of EPS. This, again, corresponds to objective C on how interviewees experienced and perceived the requirements of the standard and the legislation. The new law may affect the participating organizations and cause financial disadvantages due to the registration requirements of EPS, at least in Iceland (Act on Equal Status and Equal Rights of Women and Men No. 10/2008; the Icelandic Data Protection Authority, 2018).

The findings indicated, in the case of the knowledge-award winners, that the motivation for the registration of personal knowledge was restricted to compulsory or measurable registrations, which resembles the studies of Meyer and Rowen (1977) on ceremonial criteria of worth. Their motives did not differ from the registration motives of other organizations as examined in objective D of this research. Examples of such registrations, obtained from the interviews, include the percentage of employees who had certain university degrees, using registration various statistics as a means to project credibility for clients, monitoring institutions or the community. Further registration of knowledge that could be called nice-to-have, such as language skills, a more specific categorization of university degrees, external training or participation in conferences, writing or communication skills considered useful for the

workplace according to the interviewees, were not perceived as a registration priority. One possible reason for this perception was that they were simply “not there yet” or that their registrations were still only “fragmented” as can be seen in Figure 4.

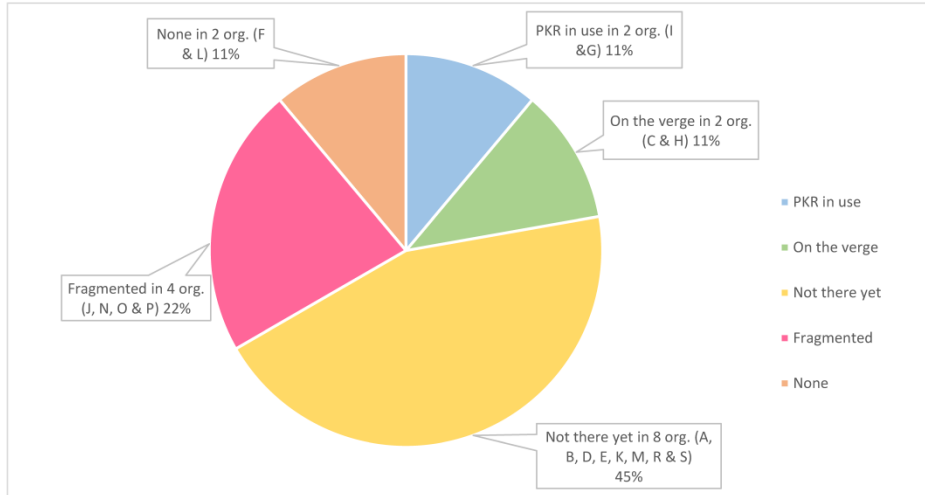


Figure 4 - Current status of PKR in the 18 organizations

Out of the 18 organizations participating in this research, it may be argued that only two (G & I) were using PKR in a strategic manner (blue slice in Figure 4). Strategic manner, in this sense, includes the registration of formal education, internal and external training that is relevant for the workplace, particular skills, former work experience, and languages, IT and communication skills (Haraldsdottir et al., 2018; Haraldsdottir, Paper IV). In these two cases, PKR was made available in an open and collaborative information system (HRMS), which made it possible for the employees to search for and find particular skills or experiences of their co-workers, contact them directly if needed, and begin a knowledge sharing interaction. Both of these organizations were private.

Two organizations (C & H) were “on the verge” (green slice in Figure 4) as the registration of personal knowledge was being transferred and more accurately registered into recently implemented HRMS that were intended to be interactive. Still, due to technological problems at the time of the research the access and use by employees was limited to a small number of people. Both organizations had full intentions to open their PKR for further access.

Eight organizations (A, B, D, E, K, M, R & S) represent the “not there yet” part of Figure 4 (yellow slice in Figure 4). These organizations were further ahead in their PKR process than the ones labelled as “fragmented”. The reason is their emphasis on the registration of personal knowledge, in particular formal education and in-house training programmes. These registrations were seen as

valuable evidence, which embodied a certain level of educational strength, portraying the organizations as capable and trustworthy. Registrations were, therefore, regularly updated by the employees themselves or by the HR and training managers. However, the kind of personal knowledge that has been described as a “nice to have”, such as language skills, communication or other skills, were not strategically registered, nor was employees’ participation in courses outside of the organizations. Also, accessibility of the existing registrations was limited to HR and training managers, while most division managers could see the registrations of the employees belonging to their particular division.

In four organizations (J, N, O & P) the registration, access and use of the personal knowledge of employees was “fragmented” (pink slice), i.e., available in parts in multiple systems, which were not connected and were with restricted access of the HR and, where applicable, training managers.

In two organizations (F & L), the registration was “none” (orange slice in Figure 4), or only limited to spreadsheets of individual managers, or placed in a paper filing cabinet at the HR office. Access and use of those documents was limited to the individual creators of the spreadsheets or the HR manager (file cabinet). Both of these organizations were public institutions.

The findings indicated that in many cases, even if the registration was partly in place, the access to the registered information was limited to the HR manager. Other professionals, i.e. different managers, were not always aware of the existence of any registration of the personal knowledge of employees. Division managers might have access to the registrations of their employees but could not see the registration for employees outside of their divisions. When asked about their PKR use, they often claimed to be using a system for personal knowledge registration but instead of using the system that the organization had installed, the results indicated that most managers preferred to use their own spreadsheet for an overview of the education and training of their employees (see Paper II). This resembles the theories of Orlikovski (2000) on espoused technologies, i.e. the technology that organizations buy and install versus the technologies that employees use in their daily work. The explanations given for using Excel instead of the PKR system were that the system was not user-friendly (e.g. too slow or too complex) as described by McLeod (2012b). The managers also felt that the registrations were inaccurate as they were not updated regularly and claimed to use the same spreadsheet to pinpoint other particular qualities about their employees that were not registered in PKR (Haraldsdottir et al., 2018).

The causes for the limited PKR access and use reported in the interviews were usually to be found in the system itself, as most interviewees deliberately

excused the current state of registration by saying that their system was either too old or too recent (as in a graveyard or not fully implemented) or not technically developed enough to allow for collaborative registration or access. This is similar to what McFarland and Playhart (2015) found when comparing different platforms for social interaction. The sort of PKR that possibly fulfilled the qualities of a strategic and collaborative platform for knowledge sharing was portrayed in the experience of a HR manager belonging to the blue slice in Figure 4

It has taken blood, sweat and tears to register everything into the system ... and, believe me, the implementation was hard. But, I am sure that the system benefits the organization, both financially and also for quality matters ... the information from our database is now standardized and we can all search for necessary information when needed, and quickly respond to our customers and send out proposals – in three languages!

The HR manager who gave this excerpt gave the impression that their PKR functioned in a similar way as the blackboard described by Bannon and Bødker (1997). The description indicates that the organization had successfully created an information system that involved the joint interpretation of the access and use of the information registered into the system by different facilitators with divergent viewpoints of the purpose of the system. Framing PKR in network terms directs attention to the roles of individuals in knowledge processes, especially “the use of KM technologies that provide directories of relationships or expertise” (Barley et al., 2018, p. 299). It appears that PKR, used as an open directory, may facilitate a better overview and understanding of who knows what in organizations.

5.3 The external environment – EPS and GDPR

EPS and the Act on Equal Status and Equal Rights of Women and Men No. 10/2008 with amendments no. 54/2017, as well as GDPR, impacted the way PKR was processed in the participating organizations (Icelandic Standards, 2012). The registration requirements of EPS and the legislation, and added data protection due to GDPR, implied a certain re-structuring of information. Data protection regulations are not new. Act No. 77/2000 on the Protection of Privacy as regards the Processing of Personal Data, and Act on Equal Status and Equal Rights of Women and Men No. 10/2008 have been in place for a decade. However, recent amendments and the broadened regulatory environment, have implications for the organizations.

EPS is a tailored standard that “provides a model for setting up a management system for a business or organization” (Icelandic Standards, 2012) and is “in substance and form similar to international management standards” (Icelandic Standards, 2012, p. 5). Icelandic standards are made when interested parties find it necessary, due to particular circumstances or because there are no previous European or international standards that cover the circumstances (Icelandic Standards, 2012).

All records for the equal pay management system should remain legible, identifiable and retrievable (Icelandic Standards, 2012). This relates to ISO 15489, the purpose of which is primarily to manage information as evidence (ISO, 2016). The participating organizations and the interviewed employees lacked further support to be better prepared for the implementation of EPS and GDPR.

The findings suggest that the regulatory and legal requirements made by EPS and GDPR put constraints on existing collaborative social knowledge systems that were used for personal knowledge sharing (see Haraldsdóttir & Gunnlaugsdóttir, Paper III). PKR was centralized in some organizations, while others expected their employees to have the inner drive to register their own education and training into a collaborative system. The EPS requires that documentation on education and training, which may have affect on pay for individuals, or groups of individuals, must be obtained by the employer (Icelandic Standards, 2012; The Icelandic Data Protection Authority, 2018). This means that it the employees themselves could no longer decide what sort of information would be registered and in what manner if the organization is to comply with EPS. Consequently, these legal constrictions could affect employees’ individual contributions to the systems being used, which may become a risk for the viability of the system. Similarly, GDPR requires that employers must ensure that they possess the informed consent of their employees for processing personal data (European Commission, 2018; IT Governance Privacy Team, 2016).

The findings indicated that the advent of EPS had greater impact on PKR facilitators than did GDPR (Haraldsdóttir & Gunnlaugsdóttir, Paper III). One cause may be that the registration of the education, training and skills of the employees was inadequate, or fragmented, in many of the organizations. Hence, these organizations were far from fulfilling the requirements of EPS. The requirements of GDPR seemed, on the other hand, not to disturb organizations much in terms of PKR (Haraldsdóttir & Gunnlaugsdóttir, Paper III). Interviewees either claimed to already possess informed consent for PKR data processing from their employees or expected no complications in obtaining consent. These results mirror Harvey’s (2017, p. 9) discussion on GDPR where

he claims that “some gurus are making some things [GDPR] seem more of a meal than they truly are.” In line with the findings and the statement above, the different levels of constraints may be explained by the fact that the organizations had been working in accordance with data protection directives and former data protection legislation (Act No. 77/2000) for years, while the mandatory EPS was a novelty for the Icelandic economy.

Again, the expertise and experience of records professionals could benefit organizations and their procedures for information protection and knowledge sharing in a regulatory and legal environment. By working in a collaborative manner towards managing information in a way that encourages participation from all stakeholders, without being constrained by function as described by Foscarini (2010), records managers, in cooperation with top management and other key stakeholder, as defined by Goldsmith et al. (2012), could balance the organization’s ability to both protect and share information. Their particular skill set is specifically applicable when “information sharing is governed by strict laws due to the specifically sensitive nature of the information” (Anderson et al., 2017, p. 1107).

It is important that data protection and privacy issues do not prevent technological innovation and communication in organizations. Information systems, such as PKR, should be designed with privacy protection rules, use a “user-centric approach” and, in general, implement “privacy-friendly practices” (Romanou, 2018, p. 109) to enable and protect the organization (McLeod, 2014).

5.4 Limited access and use of PKR

There are a number of systematic ways to accumulate and codify information regarding the personal knowledge of employees (Henttonen et al., 2016; Hwang et al., 2018). The participating organizations tried various systems in line with HRMS as described by Kavanagh and Johnson (2017) and different databases and intranets. Surprisingly, social media was not used at all for PKR platforms. The findings indicated that the organizations’ current systems at the time of the research were put to limited use.

Damodaran and Olphert (2000) stated that reasons for the limited success of information management systems included a lack of user-friendliness, poor design, inadequate training and absence of added value. These barriers mirror the responses of the interviewees, who experienced a lack of support, user guidelines, supervision and strategic intent and claimed, in some cases, that PKR was useless as it lacked a clear strategy and purpose. The same applies to the perception of interviewees who claimed that nobody seemed to have a clear role or responsibility for PKR and that the selection and registration of

information was in the hands of whoever accepted the task. This negatively effected the value of the registrations. In addition, categorization of registered information was described as chaotic at times.

If users are to voluntarily participate in a knowledge-based platform, as is the intention of social-technical systems, these platforms must include a “benefits-led experience for users that offers them a positive incentive to participate” (Bailey, 2013, p. 24). The fourth objective of this research, objective D, was to analyse how PKR was being accessed, by whom and how this access was experienced by the users involved. A particular aspect of this objective was to explore in what manner organizations that had received an award for being the Knowledge Company of the Year in Iceland, were using PKR in comparison to others. The results of the present research suggest that access and the opportunity to use and benefit from the systems were a pragmatic success factor for the uptake of PKR in all organizations. In addition, the strongest inhibitor for knowledge sharing in most of the organizations was that the employees could not search for needed knowledge among co-workers due to their limited access, despite there being technological and social solutions for further access. This inhibitor applied to award-winning organizations in the same manner as other organizations. In fact, none of the award winners had implemented an open PKR and had no strategical intention to include such changes in their systems at the time of the research. The exception was the case of organization R where the idea of an open PKR was considered an option, especially in regards to obligatory registrations due to EPS.

This lack of benefit of using the system, and unfinished software development, coloured the interest of system users and added to the experiences of poor user-friendliness. The general perception of interviewees suggested, therefore, that their PKR barriers were technical and managerial rather than social. This is contrary to the findings of Damodaran and Olphert (2000), where cultural barriers, knowledge ownership and attitudes towards knowledge sharing were considered higher inhibitors to the uptake of electronic knowledge management systems. As stated in Leyer et al., (2016, p. 97), where the purpose of social knowledge systems is explained, “the idea [was] to motivate employees to [use PKR] to indicate their area of expertise” not to claim expert status but to “see their connections to other employees ... and extend or start up their own social process-based knowledge network.”

Ellison et al. (2015) described the risk of building a narrow network and not being aware of unknown expertise among co-workers, which is in accordance with the results of the present study where interviewees repeatedly claimed to have spent time and money on external advice, not knowing that the expertise needed was already available in the organization (Haraldsdottir, Paper IV).

Employees may, therefore, interact with a limited set of co-workers for knowledge seeking, which may be hindering if other people are better sources (Borgatti & Cross, 2003, p. 442). A partial reason for this tendency to repeatedly contact the same person for information, apart from the fact that the particular person may simply be nice, friendly or quite good at his or her job, is that traditional knowledge sources, such as portals of best practices, internal benchmarking or documents in KMS, need adaption from the originals before reuse (Nebus, 2006).

Social barriers seemed, however, not a significant hindrance to PKR access and use as 50 out of 55 interviewees stated that an organizational PKR should be open for all employees. Those who questioned the use of an open PKR were worried about how this level of transparency would impact those with little formal education and whether some sort of an academic snobbery might negatively influence the organizational culture of their place of work, and thereby the active participation and voluntary registration of employees into PKR platforms. It is imperative to give credit to the internal factors of organizations when developing and implementing a system for PKR, to better represent a realistic view of organizational life (Foscarini, 2012). The design, development and implementation of IT systems, as well as perceived user-friendliness by users, affect the possible collaborative use of the systems and, thus, the information culture of the organization (Damodaran & Olphert, 2000; Bailey & Vidyarthi, 2010; Hvannberg, 2015). Furthermore, the geographic position of the organizations participating in this research, all Icelandic, may strongly have influenced the organizational culture(s) portrayed in this study, and the way things were done in regards to PKR, as claimed by Oliver and Foscarini (2010). In particular, due to the legislation regarding EPS and GDPR and regulations and standards that govern these places of work.

Most interviewees claimed that the education, training and skills of employees was no secret, as it ought to be registered in accordance with the interests of individual employees and their superiors. Also, the benefits of having an overview of the knowledge of co-workers was in the minds of the interviewees more important than privacy. This perception was explained by one of the interviewees from a knowledge-award winning organization when explaining the value of PKR in relation to EPS

we need to have those key background factors on the table, for example education and former experience, so I mean [...] I really cannot see how this information can be seen as a taboo!

The results from Sigala and Chalkiti's (2014) research on Greek tourism revealed that knowledge sharing was indeed a process by which an individual

“imparts his or her expertise, insight or understanding to another individual” and the recipient of the knowledge uses “the knowledge to perform his or her task(s) in a better way” (2014, p. 801).

When using PKR as a directory to knowledge, the knowledge seeker can search, find and read the necessary information on education, training or skills of co-workers in the directory and decide whether or not to contact a knowledge owner directly. The richness of the interaction of the two may differ depending on how their interaction takes place. It may start low and from there evolve to being moderate, medium or high, i.e., by the physical presence of a face-to-face collaborative interaction (Lengel & Daft, 1988). While PKR does not prevent knowledge leakage when employees leave the organization for different reasons, as described by Leyer et al., (2016) the personal knowledge remains accessible and retrievable for wider use if registered, and regularly updated, in a collaborative PKR. Therefore, the reuse of the personal knowledge of employees may occur through social interaction in a people-to-directory-to-people connection, by the means of face-to-face, or rich media richness (Lengel & Daft, 1988) or medium-high as in face-to-interface communication, i.e., social media platforms (Farland & Ployhart, 2015) as also described by Christensen and Pedersen (2018).

The organizations that had received a knowledge award were not necessarily better at PKR than the non-winning organizations (Haraldsdóttir, Paper IV). In the organizations that experienced the greatest success in PKR, the purpose, access and use of the knowledge of employees was primarily to have a comprehensive overview of their intellectual assets embedded in the employees, which resembles the results of Grimsdóttir and Edvardsson (2018). Secondly, it was considered of great importance to foresee which employees needed further training or could be involved as instructors in in-house training for other less experienced employees. Thirdly, PKR was helpful to quickly respond to customers and send out proposals in different languages, which helped to fulfil customer demands, production requirements and advance the organizations' competitiveness in Iceland and abroad (Haraldsdóttir, Paper IV). The social significance of PKR, and the collaborative aspect of the system was considered of great significance. It was the nice-to-have characteristic of having employees communicating and working collaboratively throughout the organization that cultivated a platform for direct personal interaction between the knowledge seekers and the knowledge owners, which relates to the results of Sigala & Chalkiti (2014).

6 Conclusion

The aim of this research was to better understand how organizations supported PKR and how personal knowledge registration impacted the work of different employees. Also to examine the collaboration of different professionals regarding the registration, access and use of the knowledge of employees. The contextual framework of the study was Iceland.

The findings show that the organizations were, for the most part, not there yet or applying fragmented registrations of the intellectual assets of their employees, focusing on formal education and, in some cases in-house training. This meant that university degrees and essential documentation of short courses regarding internal systems and procedures, sanitation, security, particular obligatory certifications and similar were registered. Registration was scattered throughout the organizations and stored in various information systems. Collaborative efforts of registration were limited.

The organizational motives for registration were primarily to comply with monitoring institutions and to demonstrate to top management and external stakeholders the statistical data on certain educational degrees or qualifications of employees. In two of the organizations, the registration was non-existent. Despite an apparent lack of PKR use, the expressed views and experiences of the professionals interviewed and their positive perceptions towards PKR indicated that education and training, and the registration thereof, was considered urgent and economically significant for value creation.

Fruitful examples of PKR use were discovered. In the two, most successful PKR cases, the reason for their success was a mixture of strategic intent and motivation. Despite their apparent success as compared to the other organizations, they were not of the opinion that their PKR was completely in place. One reason for their reservation was that, despite PKR, the knowledge sharing process did not necessarily take place as anticipated. One cause was that middle managers tended to hinder knowledge sharing. They were hesitant, or unwilling, to lend their valuable knowledge workers to assist with projects in other divisions due to internal competition. Quarterly statements from individual divisions seemed, therefore, to overrule the financial benefits for the overall organization and worked against the social interaction of a collaborative PKR platform. The knowledge seeker could find a knowledge owner via PKR, but their engagement could be hindered by the fact that the knowledge owner was not permitted to use time and money to assist the knowledge seeker, in particular if the knowledge seeker did not belong to the same division as the

knowledge owner. The findings suggest that this was one of the hindrances in making the most out of the valuable knowledge of employees.

The key contribution and originality of this research lies in how it explored different professional perspectives and produced new information on the collaborative task of managing personal knowledge. It also contributed to a theoretical framework for further studies. Thus, it bridged a gap between theory and practice. As portrayed in Figure 1, the research interrelates theories of three connected disciplines with its focus on the socio-technical aspect of PKR, in particular the human-computer interaction of knowledge sharing. The insights into the PKR process, its pitfalls, successes and challenges, have practical implications for organizations in order to understand, analyse and better prepare for the possible implementation and use of PKR.

The results showed that the participating organizations were all challenged by PKR. Registration of the personal knowledge of employees was lacking in most cases, and was dependent on the manual work of HR and/or education and training managers, as well as the employees themselves. It is probable that while some challenges may be easily reduced, such as by using a single information system for the registration of knowledge instead of many, with added support of top-management and, by defining where the responsibility of the registration process lies, new challenges will arise.

The present research also sheds a light on the border between the need for a positive user experience and the constrictions of the external environment containing legal and regulative requirements. EPS has entered in the Icelandic economy. Many countries have shown interest in implementing a similar regulatory environment (Ministry of Welfare, 2018; Confederation of Icelandic Enterprises, 2018). Similarly, GDPR has been established in most European countries. Balancing the open access of employees in PKR, and the possible benefits of voluntarily contributing knowledge to a collaborative platform, with the necessity to protect personal data as required by GDPR, is an ongoing challenge for all organizations. These insights into the PKR process have also practical implications for organizations to better prepare for the possible implementation and use of PKR.

A practical implication of this study could be aimed at inspiring organizations to communicate information on the knowledge of employees to augment the social interaction of employees. The results could also bring diverse and valuable opportunities to the profession of information and records managers in regards to the registration process and the regulatory and legal environment. This could advance their collaboration with other professionals in information management. The results could also be of value to public

authorities who want to improve the provision and practices of information management for the implementation of EPS and GDPR.

The present research looks at a hitherto under-explored topic within information management and the results have already provided a fruitful avenue for further research. It may be broadened to other countries to obtain a more international perspective and a more holistic comparison. A larger framework could consist of organizations from particular industries, such as higher education or public administration, where the results might bring valuable results in terms of better use of the personal knowledge of employees through a more structured overview and the facilitation of social interaction of employees and yield financial benefits for the organizations.

A deeper examination of the perspectives of non-management employees could advance the research topic. Their particular experience in regards to the purpose, utility, ease of use, transparency and value of PKR, could bring more practical implication for organizations interested in a social knowledge platform. Also, the motivations of top management for the implementation and use of PKR could well be addressed in further detail. Furthermore, as EPS consists of clear registration requirements on the knowledge of employees, it could be a potentially interesting avenue for future research to explore how organizations will fulfil these requirements, and to follow-up on monitoring institutions responsible for maintaining the certifications for EPS.

Finally, in light of an apparent tendency to label the modern workplace as smart, the use of social media as a platform for PKR was anticipated to be a more notable proxy for personal knowledge sharing in organizations. Social media has been described as more open, interactive, fluid and dynamic than other forms of virtual communities and is most commonly used for making connections. It was also stated in the introduction that the majority of Icelandic organizations use social media more than do organizations in other European countries. Since the results did not support this notion, and the use of social media for PKR purposes was non-existent in the participating organizations, this topic is yet to be fully explored.

It could, therefore, be of interest to examine whether upcoming technological developments may assist and speed the registration process and accelerate PKR use. Future research could also follow up on if and how trending technologies will automatically spot compatibility between potential knowledge owners and knowledge seekers. Digital natives continue to populate workplaces and the workplaces themselves will only become more flexible. It would, therefore, be advantageous to find ways to enhance direct communication and facilitate, rather than constrain, the use of collaborative social platforms for knowledge sharing, in whatever environment the PKR may be placed.

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Appendix A – Research registration

Confirmation of the registration of the research with the Icelandic Data Protection Authority.

Ragna Haraldsdóttir
Teigagerði 14
Hér með hefur Persónuvernd móttengið
tilkynningu yðar.
Tilkynningin er nr. S4913/2010

Dags. 16.09.2010

**Tilkynning um vinnslu
persónuupplýsinga**

Númer
S4913

Er um að ræða nýja
tilkynningu eða breytingu á
eldri tilkynningu?
Eldra tilkynninganúmer sé
um breytta tilkynningu að
ræða:

Ný tilkynning

Nafn
Nafn forsvarsmanns (s.s.
forstjóra) **ef ábyrgðaraðili
er fyrirtæki/stofnun:**

Ragna Haraldsdóttir

Nafn þess sem fyllir
tilkynninguna út:
Heimilisfang:

Ragna Haraldsdóttir
Teigagerði 14

Póstnúmer:

108

Staður:

Reykjavík

Símanúmer tengiliðs:

820-0816

Titill verkefnis(ss. nafn á
skrá eða heiti rannsóknar)

Með hvaða hætti skilar rafræn upplýsinga- og
skjalastjórn á þekkingarauði starfsmanna árangri
m.t.t. efnisvals, yfirsýnar, notagildis og
hagræðingar

Tilgangur vinnslunnar?

Tilgangurinn er margþættur en felst m.a. í því að
skila hagnýtum upplýsingum um notagildi rafrænna
upplýsingakerfa til atvinnulífsins, ekki síður en til
háskólasamfélagsins, til lengri tíma litið. Þá veitir
rannsóknin stjórnendum fyrirtækja og stofnana

Hvaða upplýsingar verður unnið með?	tækifæri á að nýta sér niðurstöður hennar og þau verkfæri sem þeim leiða í þeim tilgangi að hafa yfirsýn og stjórn á upplýsingum um þá þekkingu sem fyrir er, auk þess að sýna með sannfærandi hætti hvar skortur er á frekari símenntun meðal starfsmanna.
Hvernig verður úrtak vinnslunnar fundið?	Unnið verður með upplýsingar úr litlu úrtaki fyrirtækja og stofnana. Áhersla verður lögð á opin viðtöl við starfsmenn og stjórnendur fyrirtækja og stofnana, þátttökuathuganir og orðræðugreiningu, þ.e. skoðun á fyrirliggjandi efni í innra umhverfi fyrirtækja eða stofnana. Með þrjúþættri nálgun er vonast til að rannsóknin skili eins réttmætum og áreiðanlegum niðurstöðum og vænta má af eigindlegri rannsókn.
Hvert verða upplýsingarnar sóttar?	Þátttakendur, fyrirtæki og stofnanir, verða skriflega beðnir um að taka þátt í rannsókninni og leitast við að ræða við fræðslustjóra, starfsmannastjóra, stjórnendur og almenna starfsmenn.
Verða upplýsingarnar sóttar í sjúkraskrá?	Í fyrirtæki og stofnanir - þýði rannsóknarinnar
Ef upplýsingar eru sóttar í sjúkraskrá, er verkefnið?	Nei
Heimild(ir) til vinnslu persónuupplýsinga, sbr. 8. gr. laga um persónuvernd og meðferð persónuupplýsinga	Nei
Verður unnið með viðkvæmar persónuupplýsingar, sbr 8. tl. 2. gr. laganna?	samþykki hins skráða sbr. 1. tl.
Viðbótarskilyrði um vinnslu viðkvæmra persónuupplýsinga, sbr. 9. gr. laganna?	upplýst og skriflegt samþykki hins skráða sbr. 1.tl.
Frekari skýringar á þeim heimildum sem merkt er við hér að ofan (t.d. lagaákvæði eða ef byggt er á samþykki hins skráða skal hér greint	

frá efni
samþykkisyfirlýsingar)
Ef aflað er
persónuupplýsinga frá
öðrum en hinum skráða,
hvernig er þá uppfyllt
viðvörðunarskylda gagnvart
hinum skráða, sbr. 21. gr.

laganna;

Ef aflað er
persónuupplýsinga frá
hinum skráða sjálfum,
hvernig er þá uppfyllt
fræðsluskylda, sbr. 20. gr.

Með því að upplýsa viðkomandi um tilgang
rannsóknar og að trúnaði verði heitið - auk þess að
taka fram að persónulegum gögnum verði eytt
þegar þau hafa verið nýtt í doktorsverkefninu.

laganna

Verður persónuupplýsingum
safnað með notkun
eftirlitsmyndavéla eða
annars konar

vöktunarbúnaðar?

Nei

Verða upplýsingarnar
afhentar öðrum. Hverjum?

Nei, niðurstöður rannsóknarinnar verður ekki hægt
að rekja til einstakra fyrirtækja og/eða stofnana og
ekki til einstakra starfsmanna.

Verða upplýsingarnar fluttar
úr landi?

Nei

Verða upplýsingarnar birtar
á Netinu / Vefnum?

Nei

Hvaða öryggisráðstafanir
verða

viðhafðar ?

Afmáun persónuauðkenna

Ef annað. þá hvað?

Nafn og/eða stöðuheiti þess
sem ber ábyrgð á
framangreindum

öryggisráðstöfunum

Ragna Haraldsdóttir

Verður

upplýsingunum/auðkennunum

Já - upplýsingum, s.s. kóðuðum viðtölum, verður
eytt um leið og unnið hefur verið úr þeim í
doktorsverkefni rannsakanda.

m
eytt og þá hvenær?

Verður öðrum aðila

(vinnsluaðila) með

skriflegum samningi falin

Nei

vinnsla upplýsinganna?

Kennitala vinnsluaðila:

(eingöngu tölustafir)
Nafn vinnsluaðila:
Heimilisfang vinnsluaðila:
Póstnúmer:
Staður:
Hverjar eru skyldur
vinnsluaðila samkvæmt
þessum samningi?
Aðrar athugasemdir
tilkynnanda:

Appendix B – Interview guide

Interview guide for semi-structured interviews in 18 organizations.

Interview guide

Some points to think over before the interview (for the researcher to prepare for the interview):

- In what manner do organizations support PKR?
- By what means does the registration of personal knowledge impact the work of different employees?
- What information on personal knowledge is registered when new employees are recruited?
- Who is responsible for the registration?
- In what way is training and participation in courses registered?
- In what way (if any) are interviewees able to search for education or training of employees (expertise) – for example in order to find someone specialised in negotiations, German or communication?
- How are organizations doing a needs-analysis for further training (Note: this question is connected to the former question – a needs-analysis is based on former registrations, i.e. what knowledge is already in place at the organization)
- How (and who) are decisions made for further training – who (employer / employee) decides on whether (and what) to attend further training?
- In what way is the information that is already registered used as a basis for further needs-analysis (recruitment – training)?
- In what way (if any) is the success of personal knowledge registration evaluated (in the long run)? What ways are there to evaluate the registration?
- Is there a financial gain in personal knowledge registration? If so - how is it evaluated? Do the interviewees have any examples to support the argument?
- In what way (if any) is knowledge sharing made *easier* than before by the registration of the knowledge of employees?
- The use of internal knowledge in in-house training programmes?
- Collaborative knowledge for team-work, marketing (of expertise), competitive negotiations (international projects)?
- A needs-analysis for further recruitment (based on existing knowledge registrations)?

Start of the interview:

- Introduce the researcher and the research topic. Make sure to mention confidentiality and anonymity to the interviewee, explain the length of the interview and get permission to record the interview.

- Start the recording. Mention date, time and place. Explain that the research has been accepted by the Icelandic Data Protection Authority and ensure an informed consent from the interviewee for the interview.
- Let the interviewee know that they are not obliged to answer any questions and that they are free to stop the interview at any time.

Background of the interviewee:

- Working title (role and responsibility)
- Work experience (short explanation)
- Work experience in a similar job (prior to current job)
- Education, particular training, skills or expertise that they have

Experience of personal knowledge registration:

- What is the current situation of personal knowledge registration in your organization?
- Do you have an electronic database of some sort for registering the formal education of employees, i.e. the education that they already had when they first started working for the organization?
- How do you get the information of the formal education of employees (for HR or training manager)?
- How is informal education (training, courses and so on) registered?
 - Is there a difference between training that occurs in-house and training that takes place outside of the organization when it comes to registration?
 - Is the registration placed centrally (the HR department for example) or are employees registering themselves (everything, some parts – how?)
- What system(s) are you using to register the personal knowledge of employees?
- Who is in charge of the registration process?
 - Are others involved? If so – how?
- What sort of information is registered?
- All courses (training) that employees attend?
- What about courses that employees attend by own choice (not paid/suggested by the employer)?
- What sort of filtering are you using in the registration process (open text or pre-defined lists of education)?

Access and Use

- Who has access to this information (education, training, skills)?
- If the access is limited – please explain (elaborate further) on terms of access
- In what way (if any) is this registration useful?

- For the employees?
- For the organization?
- For other purposes – which ones?
- Do you have the access that you need?
 - If not – why?
- To what sort of information would you like to have access to (that you do not have now)?
- In what way is the training (participation in courses) of employees considered important (and why) when it comes to the job development of employees?
- Impact on career opportunities?
- How (if at all) is information regarding certification/authorisation used for the benefit of the organization? Examples could include:
 - Project management certification
 - Information technology certification (microsoft and others)
 - For the benefit of the employee – how?
- What is the purpose of the registration? (Please elaborate)
- In what manner is the registered information on the education, training and skills used in your work environment?
 - Ask for examples

Follow-up on Training

- How are you following-up on training/courses that your employees attend?
- Evaluation of training
- Follow-up/monitoring
- Knowledge sharing (after participation in training)

Human resource management systems:

- How are you managing employees CV's at the start of their recruitment?
- In what manner is the information on employees formal and informal education and training registered into information systems?
- Who has access to the information systems?
 - How is this access controlled? How is it decided? If the access is limited – what are the reasons?
- In what way (if any) are employees encouraged to inform the HR division of changes in their education or their participation in training/courses?
- In what manner (if any) are employees encouraged to share their personal knowledge with colleagues?
- In what way (if any) are information systems useful when it comes to the registration of the personal knowledge of employees?

- What is (according to the organizational strategy (HR and training policy)) the aim of the organization in terms of internal or external training and participation in courses, and knowledge sharing of employees?
 - Elaborate on the strategy if necessary
- What is the rate of training/courses attended by employees – and taught by employees – versus in-house training/courses – taught by external advisors?

Overview (managerial) of the personal knowledge of employees:

- How many employees work in your department?
- What do you know about the formal education of your employees (at the time they were hired)?
- What information do you have on the education and training that your employees have attended (finished) while working in your department (in-house training or external training)?
- How do you (as a manager) make use of the particular expertise of your employees for the benefit of other employees within the division (knowledge sharing)?
- What methods do you use to do a needs-analysis for further training/development for your employees?
- In what way (if any) do you inform the a) HR manager and b) Training manager of additional education (formal/informal) or training that the employees in your department have attended (finished)?
- Do you encourage your employees to attend training/courses? If so – how? And – why?
- What do you expect from your employees in terms of knowledge sharing – please elaborate. Examples could include:
 - After attending a conference/particular training and/or course participation
 - Of their particular expertise (formal education and experience)

The employee – the use of education/training/skills:

- What is your education?
- What does your employer (next manager) know about your education?
- What do you want your employer to know about your education?
- How do you think your education (training and skills) are being put to use within your organization (your workplace)?
- How are you involved in the needs-analysis for further training (your personal training and/or for the department)?

- How is your needs for training/courses met by your employer (next manager/HR or training manager)? Please elaborate?
- In what way is the training/courses that you have attended followed-up on?
- Are you interested in sharing your knowledge (expertise, experience, particular skills) with your colleagues? Examples could include:
 - After attending a conference/particular training and/or course participation
 - Of their particular expertise (formal education and experience)
- If not – why?
- What hindrances are there (if any)?

Questions regarding EPS and GDPR

- What preparations were made in the organizations to fulfil the registration requirements of EPS?
- How (if at all) was PKR being registered differently, due to recent auditing and legal requirements?
- In what way did added need for PKR (due to EPS) comply with GDPR requirements
- In what manner had the EPS and GDPR (if at all) affected the role of information and records managers within the organizations?

At the end of the interview:

- Remember to ask whether the interviewee would like to add something to the interview. Are there any questions that they were expecting or had prepared for (would like to discuss) that did not occur in the interview? Do they have anything at heart that they would like to share?
- Repeat confidentiality and anonymity
- Open up for another interview (things may have been forgotten (left out) or there might be something in the interview that needs further explanation)
- Remember to say thank you!

Appendix C – Invitation letter for organizations A-F

Invitation to participate in the research, using multiple interviews, textual analysis and participant observations. Sent as an attachment to an e-mail to six organizations at different dates.



Name of the organization

Name of gatekeeper / interviewee

Subject: A request to XXX to participate in a research in the field of education and training

I have recently started my doctoral studies in Information Science at the School of Social Sciences at the University of Iceland. The supervisor of the doctoral research is dr. Jóhanna Gunnlaugsdóttir, professor.

The aim of the research is to analyse in what manner organizations are managing the education, experience and knowledge of their employees. The focus is set on the electronic registrations of information regarding the education that employees bring with them to organizations, and the additional skills and experience that they collect as their experience grows, and is considered useful for their place of work. The analysis is directed at the current status of knowledge registrations in the organizations participating in the research and how these registrations are used as well as in what manner the registration of the personal knowledge of employees contributes to the value of the intellectual assets of the organizations. The financial gain of knowledge registration is also part of the study. The research is based on the basic assumption that registrations might be lacking regarding information on the personal knowledge of employees as well as the potential lack of strategic intentions and/or usability of the registrations that are being made.

Research question – working title:

In what way is electronic information and records management useful to register the personal knowledge of employees when considering the following factors:

- a) Overview – knowing what knowledge is available in the organization.
- b) Selection – the education and skills that are found missing after a needs-analysis for further education and training.
- c) Usability/Use – the possibility of knowledge sharing when tacit knowledge becomes explicit.

- d) Advantage – financial gain from the registration of knowledge which includes a current status of the knowledge of the organization (embedded in the employees) and a strategic plan for further recruitment and/or training of employees.

Methodology:

This qualitative research will contain interviews with employees and managers, participant observations and discourse analysis of organizational documentary material. Using triangulation, as in this research, involves using several kinds of data collected from various sources which is an attempt to ensure an in-depth understanding of the topic being studied.

Possible questions:

- In what way, if any, is the personal knowledge of employees being registered in the organization?
- How are managers and employees communicating on possible needs-analysis for further training?
- How does a needs-analysis of education and training take place?
- What, if any, is the purpose of registering the personal knowledge of employees?
- How is the follow-up for further training among employees in conjunction with current registrations?
- What is the connection between the registration of the personal knowledge of employees and strategic education and training programmes within the organization?

Research plan:

The research will take several years. In it, the purpose of implementing (PKR) is analysed by studying existing strategies, and by examining multi-professional interviews and participant observations to see in what manner those strategic intentions are being put into practice. The research starts in the autumn of 2010 and the first interviews will be conducted from Oct. 1st – Nov. 25th. Repetitive interviews may take place in the next three to four years as the research progresses. The results of the research will be introduced, both in scientific literature as well as in conferences in Iceland and abroad on a regular basis.

Your benefits from taking part in the research:

The research is intended to bring valuable information to the managers and employees at XXX as they will have the opportunity to make use of the findings of

this study in their daily work. It is the objective of this research to contribute, both in practice as in theory, to the development and success of organizations, in particular to those who gave their permission, and valuable time, to participate in the research process. Possible success of this research could support XXX in their efforts to:

- Make better use of the intellectual assets of the organization.
- Conduct a more strategic needs-analysis for further training of employees.
- Obtain a financial gain as less is spent on external advisors for in-house training.

The research context is in Iceland. A small number of organizations will be asked to take part in the research. Full anonymity is guaranteed throughout the research process and analysis of collected information which will not be possible to trace to individual interviewees or their work-places.

Reykjavík, September 30, 2010

Ragna Haraldsdóttir

Appendix D – Invitation letter for organizations G-L

Invitation to participate in the research. A request for one or more interviews. Sent as an attachment to an e-mail on January 3rd 2017 to six organizations for corroborative purposes.



Name of the organization

Name of the gate-keeper / interviewee

Reykjavik, January 3rd 2017

Subject: A request for the participation of XX in a doctoral research in the field of Information Science

You are kindly requested to participate in a research in the field of Information Science within the Faculty of Social and Human Sciences, at the School of Social Sciences, University of Iceland. The research is called: *Information management at crossroads: Personal knowledge registration in interactive organizational databases*. The researcher is Ragna Kemp Haraldsdottir, adjunct in Information Science and a doctoral student.

The time has now come to the latter part of the research, which started in 2010, and contains 18 organizations in Iceland. To shortly explain, the focus of this interdisciplinary study is set on the registration, access and use of the manner in which information regarding the education, experience and knowledge of employees is managed in organizations. Full anonymity is guaranteed throughout the research process and analysis of collected information which will not be identifiable by individual interviewees or their work-places. The research has been registered with the Icelandic Data Protection Authority no. s4913/2010. The supervisor of this research is Dr. Johanna Gunnlaugsdottir, professor in Information Science.

You are kindly requested to give permission for a single interview with an individual that is most likely to be able to provide information on the management and sharing on knowledge, for instance a records professional. Preparation is not requested of the individual prior to the interview which can take approximately 35-45 minutes.

If the interview is permitted, I would very much appreciate it taking place as soon as possible. I am of course willing to meet you and introduce the focus of the research, prior to your decision regarding your participation in this research.

Ragna Kemp Haraldsdóttir
Adjunct in Information Science and doctoral student
E-mail: rh@hi.is
Mobile: 820-0816

Appendix E – Invitation letter for organizations M-S

Invitation to participate in the research. Sent as an attachment to an e-mail on November 14th 2016. Request for one or more interviews and documentary material. Sent to seven award-winning organizations.



To: Name of the organization

Name of the gatekeeper / interviewee

Reykjavik, November 14th 2016

Subject: A request for the participation of XX in a doctoral research in the field of Information Science

You are kindly requested to participate in a research in the field of Information Science within the Faculty of Social- and Human Sciences, at the School of Social Sciences, University of Iceland. The research is called: *Information management at crossroads: Personal knowledge registration in interactive organizational databases*. The researcher is Ragna Kemp Haraldsdóttir, adjunct in Information Science and a doctoral student.

The time has come for the latter part of the research, which started in 2010, and contains 18 organizations in Iceland. To shortly explain, the focus of this interdisciplinary study is set on the registration, access and use of the manner in which information regarding the education, experience and knowledge of employees is managed in organizations. Full anonymity is guaranteed throughout the research process and analysis of collected information which will not be identifiable by individual interviewees or their work-places. The research has been registered with the Icelandic Data Protection Authority no. s4913/2010. The supervisor of this research is Dr. Johanna Gunnlaugsdottir, professor in Information Science.

This sampling only contains organizations that have won the award Knowledge Company of the Year, awarded by the Icelandic Association of Economists and Business Graduates in the years 2011-2016 and that is the reason for contacting you.

You are kindly requested to give permission for a single interview with an individual that is most likely to be able to provide information on the management and sharing on knowledge regarding the award that the organization has received. Preparation is not requested of the individual prior to the interview which can take approximately 35-45 minutes.

If the interview is permitted, I would very much appreciate it taking place as soon as possible. I am of course willing to meet you and introduce the focus of the research, prior to your decision regarding your participation in this research.

Ragna Kemp Haraldsdóttir
Adjunct in Information Science and doctoral student

E-mail: rh@hi.is

Mobile: 820-0816

Appendix F – Request for additional questions

Request for one or more interviews as regards the implementation of EPS and GDPR. Sent as an e-mail on January 8th 2018 to eight organizations that were already participating in the research.

Dear xxx,

Happy new year and thank you for our good co-operation last year,

The doctoral studies are going well and I am currently working on my third paper which is based upon data from Icelandic organizations. As before, the subject is the registration, access and use of knowledge.

There are many external factors that affect the research process and currently I am looking into the new General Data Protection Regulations and the implementation of the Equal Pay Standard. I would, therefore, like to ask whether it would be possible to ask a few additional questions that were not addressed in our previous interview.

The questions are as follows:

- a. How is the organization is prepared to fulfil added registration requirements due to the implementation of the Equal Pay Standard no. 85/2012?
- b. In what way (if at all) is information on the education and skills of employees registered today – different from before – due to the auditing and legal requirements of the Equal Pay Standard?
- c. What sort of preparations are being made regarding the processing of personal data in the organization due to the changes following the General Data Protection Regulation (GDPR) which will take place in May 2018?
- d. In what way does the registration of information regarding the education and skills of employees, as required by the Equal Pay Standard, conform with new laws on personal data protection, and affect the role and responsibility of records professionals?

I would very much appreciate it if you could take the time to look into these questions and inform me of their status within your organization. Likewise, you are very welcome to address other issues and add comments, regarding the Equal Pay System or the GDPR legislation (the names of individuals are anonymous as always in this research).

I decided to send this request to you in an e-mail so that you would have the opportunity and the time to look into this and evaluate your position. I will shortly follow-up on this e-mail with a phone call.

Do not hesitate to contact me if you have any questions.

With my best regards,
Ragna Kemp Haralds.



HÁSKÓLI ÍSLANDS
FÉLAGSVÍSINDASVIÐ

Ragna Kemp Haraldsdóttir
Adjunct in Information Science and a doctoral student

University of Iceland
School of Social Sciences
Direct phone 525-5253
www.hi.is

Appendix G – Example of an analysis of organizational strategies

Examples of strategies from the HR and/or Education and training divisions from organizations A-F.

A Financial - Private
Nearly 1000 employees.

A is a **knowledge community** of employees who have various experience and **knowledge**. We encourage work development and **offer an ambitious education and training plan** where all employees have the opportunity to increase their **knowledge** and skills. The objective is to **stimulate** and **maintain** employees' professional **knowledge**. We furthermore encourage employees to maintain their professional **knowledge** and **give them the opportunity to develop and grow at their work**. Training and education is on the one side **an initiative of the training manager but no less an initiative of the employee** or his/her manager. We welcome new employees and provide strategic training and education. When hiring, **knowledge**, experience, education and interests, are taken into account. We work strategically towards creating an environment where we can all grow at work and improve our skills. Emphasis is on good working environment with opportunities to **share knowledge and information as appropriate**.

B Technology - Private
Around 500 employees.

B's strategy is to **offer employees top-quality education** in order for them to develop at work. Employees are **responsible** for maintaining their own **knowledge** and it is therefore necessary to **follow current offerings**. It is the strategy of B to give employees the opportunity to develop within the organization. It is a mutual benefit, the employees advance their experience and **the organization is more likely to retain a long-term relationship with employees**. Work development is a **mutual task** of employees and B, but **the best chances contain outstanding performance and showing initiative at work**.
Signed by the HR manager.

C Industrial Consultancy - Private
Over 300 employees.

The resources of C are embedded in the employees, their knowledge and significant experience. It is therefore the goal of C to hire, sustain and elevate qualified employees in every way possible. E puts great emphasis on having qualified and interested employees with significant experience and **knowledge**. C **gives employees the opportunity** to develop and attend courses. It is a **mutual responsibility** between the employee and his/her manager to follow-up on education and training for each and every employee. The reception of new employees must be systematic and in coherence with the organizational procedure. A new employee must be "fostered" with a more experienced employee until he/she has adjusted to daily routines at the office. A new employee receives useful information about his/her role and **responsibilities** on the first day. **Human resource is the knowledge that resides in the team**.

D Industrial/energy - Public
Over 250 employees.

We gain knowledge and we share it. We emphasize on constantly developing our employees' skills and talent and **encourage them to continually seek ways** to develop at work. In support **we offer strategic education and training programmes**, which ensures necessary **knowledge** and capabilities in order to become successful at work. D has a close relationship with academic communities on organizational matters and **the employees share their knowledge with those communities as much as possible**. **New employees get strategic training from the first day**. Good quality procedure for new employee reception is built on the collaboration of managers, HR division and **fosters** who have had special training. We seek to create an atmosphere of **good information flow and knowledge allocation**. Communication is open and honest and employees assist one another with daily work and thereby contribute to positive working environment.

E Financial - Public
Nearly 200 employees.

The training strategy of E emphasizes employees' opportunities to achieve training that increases their capabilities and **happiness** at work. Its purpose is to encourage employees to maintain their **knowledge** and **have the opportunity to grow and develop at work, to assist managers, educational representative and the education committee, and to generally contribute to increasing abilities and skills**. The goal of the strategy is to activate and encourage employees to **take initiative** and **responsibility** of their own **knowledge** and abilities in a changing environment and to maintain and inspire employees' **knowledge** and personal skills at work. **It is important that employees themselves register all additional knowledge and skills into the HR database so that managers and educational representative have access to valid information regarding each and every employee**. The intent of the training strategy is for employees to be willing and capable of increasing and fully using their skills. **Employees are expected to develop constantly** towards changing needs, both professionally and technologically, and be **willing to train** for new and changing projects. The **cooperation** between management and educational representative includes the **analyzation and categorization** of training needs but moreover to support and elevate employees to increase their **knowledge** and skills. **The training of employees is an investment for the future of E**.

F Surveillance - Public
Almost 240 employees.

Emphasis is on **employees' possibility to acquire education and knowledge** regarding their work. Employees are expected to have and maintain their **knowledge** as appropriate with the aim to proceed with their work in a professional manner as well as advantageously. An attempt is made to get more experienced employees to take on the **role of instructors** while a new employee is trained for a job and the job environment. **Emphasis is put on inner service as it creates the drive that generates the best use of collective knowledge** when searching for solutions regarding various projects that the institution is **responsible for**. **Each division manager evaluates the need for education in cooperation with the employee and HR manager**. Employees are also encouraged to seek other educational offerings, such as language courses or other courses that may be considered valuable at work and attended outside of regular working hours.

Appendix H – Examples of inductive analysis

Two examples to portray a partial process of an inductive analysis of an interview from the first group of organizations (A-F).

með, menn þekja ekkert hvar þessi hæfni liggur, það er kannski tilhneiging á Íslandi að við höldum að við vitum svo mikið um hvorn annan, að þetta sé bara í kollinum á okkur

R Já

V Eins og það kom hérna upp þegar

stefnumótun byrjaði hér, þá var eitthvað

svona - já við þurfum ákveðna einstaklinga til að vera tengiliður við ráðgjafa og þessir

einstaklinga þurfa að hafa svona hæfni og

svona hæfni og svona hæfni og við vorum ekkert endilega með þetta skráð en það voru margir með það kollinum hvaða einstaklingar þetta væru

R Já

V En ég held að við þurfum að komast aðeins upp fyrir það

R Já

V Þetta er ákveðin bara svona þekkingarstjórnun, að að hafa þetta skrásett og, ég meina, svo er auðvitað hægt að nýta þetta, ég get nýtt svona hæfni, ég hef t.d. oft kallað þegar ég er að leita að kennara, það er einhver sem vantar námskeið í SQL forritunarmálinu

(A.R. fann að starfsmaðurinn í mér langaði að láta vita af SQL námskeiðinu hjá Endurmenntun en gætti mín á því að blanda ekki saman mér sem rannsakanda og mér sem starfsmanns á sviði símenntunar.)

V Og ég hugsaði, það er alveg pottþétt mjög hæfur sérfræðingar hérna inni,

R Já

V En hvar eru þeir, ég veit ekki um þá

R Já

- teljum okkur gata heldið utan um þekkingu fólks í kollinum.

We did not have this registered

Skirtir skráningu Nýta tengslanet

Used our "heads" to know who

komast upp fyrir þekkingu byggja á minni-

d) Þekkingarstjórnun This is KM a certain type of

these individuals were

Unrelevant Researcher's thoughts

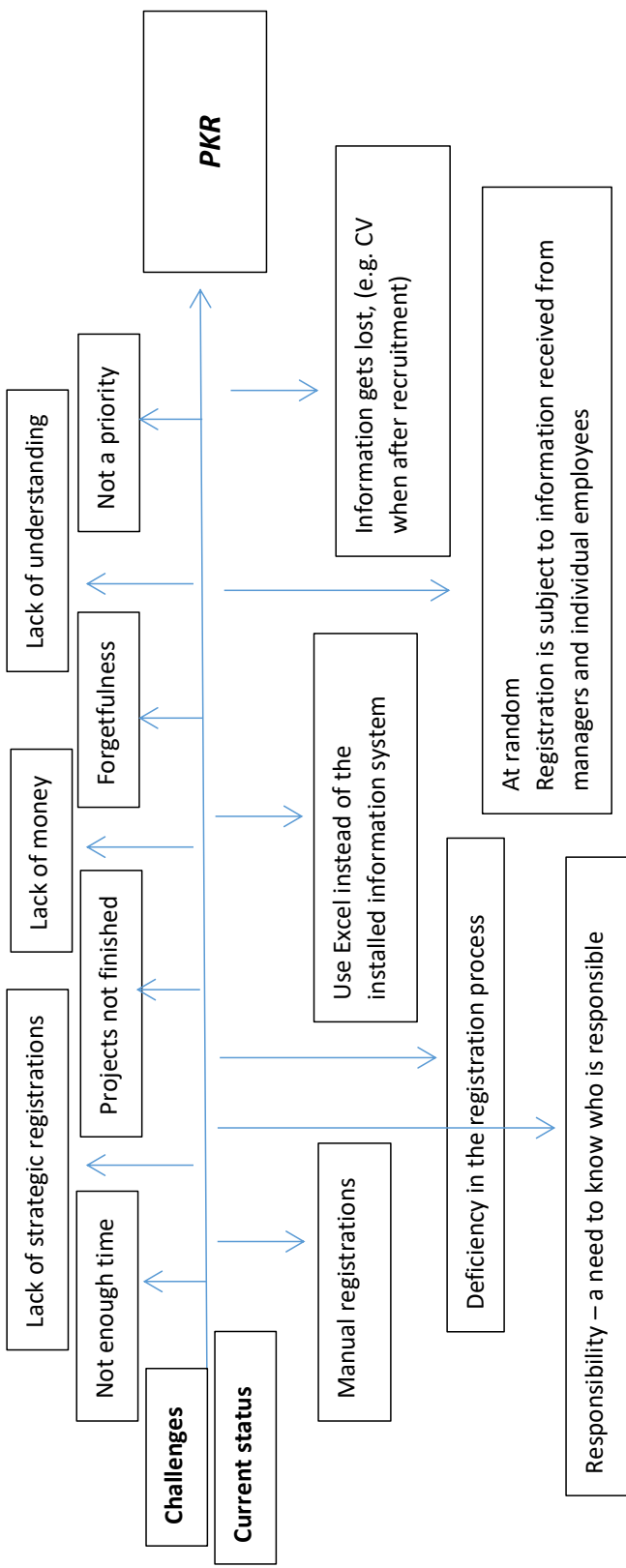
göt athugasemd good quote

And I thought, there is a very qualified expert in here for sure, (yes) but where are they, I do not know

Size and numbers	Top management	HR	Education and Training	Quality manager	Role and responsibilities of RM	Implementation of EDRMS	Intranet	PKR	Obstacles	Support	Respect of RM	Cooperation / the matrix	Financial gain of PKR
Nearly 1000 employees. almost 800 users of EDRMS and 8 in the RM division	I have my own Excel spreadsheet where I register formal education of all employees in my division. I can see how many of my employees have a university degree and how many men versus women are in my division. I haven't used the PKR database, it isn't ready and I like having control over the information of employees in my division. I have not shared my document with the training manager, but that might be a good idea. Registration of external courses is totally out of order.	We have an HRMS for PKR. Individual employee can see his/her own information and can change or enter new information. Only HR has access to the whole database. External courses are not registered which is not good since we lack overview and insight into each employee's dedication to constant improvement We are implementing a matrix which is an Excel spreadsheet focusing on registering current state of knowledge in each division. Each matrix is not shared with other divisions.	PKR is really defected; it has been troublesome that PK has not been strategically registered. When I started I had no idea about possible teaching experience of our employees. That would have helped in the beginning. Internal courses are registered but external courses are only registered at random.	No interview	"My work has to do with everything a RM does plus the library and control over various databases. Our territory is the whole of the organization, nobody is excluded"	"It has been reasonably successful. Clear rules regarding use of various devices or remote access. The system is not fully in use yet. People are also using organization al servers for documents and records"	"The intranet is in the hands of another department." There is a link from the intranet to RM material	No role in PKR. Employees register information themselves into a database, but there is no follow-up on registrations and limited access.	Unfinished implementation of a new system. People are unresponsive to reminders about registering their knowledge into the system. Data protection regulations hinder communication between systems.	"Very important to have key people on your side, such as the auditor and EDRMS positive people within each division" Constant improvement such as Lean methodology is also helping	Not an issue in the interview. The RM has worked for the organization for over ten years.	Generally good experience of working with colleagues. Not involved in HR matters. Not involved in developing HR related registrations.	"There are great advantages" We are buying expensive courses and would like to know about prior experience from colleagues before sending new people.

Appendix I – Example of axial coding

One example from an analysis of the interrelationship between categories, called axial coding. Based on interviews in the first three organizations.



Appendix J – Example of an interview analysis

An example of an analytical process of the interviews from organizations M-S.

Appendix K – Example of a documentary analysis

An example of an analysis and a translation process of documentary material.
An education and training strategy

Fræðslustefna XXX leggur áherslu á að starfsfólk eigi kost á fræðslu og þjálfun sem eykur hæfni og ánægju þess í starfi. Tilgangur með fræðslustefnunni er að hvetja starfsfólk til þess að viðhalda þekkingu sinni og eiga kost á að vaxa og þroskast í starfi, að vera stjórnendum, fræðslufulltrúa og fræðslunefnd til aðstoðar, og stuðla almenn að aukinni getu og færni. Fræðslan skal byggjast á þörfum og lagalegu hlutverki XXX þar sem tekið er tillit til þarfa og óska starfsfólksins. Markmið stefnunnar er að virkja og hvetja starfsfólk til að taka frumkvæði og ábyrgð á eigin þekkingu og færni í síbreytilegu umhverfi. Efla og viðhalda þekkingu og persónulegri færni fólksins og hefni þess í starfi og sjá til þess að starfsfólk sé ávallt vel upplýst og þekki vel til þeirra laga og reglna sem gilda um starfssvið þeirra. Til að ná þessum markmiðum mun XXX verja árlega til fræðslumála að lágmarki fjárhæð sem nemur xx af greiddum launum starfsfólks. Fylgst verður með ráðstöfun starfstíma til sí- og endurmenntunar með skráningu í XX starfsmannakerfi. Virk fræðslustefna miðar að því að starfsfólk vilji og geti eflst hæfni og nýtt hæfileika sína til fulls. Starfsfólk skal leitast við að laga sig að síbreytilegum kröfum sem starfið gerir til þess, svo sem vegna faglegrar eða tæknilegrar þróunar, og vera reiðubúið að þjálfá sig til nýrra og breyttra verkefna. XXX leggur auk þess áherslu á að koma til móts við starfsfólk sitt með því að gefa því kost á auknu svigrúmi með sveigjanlegum vinnutíma svo það geti sótt sér aukna þekkingu. Samstarf stjórnenda og fræðslufulltrúa felst í því að greina og flokka fræðsluþörf innan XXX en jafnframt að styðja við og hvetja starfsfólk til að efla þekkingu sína og færni. Stjórnendur skulu vinna að markmiðum fræðslustefnunnar meðal annars í starfsmannasamtölum en skilvirkt upplýsingastreymi og endurgjöf á frammistöðu starfsfólks er mikilvægur þáttur í framkvæmd fræðslustefnunnar, ásamt því að styðja við stjórnendur við framkvæmd hennar. Fræðsla

The education and training strategy of E puts emphasis on employees' opportunity to achieve education and training that increases their capabilities and happiness at work. The purpose of the education and training strategy is to encourage employees to maintain their knowledge and have the opportunity to grow and develop at work, to assist managers, educational and training representative and the education committee, and to generally contribute to increased capabilities and skills. The goal of the strategy is to activate and encourage employees to take initiative and responsibility of their own knowledge and capabilities in a changing environment. Maintain and encourage employees' knowledge and personal skills at work.

It is important that employees themselves register all additional knowledge and skills into the HR database so that managers and educational representative have access to clear information regarding each and every employee.

Úr nýrri stefnu:

The object of an active training strategy is for employees to be willing and capable of increasing and fully using their skills. Employees are expected to develop constantly towards changing needs, both professionally and technologically, and be willing to train for new and

starfsfólks er fjárfesting til framtíðar fyrir XXX.

Mikilvægt er að **starfsmenn sjálfir skrái alla viðbótarþekkingu og færni í starfsmannakerfið XX** svo stjórnendur og fræðslufulltrúi hafi greinargott yfirlit um hvern og einn starfsmann.

Um umsjón – ógreinilegt. Ofangreind fræðslustefna tekur gildi XX. Stefnan er á ábyrgð sviðs XX og skal endurskoðuð eftir þörfum. Fengin hjá viðmælanda.

changing projects.

The cooperation between management and training representative includes the analyzation and categorization of training needs for E but moreover to support and encourage employees to increase their knowledge and skills. **The training of employees is an investment for the future of E.**