

Social media as facilitators of tacit knowledge sharing  
practices amongst public sector employees.

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## Declaration

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I hereby declare that the work presented in this thesis has not been submitted for any other degree or professional qualification, and that it is the result of my own independent work.



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Iris Buunk (Candidate)

02/06/2020

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Date

## Abstract

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This work is concerned with the exploration of social technologies relevant to the sharing of tacit knowledge within the public sector. The findings derive from analysis of empirical data collected via survey research and twenty qualitative interviews with the members of an online knowledge sharing platform dedicated to those working within public sector bodies, mainly in Scotland.

The main contribution of the thesis is that it extends understanding of how social technologies render tacit knowledge visible by 1) providing access to online interactions for geographically dispersed individuals, 2) storing online social interactions, making them reusable, and 3) increasing network growth. The visibility of such tacit knowledge enhances knowledge awareness. This contributes to collective intelligence and learning processes and enables new collaborations.

The concept of Ba, a Japanese concept from 1998 that emphasises the influence that contexts can have over the sharing of tacit knowledge is updated with respect to the use of social media tools.

These two contributions are significant because previous research in Knowledge Management has not extensively investigated the ways in which social technologies contribute to the sharing of tacit knowledge within the public sector. They also emphasise the added value of social media tools with respect to the visibility of tacit knowledge and add a further valuable dimension to a well-known model that is frequently cited in the Knowledge Management literature.

## **Publications associated with this research**

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**Buunk**, I., Smith, C. F., & Hall, H. (2019). Tacit knowledge sharing in online environments: Locating 'Ba' within a platform for public sector professionals. *Journal of Librarianship and Information Science*, 51(4), 1134–1145.

**Buunk**, I., Hall, H. & Smith, C. F. (2017). Skills in sight: how social media affordances increase network awareness. In *Proceedings of the 18th European Conference on Knowledge Management ECKM 2017*, 181-186.

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# 1 Introduction

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## 1.1 Introduction

This chapter introduces the research presented in this thesis. It provides a summary of the study by introducing the research background, before explaining briefly the five main key concepts that underpin the theoretical framework, namely 'tacit knowledge', 'knowledge sharing', 'social media affordances' and the 'public sector'. This explanation also defines the scope of the study. The relevance of the research is then addressed, emphasising the empirical gap, before presenting the methodological approach undertaken in this study. Finally, a thesis layout summarises the content of each chapter.

The environment within which this study is undertaken is the public sector in Scotland<sup>1</sup>. This encompasses various public institutions such as the Scottish Government, local governments, third sector institutions, Police Scotland, Scottish Fire, Rescue Service, universities and the NHS. It excludes not-for-profit organisations and the private sector. The evolution of social technologies and social media affordances have enabled the sharing of tacit knowledge, so that people and organisations can benefit from extended networking possibilities at levels that were not achievable before the development of such support. The exploration of the literature presented in this thesis has led to the conclusion that there is a lack of empirical studies that investigate to what extent social technologies facilitate the sharing of tacit knowledge within the public sector. The relevance of this study, which stems from this conclusion, is explained further below.

## 1.2 Aim and research questions

The aim of this study is to investigate the extent to which social media can be facilitators of tacit knowledge sharing practices within the public sector. To achieve the objective of this study, three research questions were defined that

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<sup>1</sup> The site of data collection – the Scottish section of the Knowledge Hub – allows for participation for others from across the UK.

helped to build the scope of the research: (1) How do social media facilitate the sharing of tacit knowledge between employees? (2) How do social media bring new capabilities to the sharing of tacit knowledge? (3) Which situated factors may provide the appropriate context for using social media to enhance tacit knowledge sharing practices?

These research questions, which are further explained in section 2.7, along with the overarching aim of this study, provide the scope of this research.

### **1.3 Research background**

The purpose of this research is to investigate how social media can facilitate the sharing of tacit knowledge between Scottish users of an intra-organisational online knowledge-sharing platform which belongs to the public sector. It is acknowledged in the scientific community that there is a lack of empirical studies which would deepen the comprehension of social media usage within organisations (Panahi, Watson, & Partridge, 2013). This is particularly true within the field of Knowledge Management, where knowledge sharing practices benefit from social media technologies and affordances (Annabi & McGann, 2013). Social media affordances enhance not only socialisation processes between employees but also sharing of tacit knowledge (Panahi et al., 2013). Tacit knowledge is a type of knowledge of high value that can be easily overlooked, due to its intangible nature. It is usually shared through social interactions. Some scholars argue that the most effective way to share tacit knowledge is through direct and face-to-face interactions (Mascitelli, 2000). Others, however, have asserted that tacit knowledge can be shared with equal efficiency through online virtual networks (Tee & Karney, 2010, Panahi et al., 2013). While the use of social media is increasing within the public sector (Mergel, 2011, Mergel, 2013; Zavattaro & Sementelli, 2014), knowledge-sharing practices – due to their complexity – still represent a hurdle that needs to be overcome (Paulin & Suneson, 2012; McEvoy, Ragab, & Arisha, 2016; Razmerita, Kirchner, & Nielsen, 2016). There is, therefore, a need to investigate more thoroughly the role that social media affordances play with regard to knowledge-sharing practices within the public sector. This study of tacit knowledge-sharing furnishes new understandings of how social media affordances can enhance working processes and increase the intellectual capital of organisations.

## **1.4 Key concepts and scope**

Prior to the presentation of these key concepts, it is necessary to specify that this thesis relies on the following definition of knowledge: embedded in people's minds, but also in routines and actions, knowledge is made of employee's experiences, interpretations and experiences. Knowledge differs from information and data (Davenport et al., 1998; Choo, 2006): information derives from data, and knowledge derives from information that is contextualised and interpreted by the human mind. The type of knowledge investigated in this study is knowledge used in organisations, with a particular emphasis on individuals' knowledge. Such knowledge is believed to be highly valuable but complex, and so difficult to capture (Davenport & Prusak, 1997). It has been acknowledged for some time that there are two specific types of knowledge: explicit knowledge, and tacit knowledge. Both are addressed in this thesis, though the latter is one of the main concepts investigated in this study. These concepts are introduced immediately below.

There are five key concepts addressed in this study: (1) tacit knowledge; (2) knowledge sharing; (3) the Ba concept; (4) social technologies; (5) the public sector. A brief explanation is provided below for each of them. At the same time, this defines the scope of the theoretical background of this research. These key concepts definitions are listed in the Table 1 and briefly explained further below:

Table 1 - Key concepts definitions

Key concepts	Broad definitions	Sources
Tacit knowledge	Experiential knowledge that primarily resides in people's minds. Intangible, non-articulated, yet of high value because it is made of employees' expertise. Shared through social interactions.	(Nonaka, 1994; Jakubik, 2007; Panahi et al., 2013)
Knowledge sharing	Process of knowledge exchange between people/teams. Various techniques facilitate the sharing of tacit knowledge – it is more challenging to share than explicit knowledge. Knowledge-sharing is crucial for learning to occur.	(Nonaka, 1994; Hislop, 2013)
The Ba concept	The concept of Ba refers to a contextual space within which knowledge is shared. The four types of Ba are: 'Originating Ba', 'Dialoguing Ba', 'Systemizing Ba' and 'Exercising Ba'. These stages underpin the four stages of Nonaka's SECI model within which tacit and explicit knowledge are inter-converted.	(Nonaka & Konno, 1998)
Social technologies	Social technologies encompass social media tools and enterprise social software. They enable and facilitate social interactions occurring online (via the Internet) or via mobile devices.	(Kaplan & Haenlein, 2010; Treem & Leonardi, 2012)
Public sector	Economic environment that includes public services and governmental organisations that serve the population. Generally owned by the state and non-profitable.	Mullins (2007)

### 1.4.1 Tacit knowledge

The type of knowledge addressed in this study is tacit knowledge, commonly described as the knowledge that resides in people's minds. Tacit knowledge is personal and hence difficult to formulate because of its intangible nature. Invisible, it is often compared to the hidden part of an iceberg (Haldin-Herrgard, 2000). Due to its multi-faceted nature, there is an abundance of definitions provided by

scholars. These are explained in Chapter 2, section 2.2.3.2. Tacit knowledge is considered as being of high value for organisations because they rely on their employees' expertise. It is made, for instance, of ideas, intuition, mental models, skills, know-how and implicit rules of thumb (Nonaka, 1994; Panahi et al., 2013). Unlike explicit knowledge (articulated, coded or formally presented in the form of documents), tacit knowledge is shared through social interactions, most efficiently through direct face-to-face interactions. The emergence of social media technologies has revived this debate, as explained in Chapter 2, section 2.4.2.

For the purpose of this study, tacit knowledge is used to mean the knowledge which refers to the technical and cognitive dimensions, as defined by (Nonaka, 1994) and further explained by Panahi et al., 2013).

#### **1.4.2 Knowledge sharing**

Knowledge, whether it is tacit or explicit, needs to be shared between employees if it is to exist at an organisational level so that learning can occur. Knowledge-sharing, however, remains a challenge in organisations due to several factors. Among these are the types of knowledge shared (explicit or tacit), the choice of appropriate techniques, and the contexts within which knowledge is shared (Hislop, 2009). Several techniques known to facilitate the sharing of tacit knowledge have been discussed in the literature and used in professional contexts for more than two decades (Hislop, 2009). These are explained in the literature review in section 2.3.3. Among those techniques are Communities of Practice (CoPs) – this technique very relevant to this study. This technique, that was (and still is) used face-to-face, has migrated to online platforms that support their deployment. The social interactions and knowledge-sharing that occur within a CoP enhance the learning process on individual and on team levels. This can ultimately benefit entire organisations (Wenger & Snyder, 2000; Krishnaveni & Sujatha, 2012).

The context within which knowledge is shared also matters (Jakubik, 2007). This is particularly the case with tacit knowledge because it is often subjective and therefore highly dependent on the contexts within which it is shared (Sole & Wilson, 1999; Tounkara, 2013). This is the reason why the concept of *Ba*, created by Nonaka & Konno (1998), is considered in this study. This concept implies four

types of contextual spaces within which knowledge is created through an ongoing conversion process of tacit to explicit knowledge (a conversion process known as the SECI model of knowledge creation (Nonaka, 1994). A larger discussion of this topic can be found in the Literature review in section 2.3.2.

### **1.4.3 The concept of Ba**

The concept of Ba defines a phenomenological time and space within which knowledge is constantly created (Rennemo & Åsvoll, 2019). This concept was originally created by Nonaka & Konno (1998) in the late nineties. It addresses the importance of the context within which knowledge-creation and knowledge-sharing processes occur. Because tacit knowledge is highly contextual, it is particularly relevant to this study. Ba represents four contextual spaces within which four stages of knowledge-creation (also known as the SECI model) are embedded (as explained in more detail in section 2.3.2.

Several scholars of knowledge management have reviewed this concept since its creation, particularly with regard to the emergence of new technological affordances that facilitate knowledge-sharing that were not available at the time when Ba was first proposed. The concept of Ba emphasises invisible, yet real, spaces within which knowledge is created, used, and shared on individual and collective levels. The association of digital communication, networks, physical places and online social interactions has modified the way knowledge is shared, particularly in inter-organisational settings (Bartolacci, Cristalli, Isidori, & Niccolini, 2016). This statement fits with the case study investigated in this study and therefore justifies the integration of the Ba concept into the research questions deployed in this study.

### **1.4.4 Social technologies**

Social technologies are technologies that facilitate online social interactions (via the Internet or mobile devices). They encompass social media tools, social networks, and enterprise social platforms. Although the distinction between technologies belonging to the eras of Web 1.0 and Web 2.0 is clear and understood, the same cannot be said for social web technologies created and developed in the

era following Web 2.0. Such technologies are known as the 'social web'. Because of the exponential increase of such technologies since the beginning of the 21<sup>st</sup> century, neither professionals nor researchers have agreed on a common term that would define them (Kaplan & Haenlein, 2010). However, for the purpose of this study, these distinctive characteristics are explained in more detail in the literature review (see section 2.4), and the term 'online social platform' will be predominantly used in this research. There are several attributes that characterise social technologies. Among those relevant to this study are their participatory and collaborative aspects. These are inherently linked to the creation of collective intelligence (Kaplan & Haenlein, 2010; O'Reilly, 2012). Moreover, these tools were built so that the generation and sharing of content could be done easily and quickly. These can potentially enhance work-efficiency. A larger discussion of this topic can be found in the Literature review in section 2.4.

#### **1.4.5 The public sector**

The public sector comprises institutions involved in public services, governmental organisations, and public enterprises. Their missions are to provide services to populations, in order to fulfil governmental objectives. Usually owned by the state, these organisations' finances depend on funds allocated to them by the government, which makes them political and non-profitable. The aim of the public sector is to provide service delivery with added value that optimises resource allocation. Its emphasis is on efficiency and work enhancement for the benefit of the population. Several aspects characterise public sector organisations and hence distinguish them from private sector organisations, which are explained in section 2.5.1.

Because public sector organisations are knowledge-intensive organisations (Willem & Buelens, 2007), Knowledge Management initiatives have increased over time, but not as significantly as in the private sector (as detailed further in the literature review, section 2.5.2. This has had a direct consequence on the way Knowledge Management has been studied because a lack of empirical studies of Knowledge Management within the public sector has been identified by Massaro, Dumay, & Garlatti (2015), despite the number of such studies increasing throughout the years.

Meanwhile, social technologies have become increasingly adopted in the public sector, particularly in the second decade of the 21<sup>st</sup> century. However, their use has mainly been for marketing and strategic communication with the citizens they serve. The usage of social media tools as a way to contribute to knowledge-sharing, both within organisations and throughout the wider sector, is still at a pre-mature stage. Their usage is explained in the Literature Review in section 2.5.3

## **1.5 Relevance of the research**

It is argued in the literature that knowledge is socially constructed (see section 2.2.1). This is particularly accurate with regard to the nature of tacit knowledge that is shared through social interactions. Although tacit knowledge is often most efficiently shared through face-to-face interactions (Mascitelli, 2000), it has also been argued that this type of knowledge can be equally shared through online networks.

This argument has been strengthened by Panahi et al., (2013), who assert that social media affordances may enhance socialisation processes among employees and hence enhance the sharing of tacit knowledge. It has also been argued that social technologies and social media affordances contribute to knowledge-sharing practices (Annabi & McGann, 2013). Meanwhile, it is acknowledged that few empirical studies have been conducted to deepen understandings of social media usage within organisations (Panahi et al., 2013), and that there is a need for empirical studies that investigate the sharing of tacit knowledge within the public sector. Therefore, there is a need to investigate more thoroughly to what extent social media facilitate sharing of tacit knowledge within the public sector. Hence this study contributes to a better understanding of the influence of social technologies on organisations' intellectual capital.

## **1.6 Methodological approach**

There is a tendency in the field of Knowledge Management to favour the study of explicit knowledge over tacit knowledge (H. Kane, Ragsdell, & Oppenheim, 2006) for the obvious reason that explicit knowledge, being tangible, quantifiable and

therefore measurable (Virtanen, 2010), is more easily observable. It is therefore understandable that the study of tacit knowledge, which is intangible by nature, is more challenging. However, some scholars who are aware of the high value of tacit knowledge have thoroughly investigated it some with the strategic aim of capitalising on its potentially positive outcomes (Huysman & Wulf, 2006; Nonaka, 1994). Different approaches have been used to study tacit knowledge. The most widespread of these is the adoption of quantitative methods based on large-scale surveys. Others have opted for an entirely different approach, i.e. an almost ethnological approach, with all the constraints that this implies (time-wise and resource-wise). Others have chosen mixed-method approaches – these are increasingly used in social sciences. Whatever the chosen method, its selection needs to take into consideration the environment within which the study will be undertaken, its population, and the means available to undertake the study without putting at risk the reliability of the results.

For the purpose of this study, the methodological approach viewed as most relevant to undertake this empirical research was one that deployed mixed-methods executed as an inductive case study. A sequential explanatory design in a two-phase process that enabled the collection of quantitative data before collecting qualitative data was chosen as the most appropriate approach to undertake the empirical investigation. Its concrete components were an online survey (undertaken between July and August 2016) followed by semi-structured interviews (undertaken between November 2016 and March 2017) with selected respondents, within a limited timeframe.

To achieve the objective of this study, three research questions were defined that helped to build the scope of the research:

1. How do social media facilitate the sharing of tacit knowledge between employees?
2. To what extent do social media bring new capabilities to the sharing of tacit knowledge?
3. Which situated factors may provide the appropriate context for using social media to enhance tacit knowledge sharing practices?

In order to identify the data requirements that would help to address these research questions, a conceptual framework, based on the literature review, was developed. It also served as a methodological tool to build both the survey and the interviews. This is elaborated on Chapter 2, section 2.7 and Chapter 3, section 3.3.2.

The advantages of using a single case study are that it enables an in-depth observation of the object of study, and expands the understanding of a phenomenon that cannot be achieved, for instance, through large-scale quantitative surveys. Single case studies are also known as the 'power of good example' (Flyvbjerg, 2006). The case study that was chosen for the purpose of this study is the Scottish section of Knowledge Hub (KHub), a national online social platform dedicated to public service across the UK. Its members belong to various UK public bodies and third sector organisations, such as national and local government, social services, and charities. These people and organisations work across a wide range of sectors such as health, education, housing, police, fire services, and professional membership associations. The option of using KHub as a single case study was an outstanding opportunity to undertake the empirical work needed in this research. The large number of KHub users, and the availability of some of these users to take part in qualitative interviews have provided an eminently suitable locus for this investigation.

## 1.7 Thesis layout

This thesis contains seven chapters. The contents of each chapter is summarised in the Table 2:

*Table 2 - Thesis layout*

Chapter 1: <b>Introduction</b>	This chapter introduces the research territory, outlining the importance of the study in the field of Knowledge Management, and provides the information needed to understand the context within which this research was undertaken.
Chapter 2: <b>Literature Review</b>	This chapter describes the current state of research about epistemology, knowledge-sharing, tacit knowledge, social media affordances and the public sector as appropriate to the field of study. It reveals the lack of research on the influences of social media tools on tacit knowledge sharing within the public sector, and the need for further research in this area.
Chapter 3: <b>Methodology</b>	This chapter presents an explanation and justification of the methodological approach chosen, with a strong emphasis on ontological assumptions and philosophical stance.
Chapter 4: <b>Survey findings</b>	In this chapter, the results of the survey are presented. The population consist of members of an online trans-organisational social platform (K Hub) that enables professionals in public sector institutions in Scotland to share their knowledge.
Chapter 5: <b>Interview findings</b>	This chapter presents the results from semi-structured qualitative interviews with twenty members of KHub.
Chapter 6: <b>Discussion</b>	This chapter is a discussion of the findings. They are contextualised by the literature review, with reference to this study's research questions and conceptual framework. The contributions of this study are also articulated in this chapter.
Chapter 7: <b>Conclusion</b>	This chapter summarises the main contributions of this study, limitations of the research and recommendations for future work to be undertaken.

## **2 Literature review**

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### **2.1 Introduction**

This chapter provides an overview of previous published work in this area, setting out the theoretical background against which the study has been undertaken. The first section of the chapter reviews and contextualises the concept of knowledge, its initial ontological and epistemological stances, and what it means in the context of Knowledge Management. There is then an assessment of debates around types of knowledge (tacit and explicit) and the variety of understandings and definitions discussed in the literature. The chapter continues with a review of models of knowledge sharing, and of models that apply to tacit knowledge. Particular attention is given to Nonaka's SECI model (1994) and concept of 'Ba', both of which are core to this study. The public sector environment within which this study is situated is then discussed, taking into account previous research into knowledge-sharing practices and social media use relevant to this specific context. There is then an assessment of the place of online platforms around knowledge-sharing, and the particular technological attributes of social media tools and platforms, and the characteristics of social media affordances. The aim of covering these areas is to cumulatively develop the rationale for the empirical work. The penultimate section of the chapter is a demonstration of a knowledge gap around the place of social media in supporting tacit knowledge sharing, particularly with regard to the public sector. This section includes the three research questions that formed the basis of the empirical investigation by addressing the gaps in knowledge that were identified in the literature review, and which defined the scope of the study.

### **2.2 Knowledge**

#### **2.2.1 Epistemology**

Knowledge is a concept that has been studied and explored over centuries. In Western culture, attempts to define and understand knowledge have roots in ancient philosophy, particularly the thought of classical Greek philosophers such as Socrates, Plato, and Aristotle who developed the epistemology discipline (Stenmark, 2001). More recently, since the start of the 20<sup>th</sup> century, scientists in various fields (for example, sociologists in the sociology of knowledge,

psychologists in cognitive science, managers in economics, and computer engineers in information systems) have further investigated the nature of knowledge, providing various meanings and applications of knowledge which have been continually debated (Stenmark, 2001). While this has enriched understandings of knowledge and widened the perspectives of future empirical studies, this might also have paradoxically created confusion due to the existence of multiple interpretations of knowledge and its use (Jakubik, 2007). This is particularly true with regard to tacit knowledge. Because of its greater complexity, this form of knowledge requires a perspective from specialists in the field of Knowledge Management which is explained further below (see section 2.2.2). This variety of disciplines also illustrates in itself the complexity of knowledge, and the difficulties in comprehending its intangible nature (H. Kane et al., 2006). Therefore, any attempt to provide a firm or strict definition of knowledge is bound to fail (Styhre, 2004).

For the purposes of this study, some exploration of the historical grounds and evolution of epistemology is desirable. However, a full exploration would be disproportionate, so the following discussion concentrates on concepts that have been considered within the field of Knowledge Management. This discipline originated in the late twentieth century with the publication of work such as 'Working knowledge' (Davenport & Prusak, 1998) and the 'Knowledge creating company' (Nonaka & Takeuchi, 1995). It deals with what is known as 'organisational knowledge', that is knowledge used by and created within organisations. The ways in which organisational knowledge have been studied by scholars stem from two distinct epistemological stances that have been depicted in two Knowledge Management strategies: codification and personalisation (Hansen, Nohria, & Tierney, 1999). In the codification strategy, knowledge is obtained from people's minds so that it can be codified (e.g. in written reports, infographics, white papers), stored in databases, and therefore easily made reusable and sharable. In this approach, knowledge becomes independent from those who create it, and is directly linked to documents (Hansen et al., 1999). In the personalisation strategy, the emphasis is on knowledge that is shared between individuals through dialogues occurring either one-to-one or collectively (e.g. brainstorming sessions). Such dialogues can take place face-to-face or through media such as e-mails,

phone-calls, conversations, instant messaging, or video-conferences. For this approach to work, networking must first be initiated and then maintained. When tacit knowledge is shared collectively, it enables people to gain better insights and understandings which will eventually lead to problem-solving (Hansen et al., 1999).

These two epistemological stances merit explanation because they have greatly influenced how knowledge has been managed so far, with varying degrees of success. The oldest epistemological assumption about knowledge is the objectivist perspective, which stems from positivism (Hislop, 2009, p. 16). This objectivist view of knowledge is rooted in positivist philosophy, according to which, for instance, social phenomena can be studied scientifically to find objective knowledge. Such objective knowledge is considered to be independent from individual subjectivity and from all subjective contexts. This epistemological perspective is also supported by the dualistic cartesian view on knowledge. Descartes' epistemological stance asserted that mind (subject/self) and body (object) are separate, and that (rational) knowledge is split from emotions and actions (Gueldenberg & Helting, 2007; Paavola, Lipponen, & Hakkarainen, 2004). This epistemological stance posits that all explicit knowledge relies on certainty. The logical conclusion from this standpoint is to refrain from denoting anything as 'knowledge' that lacks the certainty that positivists see in the physical sciences (Gueldenberg & Helting, 2007).

The objectivist approach remains the mainstream perspective in Knowledge Management literature (Hislop, 2009, pp 17, 30). The primary characteristic of this epistemological perspective is that its proponents consider knowledge to be an entity owned by, yet independent from, people. In this perspective, knowledge is objective, explicit and codifiable, and hence can be shared via documents, reports, manuals, etc. Because proponents of this approach consider pieces of knowledge to be 'objects', this approach is also known as the 'commodity view' of knowledge (Stenmark, 2001; Jakubik, 2007). This expression is used in management practice when knowledge is considered as a static resource. From the positivist perspective, objective knowledge is more valued than tacit knowledge (Hislop, 2009, pp 19-20).

The alternative epistemological perspective on knowledge is the social constructivist approach. This subjectivist understanding of knowledge emerged during the late 1970s through the work of researchers such as Barnes, (1977), who affirms that knowledge is produced through social interactions among people who are engaged in specific activities. Berger & Luckmann, (1979) and later Bourdieu, (1980) define knowledge (alongside reality) as 'socially constructed'. These scholars assert that knowledge is not universal, that it can only be defined through social interactions and actions, and that it is essentially subjective in nature. These approaches have informed a number of Knowledge Management practices that engage with the essential subjectivity of knowledge. For example, knowledge workers engage in face-to-face interactions, such as story-telling (Holste & Fields, 2010; Kingston, 2012), or Communities of Practice to share tacit knowledge (Hall & Graham, 2004; Annabi & McGann, 2013).

The social constructivist view of knowledge is also known as the community view of knowledge (Jakubik, 2007). Its proponents consider knowledge to be a dynamic process, in contrast to the static view promoted by positivist theorists. They assume that knowledge can be shared and created in organisations through dialogue between individuals (Jakubik, 2007). To a certain extent, knowledge is also considered as being strongly influenced by the social contexts within which it is being shared (Pór, 1998) and created. The consideration of knowledge as being dynamic, and the emphasis on the context within which knowledge is exchanged, are aspects that have been considered by Nonaka (1994), as explained further below in section 2.2.3.3.

## **2.2.2 Knowledge Management**

As noted above, attempts to define knowledge can be arduous. Consequently, new definitions regularly appear from scholars who study Knowledge Management. In Knowledge Management, knowledge is considered primarily in the context of organisations. That is, Knowledge Management's domain is working knowledge, which may facilitate working processes to fulfil organisations' strategic objectives and missions (Dalkir, 2005). This working knowledge is also called 'experiential knowledge' (Dalkir, 2005, p. 96). According to Dalkir (2005), Knowledge Management can be considered from three different perspectives: (1) as a business

activity that treats knowledge (both tacit and explicit) as resources which may enable positive results by enhancing organisations' intellectual capital; (2) as cognitive resources that acknowledge and foster individuals' understandings and 'know-how' that will eventually be converted to best practices; (3) as 'actionable' knowledge that facilitates innovation and enhances 'collective wisdom'.

This implies the usage of appropriate practices (such as Communities of Practice) and technological tools (such as enterprise social networks) to facilitate knowledge exchange (Dalkir, 2005, pp 4-5).

### **2.2.3 Types of knowledge & knowledge creation**

While the definitions of knowledge itself benefit from abundant literature in several disciplines (for example cognitive science, information science, management, psychology, sociology) (Dalkir, 2005, pp 4-6); Garbacz, Kulicki, & Trypuz, 2012), the main debate among academics and knowledge managers concerns the distinction between tacit knowledge and explicit knowledge, particularly the ways tacit knowledge and explicit knowledge do, or do not, relate to each other.

Two perspectives are suggested by Hislop (2009, pp 23-24): (1) a dichotomous perspective which considers explicit knowledge and tacit knowledge as two separate entities; (2) a unified perspective which considers tacit knowledge and explicit knowledge as two extremes of one spectrum. The former is often attributed to Nonaka's theory of knowledge and the latter to Polany's consideration of tacit knowledge (Hislop, 2009). These attributions are arguable and are addressed further below in section 2.2.3.2. Another perspective given by some scholars is that explicit knowledge as such does not exist because any knowledge that has been made explicit is 'information'. This implies that all knowledge is entirely tacit or at least rooted in tacit knowledge.

#### **2.2.3.1 Explicit knowledge**

Across the perspectives set out in the relevant literature, the majority share the same essential conception of explicit knowledge: it is tangible, codifiable and

therefore supposedly easier to share than non-articulated tacit knowledge. For instance, it can take the form of written reports, manuals, patents or procedures. It is also formalised (Nonaka, 1994) i.e. knowledge is expressed in formalised ways (Dalkir, 2005, p.49). Because such technical knowledge, symbolised by the expression 'know-what' (Brown & Duguid, 1998), is 'codified', printed or digitally written and stored in databases, it has been argued that it is easier and faster to disseminate it to other people and to reuse it. This reusability of explicit knowledge has been seen as time- and money-saving by managers (Smith, 2001).

Explicit knowledge can serve a variety of purposes in organisations (Choo, 2006, p.142). Among them, lessons learned (past issues and their resolutions), when translated, for instance into new policies and practices, can prevent the 'reinvention of the wheel' – a metaphor commonly used in the Knowledge Management discourse to illustrate the too-often costly duplication of efforts (Alvarenga Neto, 2007; Annabi & McGann, 2013). Choo (2006) states that explicit articulation of knowledge does not necessarily mean that it is readily understandable. It might still be required to integrate knowledge via learning processes (Choo, 2006, p.142). Some scholars, such as (Miller, 2002 and Wilson, 2006), even argue that there is no such thing as explicit knowledge and that it should be simply named 'information'. The temptation to use the word 'information' instead of 'knowledge' is understandable if the aim is to find a common language and simplify the sometimes-fuzzy concept of knowledge. However, by adopting such a reductive attitude, there is a risk of altering the initial meaning of the concept and failing to illustrate the very nature of its complexity. Indeed, others have argued that knowledge is actually 'information in context' (Garvin, 1993; Davenport & Prusak, 1997) and that knowledge is more complex than information which is itself data in context (Von Krogh, Nonaka, & Aben, 2001). It would therefore be an over-simplification to reduce the concept of knowledge to just 'information'.

#### **2.2.3.2 Tacit knowledge**

For more than two decades, scholars studying Knowledge Management have suggested various definitions of tacit knowledge (Nonaka & Konno, 1998; (Choo, 2006; Panahi et al., 2013). Each suggested definition was intended to clarify this

understandably complex concept, although the multiplication of explanations has perhaps brought more confusion than clarity (Jakubik, 2007). Tacit knowledge is commonly described as knowledge that is embedded in people's minds, and that can be difficult to express and to share, in contrast to explicit knowledge or information. Tacit knowledge has nevertheless been acknowledged as essential to organisations and companies, even though such knowledge is intangible. Using the analogy of the iceberg to distinguish between the two types of knowledge, Haldin-Herrgard (2000) characterises tacit knowledge as the hidden (and much larger) part of organisational knowledge, as opposed to explicit knowledge (the visible top of the iceberg), i.e. structured or codified knowledge which is easier to access and share, as mentioned earlier.

Many researchers also suggest that most organisational knowledge is tacit. (See, for example, Mooradian, 2005; Suppiah & Singh Sandhu, 2011). Tacit knowledge comprises, for example, people's experiences, lessons learned or expertise. These are inherently valuable to organisations, because if properly shared, they can contribute to the enhancement of working processes and organisational strategies. Consequently, refraining from sharing such valuable knowledge can potentially put organisations into vulnerable positions (Lee, 2000). If no efforts are made to share and use this valuable knowledge there is a risk of a knowledge-loss (Lee, 2000; Smith, 2001). This typically occurs when employees retire or leave the organisation without their expertise having been shared with the rest of the team or with newcomers.

Several scholars have attempted to shed light on the meaning of tacit knowledge, suggesting various definitions that highlight its complexity. Some of these interpretations are shown in Table 2 and explained further below.

*Table 3 – Researchers’ understandings of tacit knowledge.*

<b>Understandings of tacit knowledge</b>	<b>Contributions</b>
Experiential	Choo (2006), Dalkir (2005), Lazaric, Longhi, & Thomas (2008), (Polanyi, 1966), Sternberg, Wagner, Williams & Horvath (1995), Tsoukas & Mylonopoulos (2004), Wagner (1987)
Non-codified	Dyer & Nobeoka (2000), Nonaka & Konno (1998), Reagans & McEvily (2003), Szulanski, Jensen & Lee (2003)
Bi-dimensional	Nonaka & Konno (1998), Polanyi (1966), Sveiby (1996), (Panahi et al., 2013)
Self-acquired	Dyer & Nobeoka (2000), Nonaka & Konno (1998), Sternberg et al. (1995), Wagner (1987)
Socially acquired / Collective	Collins (2006), Lazaric et al. (2008), Nonaka & Konno (1998)

By defining tacit knowledge as experiential, scholars emphasise how this type of knowledge is embedded in action. This implies that knowledge is created by doing and practising (Dalkir, 2005). Tacit knowledge is therefore gained from experience. 'Non-codified' means that tacit knowledge is not articulated nor standardised as would be explicit knowledge. Other scholars use the attribute bi-dimensional to argue that tacit knowledge is made of two dimensions, although the significance of these dimensions differs depending on who has suggested each definition and on what they are. For instance, according to Polanyi (1966), tacit knowledge is made of two kinds of awareness, a focal awareness and a subsidiary awareness, both mutually exclusive. Focal awareness occurs when the attention is turned towards an object (physical or conceptual), while subsidiary awareness occurs when attention is switched towards the knowledge held in the 'back of the mind'. Polanyi has often used the analogy of riding a bicycle to illustrate his theory: either one concentrates on the very action of riding (which is usually the case with beginners) or one can pay attention to the environment (road, landscapes) without paying attention to the technique of riding.

Another suggestion of a bi-dimensional nature of knowledge was made by Nonaka & Konno (1998) and later adapted by Panahi et al. (2013). They consider tacit knowledge as being made up of a technical dimension and a cognitive dimension. The technical dimension relates to 'know-how', i.e. skills, expertise, while the cognitive dimension refers to mental models, points of views, beliefs, ideas, paradigms, values and intuition. Other interpretations of tacit knowledge underline the self-acquired aspect, which emphasises the individual process of tacit knowledge acquisition that occurs when someone is learning something new. This aspect is also emphasised by Nonaka (1994) in the internalisation process of his SECI model. On the other hand, other scholars also assert that tacit knowledge can be collective and socially acquired (Collins, 2006; Lazaric et al. 2008; Nonaka & Konno 1998). Whether it relates to the team level or the organisational level, this also relates to the way tacit knowledge can be embodied in organizational routines (Lawson & Lorenz, 1999).

According to Oğuz & Şengün (2011), organisational routines represent the collective 'know-how' which is as difficult to share as personal tacit knowledge. Using the work of Nelson & Winter (1982), who contributed to the development of the knowledge-based theory of the firm in the early eighties, Choo (2006) explains how individual skills can also be embedded in such organisational routines when actions are internalised to the extent that they can be executed without much awareness. These routines therefore represent organisational tacit knowledge, such as expected 'behavioural patterns', procedures, working processes, policies, or 'business strategies' (Choo, 2006, p.138). This knowledge generally remains tacit because it would take too much time and effort to articulate it in order to perform tasks that do not need thorough explanation or understanding (Choo, 2006, pp138-139). This illustrates that not all tacit knowledge needs to be made explicit at all costs and at all times. It is the awareness of its existence and the capability to exchange it that is required. The challenge, according to Choo (2006), is to find ways to deal with both individual and organisational tacit knowledge so that valuable knowledge can be used to fulfil the organisation's strategic objectives.

As well as these various understandings, the main debate turns on the definition of tacit knowledge and how it differs from explicit knowledge. This debate is particularly apparent in the theoretical explanations given respectively by the academics Michael Polanyi, who is considered as belonging to a 'western' philosophical school of thought (Gueldenberg & Helting, 2007), and Ikujiro Nonaka, who provides an approach that is grounded in both Japanese philosophy and in western management, including organisational theories (Nonaka & Takeuchi, 1995). As acknowledged earlier (see section 2.2.3), this debate usually concerns the difference between tacit knowledge and explicit knowledge, and the process of knowledge conversion from tacit to explicit knowledge. Because this debate is relevant to this study, it is addressed here to establish the epistemological position of this research. While the discussion is often abstract, the implications are nonetheless important and have direct consequences on how this study's framework is contextualised. There has been a heated debate among scholars regarding this specific aspect.

Tacit knowledge was initially explored by Polanyi (1966, p.4) in his renowned monograph *The Tacit Dimension*, from which his famous statement 'we know more than we can tell' has been widely quoted. Tacit knowledge, argues Polanyi, is not only embedded in people's heads but is also incorporated in people's actions and experiences. Polanyi (1966) stipulates that if tacit knowledge is personal, it is also a skill that enables the person possessing this knowledge to do something or solve a problem. This capacity to act is based on one's own experiences, and therefore on tacit knowledge (Polanyi, 1966, p 87). Grounding their theory in Japanese philosophy and Western philosophy, mainly Polanyi's work, Nonaka and colleagues suggested a renewed approach to tacit knowledge that is adapted to organisational theory and management practices (Nonaka, 1994; Nonaka & Konno, 1998). As Teece & Al-Aali (2013) emphasise, one of Nonaka's contributions was to distance himself from the theory of the firm driven by technical information-processing, in order to focus on the process of creation of knowledge by individuals.

By focusing on employees, the roles they play in exchanging new ideas through social interactions and the value this new knowledge holds in regard to organisational innovation, Nonaka renewed the knowledge-based theory of the firm (Spender, 1996), emphasising its pragmatic attribute (Stenmark, 2001, p1.). This led to the creation of the seminal SECI model (where S stands for Socialisation, E for Externalisation, C for Combination, and I for Internalisation).

### 2.2.3.3 The SECI model of knowledge creation

The model that is most cited in the scientific literature is Nonaka's (1994) SECI model of knowledge creation. In this model (Figure 1), Nonaka explains how tacit knowledge is acquired through experience, and how sharing of people's thought processes can only occur through the sharing of experiences (Nonaka, 1994 p.19). This knowledge-conversion model facilitates an understanding of the complex processes of converting knowledge from tacit to explicit, and from explicit to tacit. This occurs through four stages: Socialisation, Externalisation, Combination and Internalisation.

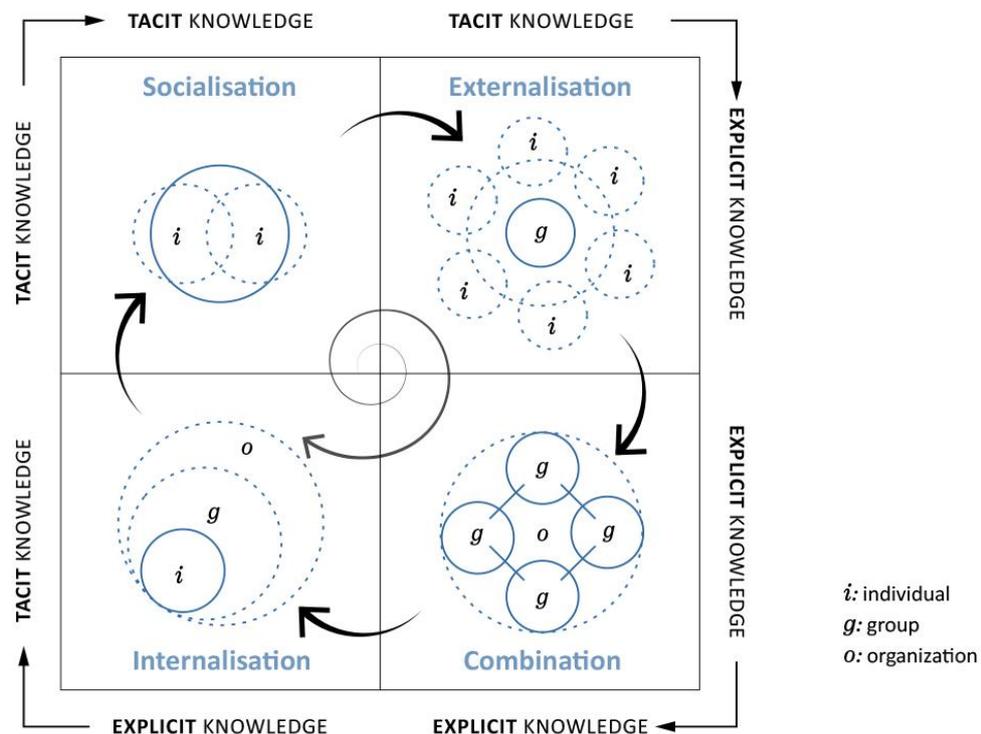


Figure 1- The SECI model. (Nonaka & Takeuchi, 1995)

*Socialisation* (from tacit to tacit) is the process that occurs when someone implicitly shares their tacit knowledge with someone else who directly experiences it. This represents the strongest degree of 'tacitness' in knowledge. Socialisation occurs through observation, imitation, know-how transfer, or direct experience sharing (Nonaka, 1994; Baumard, 1999). This is the only stage of knowledge-sharing where knowledge is not codified (for example, in words, pictures, sounds, etc.). *Externalisation* (from tacit to explicit) is the process of conversion of tacit knowledge into explicit knowledge. It is at this stage that tacit knowledge becomes explicit by being articulated into words, and later translated into documents (reports, strategies etc). According to Nonaka (1994), this is also the stage when knowledge-creation occurs, because once it is codified and normalised it can be easily shared. *Combination* (from explicit to explicit) is the process through which one form of explicit knowledge is transferred into another. For instance, 'combination' occurs when information is shared through a computerised network, or data is extracted to create a formalised report. According to Nonaka (1994), this explicit knowledge can come from outside or inside the organisation, and can be easily shared to or by everyone, usually through formalised channels (for example, newsletters, reports, intranets). *Internalisation* (from explicit to tacit) is the process through which explicit knowledge is taken in by individuals, enriching their tacit knowledge. This new knowledge is embodied through learning-by-doing (Nonaka, 1994), or through training. Knowledge enhanced by internalisation may then be shared further through the socialisation process.

*Externalisation* is the stage when an individual articulates tacit knowledge into explicit forms. On the other hand, *Internalisation* is the stage when the integration of explicit knowledge is processed internally, such knowledge ultimately becoming tacit once more, but enriched with new content. It is during this process that a person learns new knowledge, thinks about it and reflects on it. This corresponds with the definition of education, that is, the acquisition of new knowledge (Hisyam Selamat & Choudrie, 2004). Therefore, the interplay between Externalisation and Internalisation illustrates the essential components that are required for learning to occur, not only for individual people but also within organisations.

These four stages of knowledge-conversion also occur successively at various levels such as individual, group, organisational and inter-organisational (Paavola et al., 2004). To better explain the overall dynamism generated by this knowledge conversion process, Nonaka (1994) set out the 'Spiral model of knowledge creation' (an often overlooked model). The spiral metaphor model (shown in Figure 2) was designed to capture the dynamic interplay between tacit and explicit knowledge during the four stages of knowledge conversion.

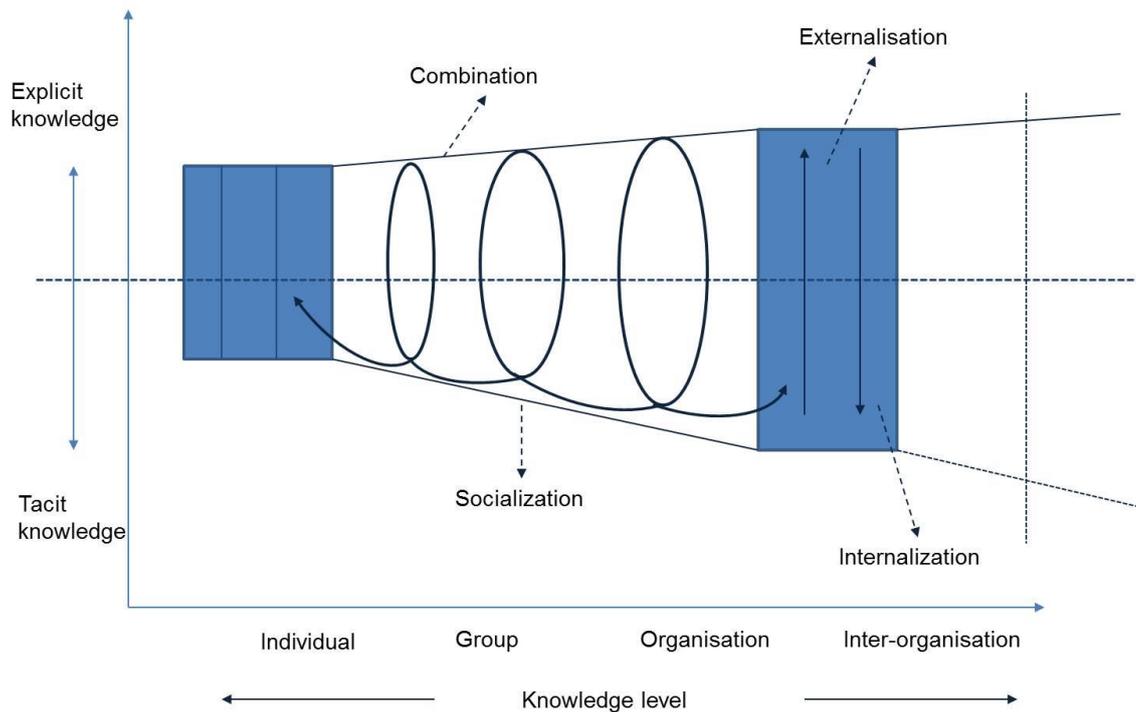


Figure 2 - Spiral of organisational knowledge creation. (Nonaka, 1994)

The key difference between the SECI model and the Spiral model of knowledge-creation is that the latter emphasises an iterative movement of knowledge-creation, in which knowledge grows as more employees participate in the process until, ultimately, the entire organisation is involved. This emphasises the processes of acquisition and externalisation of tacit knowledge on an individual level, on a team level and on an organisational level.

Nonaka's initial intention in setting out the SECI model was to provide an accessible model of knowledge conversion and creation that could be applied by managers inside Japanese and Western organisations, without uprooting it from its epistemological backgrounds. This suggestion of a pragmatic epistemology,

stemming from Nonaka and his peers' understanding of tacit knowledge, and the way it can be made explicit (i.e. more easily usable), has therefore been driven by a managerial, goal-oriented principle.

On a philosophical level, some scholars (for instance Ray, 2009, p.26) state that Nonaka ignored or altered Polanyi's epistemological understanding of tacit knowledge by neglecting Polanyi's metaphysical position that is based on faith in transcendent truth (Ray, 2009, p.13). However, the element of faith in Polanyi's work has not been fully examined by other scholars. It has also been argued that Nonaka considered tacit knowledge as easily accessible to any manager while denying the value of explicit knowledge (Ray, 2009, p.26), a statement that is self-contradictory.

Other scholars emphasise the cultural setting of Nonaka's theory, i.e. that it is only relevant to Japan (for instance Bratianu, 2010, p.196-198). Glisby & Holden (2003) also emphasise that Japanese employees' attitude towards their employers, such as loyalty or commitment, is deeply embedded in the cultural values of Japan. Lifetime employment and seniority would have also influenced knowledge-sharing practices, because it is implicitly understood that knowledge needs to be openly shared. These arguments, however, exclude a fundamental aspect of Nonaka's theory: that the epistemological background of Nonaka's model is also rooted in Western philosophy. Indeed, Nonaka & von Krogh (2009, p.639-640) argue that their approach to epistemology is pragmatic and is adapted to managerial practices in organisations. Their definition of knowledge is therefore inherently linked to people's individual and collective experiences and processes.

Other scholars criticise Nonaka's understanding of tacit knowledge (and of explicit knowledge), arguing that tacit knowledge can never be made entirely explicit because all knowledge is inherently rooted in tacit knowledge (Tsoukas, 2003, p.23; Gourlay, 2006, p.1430). In order to promote such arguments, some of these scholars have suggested different interpretations by creating new definitions of tacit and explicit knowledge. For instance, Wilson (2006, p.35) has called for tacit knowledge that can be expressed to be named 'implicit knowledge'. Tsoukas (2003, p.23) has claimed that tacit and explicit knowledge are 'two sides of the

same coin' instead of being two opposite ends of a continuum (Nonaka, 1994). Hildreth & Kimble (2002, p.7) wrote that tacit knowledge made explicit is just an attempt to render 'soft knowledge hard'.

However, Nonaka's definition of tacit and explicit knowledge is not, contrary to some scholars' positions, dualistic – as if there was a clear separation between tacit and explicit knowledge (Tsoukas, 2003, p.23), but rather non-dualist, because tacit knowledge is 'mutually complementary and based on the same continuum' (Nonaka & von Krogh, 2009, p.640). From one extreme of this 'continuum' where lies the most tacit knowledge, to the other extreme where knowledge has become the most explicit, knowledge-conversion occurs through the process of a fluid movement, unlike the sudden shift from subsidiary awareness (tacit) to focal (explicit) awareness suggested by Polanyi. This principle of 'continuum' aims therefore to facilitate the analysis of how tacit and explicit knowledge interact (Nonaka & von Krogh, 2009).

The very process of knowledge-conversion suggested in the SECI model is also directly criticised by Hildreth & Kimble (2002, p.5) who argue that because tacit knowledge cannot be apparently converted into explicit knowledge, the Socialisation and Externalisation stages – which both imply 'explicitation' of knowledge – would be impossible. A similar stance is taken by Gourlay (2006, p.1430) who criticises the stages of Combination and Internalisation, arguing that these stages actually concern knowledge transfer<sup>2</sup>.

Nonaka & von Krogh (2009) counter-argue that knowledge conversion is essential for knowledge creation to occur. Whether knowledge is made explicit as mentioned above, or internalised – such as in the incorporation of new knowledge – there is a continuous movement between the 'tacitness' and 'explicitness' of knowledge. Nonaka & von Krogh (2009) also acknowledge that not all tacit knowledge can be made explicit, particularly 'embodied' knowledge which they situate at the extreme 'tacit' end of the knowledge continuum. For them, only

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<sup>2</sup> 'Knowledge transfer' must be understood here (and in other references) as the unidirectional process of transferring knowledge at an organisational level. It is sometimes mistaken for 'knowledge sharing' the bi-directional process where individuals mutually exchange knowledge.

certain aspects of embodied knowledge can be expressed. Referring to the work of Dreyfus & Dreyfus (1986), Nonaka & von Krogh (2009) state that not all expert tacit knowledge can be captured because it has embodied elements.

However, the process of knowledge conversion itself is important in organisation science, because it enables understanding of how knowledge creation happens and how innovation can occur (Nonaka & von Krogh, 2009).

The criticisms of Nonaka's theory are summarised in Table 4.

*Table 4 – Researchers' criticisms of Nonaka's theory.*

<b>Concepts</b>	<b>Contributions</b>
Epistemology	(Bratianu (2010, p.196, 198); (Gourlay, 2006, p.1430); (Ray, 2009, p.26)
Knowledge conversion process	(Bratianu, 2010, p.195); (Gourlay, 2006, p.1430); (Hildreth & Kimble, 2002, p.5); (Tsoukas, 2003, p.23); (Wilson, 2006), p.33)
Knowledge-sharing	(Bratianu, 2010, p.195)
Organisational culture	(Bratianu, 2010, p.196, 198)
Tacit knowledge understanding	(Gourlay, 2006, p.1430); (Hildreth & Kimble, 2002, p.7); (Ray, 2009, p.26); (Tsoukas, 2003, p.23); (Wilson, 2006, p.34, 35)
Tacit vs Explicit knowledge	(Bratianu, 2010, p.195); (Gourlay, 2006, p.1430); (Hildreth & Kimble, 2002, p.5,7); (Ray, 2009, p.26); (Tsoukas, 2003); (Wilson, 2006, p.34)

Unlike explicit knowledge, tacit knowledge is particularly challenging to share, due to its complexity. As mentioned earlier (see section 2.2.3.1), it is often acknowledged that tacit knowledge needs to be made explicit if it is to be shared. (See, for example, Nonaka, 1994; Davenport & Prusak, 1997; Choo, 2006; Jashapara, 2011). This conversion is necessary for facilitating the process of sharing knowledge, and to enable the capture of valuable knowledge so that it might be reused later in appropriate situations. However, this begs the questions of whether all tacit knowledge can, or must, be made explicit in order for it to be shared and to be useful. This said, the process that is important here is the issue of sharing knowledge, as explained in the next section.

#### **2.2.3.4 The link between tacit and explicit knowledge**

An explanation of the specific characteristics of tacit knowledge and explicit knowledge may help to distinguish between these types of knowledge. It is equally relevant to explain the link between these two types of knowledge. The link is in the articulation process itself, which consists of rendering tacit knowledge into a more explicit form, so that it can be more easily shared. Articulation of tacit knowledge mandates is a process of codification. This articulation process relates to the Externalisation stage of the conversion process defined by Nonaka (1994) in his SECI model (section 2.2.3.3). In the following Combination stage, codified explicit knowledge can then be exchanged. The ways in which such articulations take form are not uniform – they can vary depending on the technological tools that will be used (e.g. social media), the techniques adopted (e.g. Communities of Practice), the types of tacit knowledge involved (e.g. cognitive or technical), or the reasons for which articulation is needed (e.g. outcome). Because tacit knowledge is complex and contextual, it usually requires explanations – these often occur through social interactions (Nonaka, 1994).

However, the codification of all tacit knowledge available in one organisation is not only impossible, but futile (Davenport & Prusak, 1998). It is estimated that only twenty per cent of knowledge in organisations is explicit (Haldin-Herrgard, 2000; Dalkir, 2005). This is the reason why, as is explained in section 2.4.2, and further demonstrated in the contributions (see section 6.5), social media provide an intersection between tacit and explicit knowledge, in that they provide platforms on which employees can articulate their tacit knowledge through social interactions. Because these interactions are digital, they stand between the sharing of tacit knowledge (which is best performed face-to-face) and explicit knowledge (which could be accessed in online reports, for example). Panahi has tried to illustrate this intersection the model shown here below in Figure 3:

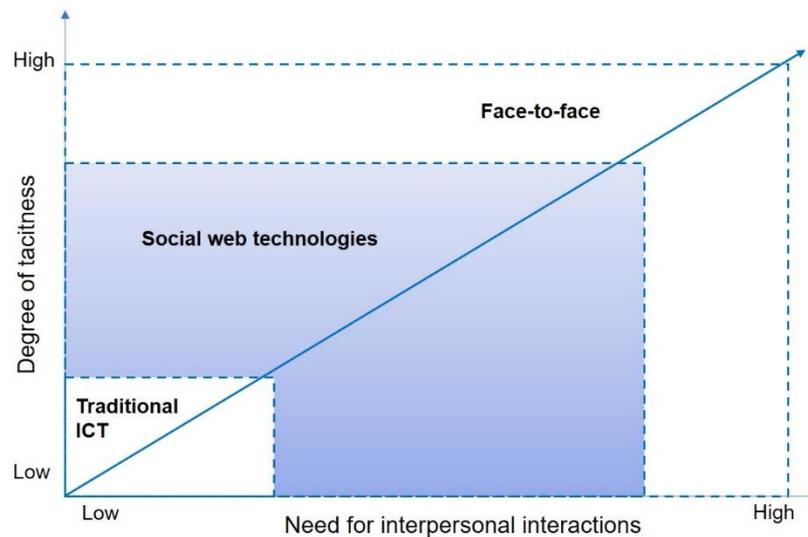


Figure 3 Degree of tacitness and social interactions (Panahi, Watson, & Partridge, 2016)

This said, the process that is important here is the issue of sharing knowledge – this is examined in the next section.

### 2.3 Knowledge sharing

This section covers issues related to knowledge sharing. It presents (1) three different models of knowledge sharing relevant to this study; (2) the importance of the context of knowledge-sharing processes, with a special emphasis on the Japanese concept of Ba; (3) three different techniques for sharing tacit knowledge; (4) enablers of knowledge-sharing; (5) hindrances to knowledge-sharing.

Past research has generated several models of knowledge sharing, as described in section 2.3.1. There is also a large amount of literature on knowledge-sharing in general (Wang & Noe, 2010). Knowledge-sharing is one of the main themes addressed in Knowledge Management, and remains one of the greatest challenges for knowledge workers (Hislop, 2013). It is also considered one of the cornerstones of Knowledge Management (Tangaraja, Mohd Rasdi, Ismail, & Abu Samah, 2015), because it has been acknowledged that knowledge resources reside in people’s minds (Husted & Michailova, 2002; Karhu, 2002). As explained earlier in this chapter (see section 2.2.1), social constructivists argue that knowledge is shared through social interactions.

For knowledge to exist on an organisational level, it needs to be shared between employees. The learning process can only occur once the knowledge has been shared, ultimately when it is applied (Nonaka, 1994). This learning process occurs during the Internalisation stage of Nonaka's SECI model. This demonstrates the extent to which knowledge-sharing is crucial to the knowledge-conversion process. Fostering innovation through the sharing of best practices, enhancing work efficiency, and retention of employees are also among the many strategic objectives of knowledge-sharing (Dalkir, 2005, pp 137-138). Knowledge-sharing enables organisations to value and foster employees' individual knowledge with others (Charband & Jafari Navimipour, 2016). This will consequently enrich organisations' knowledge assets, also known as 'intellectual capital' (Choo & Bontis, 2002, p.8; Dalkir, 2005, pp 16-17). The value of tacit knowledge as an intangible asset stems from the 'knowledge-based theory of the firm' (Grant, 1996).

### **2.3.1 Models of knowledge sharing**

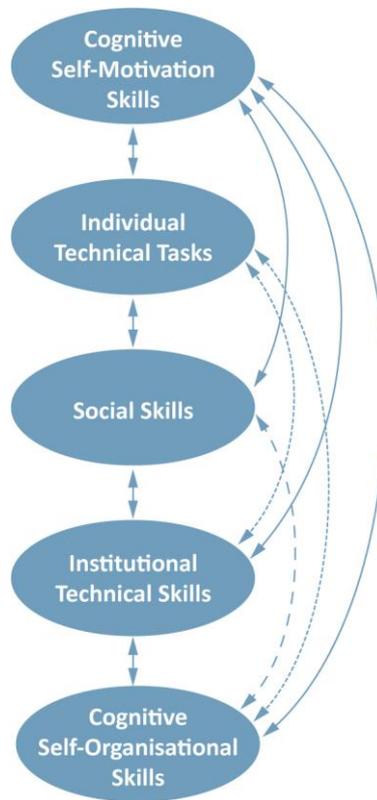
The variety of models of knowledge-sharing reveals the complexity of this process. Over the last two decades researchers have analysed different facets of knowledge sharing under three 'headings': (1) the mechanisms that enable knowledge sharing; (2) how knowledge is processed; (3) the probable impact of knowledge-sharing. Some of the models presented below derive directly from empirical research with two distinct approaches: (1) either they have been initially conceptualized before being tested with participants; or (2) they have been designed after the collection of the results, as an outcome of results-analysis. (Other models, not covered here, are solely theoretical and have been conceived by researchers as hypothetical constructs, or 'ideal types,' based on an analysis of the pre-existing models discussed in the literature.) The distinction between the two types of research is secondary to whether or not the models described have potential value for empirical study.

There are a variety of aspects on which the models focus. Some of them focus solely on the importance of knowledge-sharing enablers, while others focus more on the outcome of knowledge-sharing practices (whether such outcomes are conceptually planned or empirically discovered).

Some encompass both aspects, with authors defining such models as multidimensional (Leonard & Inch, 2005). The models assessed below treat tacit knowledge in a variety of ways. They have been selected according to the research interests of this study, and with regard to the research concepts (i.e. tacit knowledge, knowledge sharing, social media, public sector). Some scholars consider the importance of the multidimensional contexts within which tacit knowledge sharing can occur, taking into account not only the enablers that facilitate such processes, but also the (positive) outcomes of such approaches. Three of them (created by Leonard & Inch (2005, Lin (2007, and Salleh, Choy Chong, Noh Syed Ahmad, & Sharifuddin Syed Ikhsan (2013) that are relevant to the purpose of this study are discussed in chronological order of publication.

#### **2.3.1.1 Leonard & Inch's model of knowledge sharing**

The model conceived by Leonard & Inch (2005) is of interest because of their attempt to measure the value of individual people's tacit knowledge. It focuses on the process of knowledge-conversion between the tacit and explicit dimensions in an academic context, and shows how this tacit knowledge can positively influence people's success (in this case, students' success) if used and applied adequately. Basing their research on the theory of Polanyi (1966), Nonaka & Konno, (1998), and on a model conceived by Somech & Bogler (1999), Leonard & Inch (2005) established a link between tacit knowledge and academic achievement. Their multidimensional model illustrates the codification system they used to organise and categories these results. In this system, 'items' (such as 'attend class regularly', 'make time to study', 'get to class on time') were thematically compiled into larger ones such as 'cognitive and self-motivation skills', as shown in Figure 4.



*Figure 4 - Leonard & Insch model of knowledge sharing.*

The model was designed to measure the multidimensional aspects of tacit knowledge in an academic setting. It is based on the results of semi-structured interviews led by twelve graduate experts and 240 undergraduate students who were asked about the kinds of knowledge they needed to succeed, and what knowledge they wished they had before starting their studies (Leonard & Insch, 2005, p.507). Of particular interest is the way that Leonard & Insch enhanced the SECI model by adding a 'social dimension' to the cognitive and the technical dimensions in Nonaka & Konno's original model, and by asserting that social interactions contribute to the creation of tacit knowledge.

In confirming that tacit knowledge becomes visible through action, Leonard & Insch, (2005) draw attention to the technical dimension of tacit knowledge. This dimension is represented by skills through which outcomes are then more easily measurable. For this purpose, Leonard & Insch, (2005) have conceived an 'Academic Tacit Knowledge Scale' (ATKS). This is confined to the unique context of the academic field. Nonetheless, they suggest that their model could be used in different contexts if complementary empirical studies were undertaken to validate the results.

Despite their attempt to suggest what they call a 'multidimensional' approach to tacit knowledge; their model does not, however, take into consideration the influence of organisational culture on knowledge-sharing or factors that may enable such sharing.

### 2.5.1.2 Lin's model of knowledge sharing

The distinctive contribution of the model suggested by Lin (2007), and shown in Figure 5, is that it represents knowledge sharing practices from an ethical point of view. Lin emphasises the influence of employees' commitments to their organisations on the ways they commit themselves to share tacit knowledge for the benefit of these organisations. Therefore Lin's focus is more on employees' attitudes than on their organisations, even though the aim is to enhance work efficiency. Lin underpins an overlooked issue regarding the sharing of tacit knowledge. This issue is the question of knowledge-sharing that requires tacit knowledge to be made explicit at the expense of contravening confidentiality requirements. This sensitive issue needs to be considered by knowledge managers to ensure that knowledge sharing can occur in safe and ethical environments.

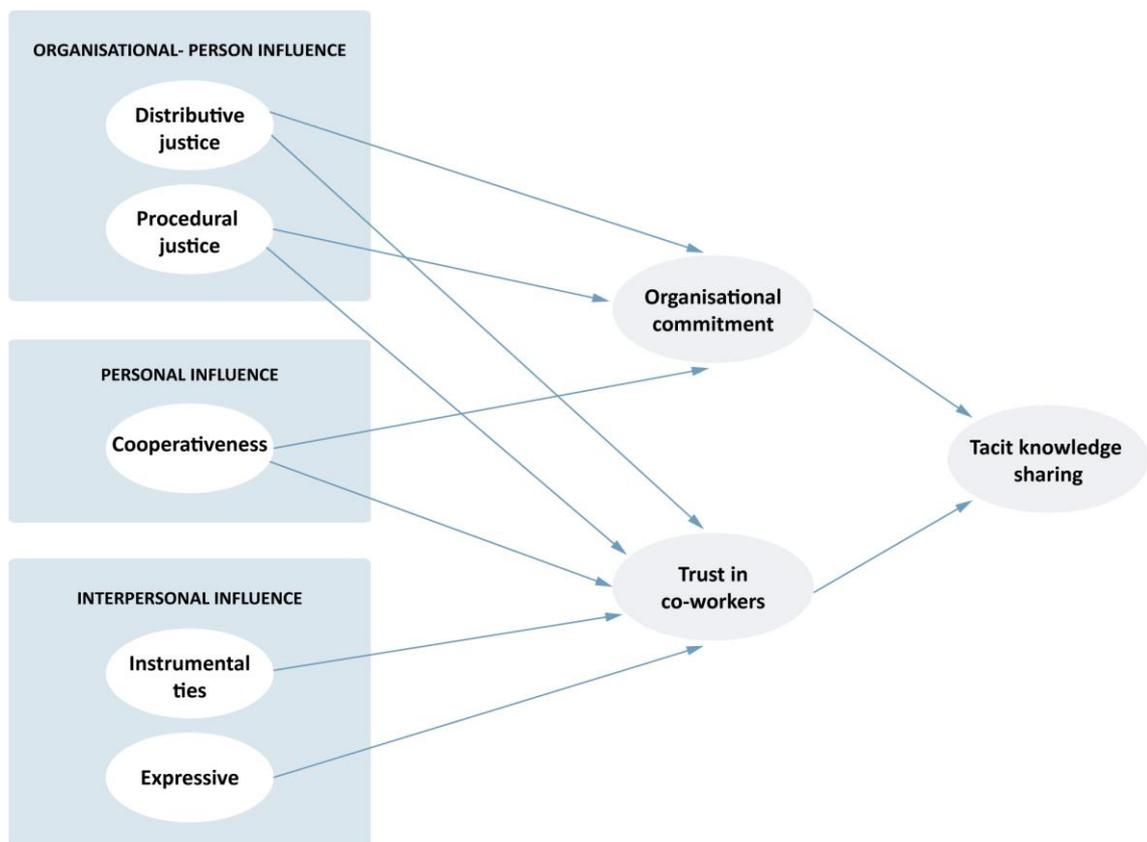


Figure 5 - Lin's model of knowledge sharing.

Lin concludes that implementation of ethical policies will provoke greater commitment from employees and so increase mutual trust. This should have a beneficial effect on the ways tacit knowledge is shared (Lin, 2007, p. 421). This argument contradicts warnings from other authors regarding the overuse of guidelines and procedures that can restrain knowledge sharing processes.

### 2.5.1.3 Salleh et al.'s model of knowledge sharing

The model conceived by Salleh et al., (2013, p. 429) investigates the link between tacit knowledge and learning processes in the context of a governmental body. Building their hypothesis on a literature review analysis, they conceived a model comprising six 'learning factors', as shown in Figure 6. They then quantitatively tested their model, using employees in a financial department as research subjects. The results of their research led them to the conclusion that training and learning processes have the strongest positive influences on the way tacit knowledge is transferred. (Job rotation did not seem to have a strong influence in the context of their study.)



Figure 6 - Salleh et al. model of knowledge sharing.

Salleh et al., (2013) insist that organisational learning practices enable tacit learning, warning managers that such practices should be embedded in Knowledge Management strategies. Unfortunately, in this research, there is no clear mention of the components of 'tacit knowledge'.

This weakens the argument that their model could be applied in different environments. Moreover, even though this research was conducted in the specific context of a governmental body, there is no theoretical (nor empirical) contribution that would deepen the understanding of knowledge sharing within the public sector. Nonetheless, among the six factors identified, the 'ICT know-how and skills' factor is of relevance to this study because it brings to light a potential hindrance to sharing tacit knowledge via social media. Indeed, if 'ICT know-how and skills' are necessary for tacit knowledge-sharing processes to be successful, it is implicit that a lack of ICT competencies among employees will hinder their sharing of tacit knowledge. For example, reluctance of employees who are not acquainted or at ease with social media tools could prevent such knowledge-sharing. This suggestion is investigated later in this thesis (see section 5.1.3.5).

### **2.3.2 Knowledge sharing contexts: the Ba concept**

One of the developments of Nonaka's initial work concerns the concept of 'Ba' (Nonaka & Konno, 1998). Ba (see Figure 7) represents a contextual space that is shared with other people, within which the SECI model is embedded. That is, Ba is a space where knowledge-sharing, transfer or mobilisation can occur. Knowledge is embedded within Ba and acquired by people as they gain experiences or appreciate the experiences of others in Ba. Knowledge residing within Ba is intangible, while knowledge separated from Ba is information, to be communicated in tangible forms.

The shared spaces of Ba may be physical, virtual, mental, or a combination of these, as shown in Figure 7.

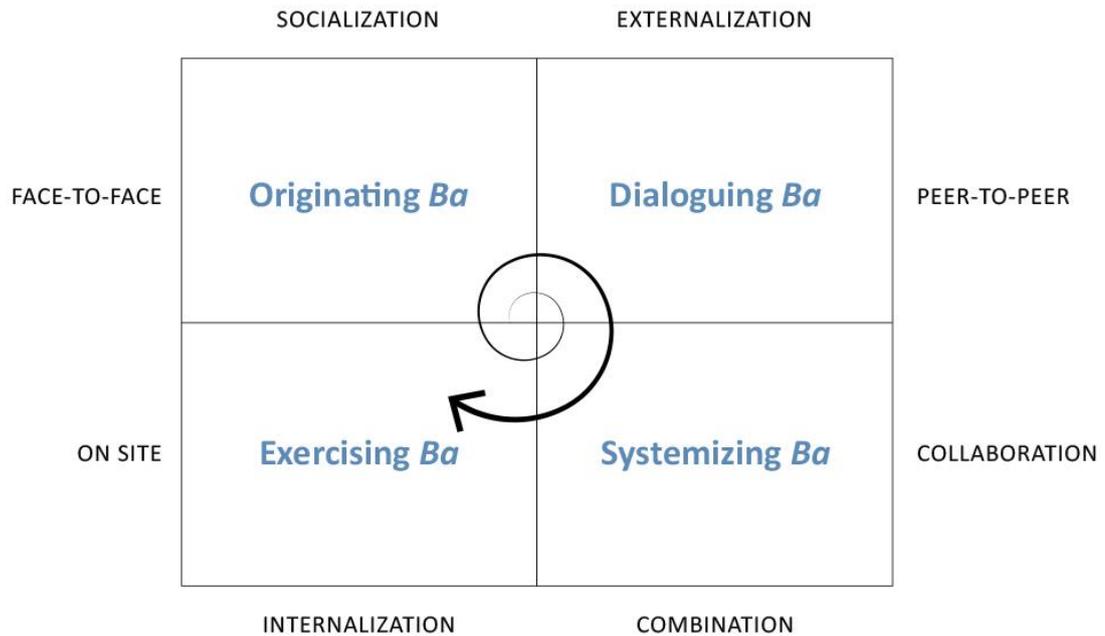


Figure 7 - The Ba concept and characteristics. (Nonaka and Konno, 1998)

Four types of Ba were defined by Nonaka & Konno (1998). These are:

*'Originating Ba'* – an 'existential' place in which individuals can share experiences, emotions, feelings, and ideas face-to-face through a primary socialisation process. Barriers between the self and others are diminished, and organisational culture is implicitly communicated. This is the 'primary' Ba, where initiation of the knowledge-creation process takes place through direct encounters between people.

*'Dialoguing Ba'* – a place within which tacit knowledge is more consciously articulated through the assembly of participants, perhaps via team or project work. It is a place in which knowledge and skills are shared among peers through externalisation processes, converting knowledge from tacit to explicit. Mental models and skills are shared between team members, enabling these to be contrasted with individuals' own models and skills. Dialogue is therefore crucial in this process.

*'Systemizing Ba'* (also called 'Cyber Ba') – this uses virtual interactions in place of physical exchanges. This is a virtual place in which explicit knowledge is exchanged

and combined in a systematic way. Technologies such as online networks, groupware and databases enable collaborative environments that facilitate knowledge and information sharing.

*'Exercising Ba'* – a space in which the absorption of new knowledge occurs through internalisation processes where explicit knowledge is converted into tacit knowledge. Unlike Interacting Ba, which emphasises sharing of mental models, Exercising Ba emphasises action and learning-by-doing. Here, individuals use the explicit knowledge made available to them and translate this knowledge into action.

Difficulties and ambiguities in comprehending Ba are important. This is because they bring into perspective a number of criticisms of the concept, and the subsequent revisions that have been suggested. The concept's origin in Japan has lent weight to arguments that it can be challenging to understand from the western perspective (Nakamori, 2006; Zhu, 2006). This is compounded by the fact that it cannot be explicitly translated into English, nor into any other language. If this lack of shared understanding among scholars could be considered as a weakness, (Nakamori, 2006) alternatively suggests that it allows scholars to provide various interpretations of Ba, without compromising the depth and versatility of the concept. Some scholars have criticised the concept of Ba itself; for instance, Zhu (2006) is critical of Nonaka & Toyama's (2003) choice to establish a parallel between Ba and Giddens' (1984) theory of structuration. Zhu criticises Nonaka and Toyama for drawing upon the theory of structuration in order to further justify Ba. However, Nonaka and Toyama have clearly acknowledged the ontological distinctions between both theories, while emphasising what is common to both views in order to further explain the link between tacit and explicit knowledge-conversion and the inherent influence of the context within which this process takes part (Nonaka & Toyama, 2003).

Zhu (2006) also considers the concept of Ba as being too simplistic and optimistic. This is because it does not take into consideration the complexity of human beings, nor the challenges posed by knowledge itself, such as power dimensions and sharing hindrances as discussed in Knowledge Management literature (Ardichvili,

2008; McDermott & O'Dell, 2001; Rosen et al., 2007; Hubert & Lopez, 2013). However, (Zhu, 2006) simultaneously acknowledges that his full understanding of Ba may, in fact, be limited because of cultural differences for the reasons explained above.

### **2.3.2.1 The 'Ba' concept revisited**

Since the publication of Nonaka's work on the concept of Ba, several scholars have revisited and analysed his theory, particularly with regard to new technological affordances that were not available at the time when his concepts were first proposed. Studies have underlined the need to update the SECI model and the Ba concept to take into account new and emergent technologies. Conclusions drawn by Martin-Niemi & Greatbanks (2010) and Bartolacci, Cristalli, Isidori, & Niccolini (2016) regarding knowledge-sharing and Ba represent a paradox in respect of the ontological nature of Ba. While Nonaka and Konno's definition of originating Ba places the physicality of interactions centre-stage, more recent work asserts that originating Ba can occur online, without physical context, because rich interactions are now possible on virtual platforms. Further, there is confusion between the SECI model (a process) and Ba (a context) – this needs to be resolved. Each stage of the SECI model represents a process of knowledge-conversion that occurs within the context of Ba. If the socialisation process (which is part of originating Ba) can occur online, it is tempting to conclude that the same also applies to Originating Ba. This is where the paradox lies because this conclusion contradicts the definition of the Originating Ba itself. According to Nonaka & Konno (1998), Originating Ba provides an existential context within which individuals can share feelings, emotions and intuition. This Ba is defined by physical face-to-face interactions between individuals – the only way to grasp the complexity of physical senses and psycho-emotional characteristics of human beings (Nonaka, Toyama, & Konno, 2000). In addition, Originating Ba is also characterised by a 'here and now' quality, implying that only synchronous and dialectical interactions can occur within this space.

This partly contradicts assumptions by Martin-Niemi & Greatbanks (2010) evident in their study of blogs, because blog interactions can be asynchronous. Bartolacci et al., (2016) emphasise the ability of users of the platform to 'see' each other (without specifying whether this visual contact included live interactions akin to

video-conferencing), potentially substituting such conditions for the physical and spatial elements associated with Originating Ba. Because this represents a challenge to the ontological foundations of this Ba, it is clear that assertions that Originating Ba can occur online require further empirical substantiation. Many of the scholars who have revisited Ba take into account new technological developments that were not available in the late 1990s. It has been argued that social media platforms may be similar to Ba in that they represent a 'place' (Razmerita, Kirchner, & Nabeth, 2014). The emergence of new technologies (such as wikis, blogs, microblogs, instant messaging), collectively known as the social web, has facilitated online social interactions. For instance, Martin-Niemi & Greatbanks (2010) undertook a study to analyse the extent to which the characteristics of a blog community could be related to conditions that enable knowledge-conversion, drawing upon the SECI model and Ba. Using a digital ethnographic approach that featured observation and analysis of the conversations occurring within a blog community over five months, it was discovered that ten enabling conditions facilitate the sharing of tacit knowledge between individuals. These are Recognition, Common language use, Cooperative behaviour, Mutual trust, Active empathy, Lenience in judgment, Active questioning, Metaphor use, Storytelling, and Access to help.

The sense of community identified in this study drew upon the work of McMillan & Chavis (1986) who defined four elements – 'membership', 'influence', 'integration and fulfilment (reinforcement) of needs' and 'shared emotional connection' – as important elements of communities. Martin-Niemi & Greatbanks (2010) also addressed the challenges that employees may face when they are dispersed across different geographic locations and so cannot have face-to-face contact and interactions. If social media tools enable 'person-to-person' interactions, face-to-face interactions may not be necessary (Martin-Niemi & Greatbanks, 2010, p.20). This led to the conclusion that sharing of tacit knowledge between individuals can occur within virtual contexts that relate to both originating Ba and interacting Ba.

A study by Bartolacci et al., (2016), based upon a European project named BIVÉE (Business Innovation in Virtual Enterprise Environments), evaluated the applicability of the SECI model to a virtual community of practice (vCop). This

study examined the creation and use of a collaborative platform to support virtual Communities of Practice and to enable knowledge exchange between stakeholders, in order to foster innovation. The platform included virtual tools such as instant messaging, forums and meeting rooms that enabled professionals to 'meet' to exchange ideas while 'seeing' each other. Unfortunately, the specific type of visual tool used is not made clear in the report of this study. Several relevant outcomes from the study are emphasised by Bartolacci et al., (2016). The first is that each phase of the SECI model can occur online, including the socialisation process (i.e. sharing intuition, ideas), if rich media tools that are capable of enabling social interactions are used. The second, and related, outcome is that Cyber Ba cannot be limited only to the sharing of explicit knowledge. This is because the entire SECI process can occur online. Perhaps most fundamentally, Bartolacci et al. (2016) assert that face-to-face interactions and physical proximity are no longer limiting conditions for Originating Ba. This is because the socialisation process can now occur through virtual social interactions. Some studies in the field of online education (for instance, Levenberg & Caspi (2010) also indicate that rich media communication or online conference tools (such as Skype or WebEx) may facilitate the sharing of tacit knowledge in virtual environments. Because face-to-face interactions are enabled by such technology, these studies support the suggestion that these interactions actually occur within Originating Ba.

These empirical studies contribute to a greater understanding of social media affordances in the sharing of tacit knowledge while providing a necessary revision of the concept of Ba, particularly with regard to the emergence of new social technologies.

### **2.3.3 Tacit knowledge-sharing techniques**

It has already been established that the sharing of tacit knowledge occurs through social interactions. (See section 2.2.3.3.) Several techniques facilitate this process. Before exploring how social media affordances can facilitate and extend the scope of this process, three of these techniques (Communities of Practice, Storytelling and Mentoring) are outlined below, emphasising the analogous approach of people sharing tacit knowledge face-to-face.

### **2.3.3.1 Communities of practice**

The very act of sharing knowledge within a community is not new. Historically, Communities of Practice (CoPs) date back to ancient times, whether in classical Greece, where craftsmen would gather in 'corporations' to exchange ideas, mentor young apprentices or spend time in social activities, or in the Middle Ages where guilds would fulfil a similar purpose (Wenge & Snyder, 2000). Since the late 1990s, Communities of Practice have been acknowledged as an efficient way to facilitate knowledge-sharing within organisations, particularly for tacit knowledge. At the instigation of Lave & Wenger (1991), who were the first to define the concept within the organisational context, CoPs increasingly gained interest in both academic and managerial fields (Annabi & McGann, 2013). A Community of Practice is a gathering of people who have a common interest or practice, and who decide to share their knowledge and expertise in order, for instance, to innovate or to solve issues. The learning processes which occur through these social interactions and knowledge-exchange among group-members benefit both the individuals and the team (Foote, Matson, Weiss, & Wenger, 2002; Krishnaveni & Sujatha 2012). CoPs do not have formal structures, can grow organically and are usually time-limited following a life-cycle from planning to closure (Krishnaveni & Sujatha, 2012). This means that CoPs are supposed to be initially independent of managerial structure or strategic influences. This is in order to encourage people to voluntarily share their knowledge in trustful environments that support innovative ideas and contributions. While such an approach is intended to secure optimal outcomes for CoPs, the paradoxical implication is that, to be successful, CoPs should be separate from organisational strategies (Annabi & McGann, 2013).

In the early CoP literature, CoP members were considered to share knowledge face-to-face because this is the most appropriate way of sharing tacit knowledge (Nonaka & Takeuchi, 1995; Koskinen, Pihlanto, & Vanharanta, 2003). However, the evolution of social technologies has enabled CoPs to become virtual Communities of Practice (vCoPs), thus extending networking possibilities. These are explained in the section 2.4.4.1).

### **2.3.3.2 Storytelling**

Another way to share tacit knowledge is by telling stories. Storytelling has become increasingly used within organisations since the beginning of the 21st century (Snowden, 2000) and consequently has become the subject of academic research (Burnett, Pedersen, & Smith, 2011; Detlor, Hupfer, & Smith, (2016). This narrative technique is an efficient way to stimulate the expression of contextual knowledge (Snowden, 2000) by, for instance, communicating informally about management decisions, intra-organisational events or employees' activities (Dalkir, 2005). Storytelling facilitates communication of cultural values and richer understandings of specific contexts. It can also initiate organisational learning practices (Burnett, Grinnall, & Williams, 2015). This ultimately contributes to share valuable tacit knowledge (Snowden, 2000, 2004, Dalkir, 2005).

### **2.3.3.3 Mentoring**

Mentoring has been increasingly acknowledged as a valuable mechanism for sharing tacit knowledge within the last decade (Mayfield, 2010; Swap, Leonard, Shields, & Abrams, 2001). Similar to Communities of Practice, mentoring is not new: original traces of it can be found in Homer's writings about the mythological stories of Telemachus and his mentorship (Swap, Leonard, Shields, & Abrams, 2001). Even though the mentoring technique is less popular than the two previous ones (Swap et al., 2001), its value is nonetheless essential to organisations which face issues related to knowledge loss. This typically occurs when there is a high staff turnover, or when retired employees are not replaced and their knowledge not transferred to other employees. Currently, the initial role of a mentor has remained the same, even though the context within which the process occurs has changed: in organisations, mentoring enables experts to transfer their knowledge to less experienced employees who need guidance to learn new skills and become knowledgeable about a specific area (Mayfield, 2010).

### **2.3.4 Enablers of tacit knowledge sharing**

Networking and informal relationships are both considered to be enablers of tacit knowledge sharing (Haldin-Herrgard, 2000); (Smith, 2001). Social media enhance the possibilities of networking and informal interactions between users (Hemsley

& Mason, 2011; Nielsen & Razmerita, 2014; Razmerita et al., 2014). Panahi considers 'observation and listening' to be another enabler of tacit knowledge sharing, implicitly referring to the socialisation stage in which people learn from each other via observation. According to Panahi's analysis (2013), this observation process can occur through the use of online multimedia tools such as video-conferencing tools that are enhanced with social affordances, that is affordances enabling users to make comments and be part of online communities. Finally, Panahi postulates that 'mutual swift trust' creates the necessary conditions to facilitate tacit knowledge sharing. Although the concept of 'swift trust' that Panahi has identified is relatively new, the requirement for mutual trust for knowledge-sharing to take place is widely acknowledged (e.g. Koskinen et al., 2003; Lin, 2007; Holste & Fields, 2010; Lopez-Fresno & Savolainen, 2011). Such trust can also occur online, on virtual networks and online social networks (Hsu, Ju, Yen, & Chang, 2007; Chen & Hung, 2010).

### **2.3.5 Knowledge sharing hindrances**

Even though it might seem obvious that sharing knowledge is necessary, some organisations still encounter issues when trying to implement knowledge-sharing practices, and to embed them into working processes. Barriers to knowledge-sharing have long been studied within the academic and professional fields, as well as how to overcome them. Barriers may spring from work cultures (Suppiah & Singh Sandhu, 2011), lack of trust (Razmerita et al., 2016), or technology (Riege, 2005; Rosen et al., 2007). One of the reasons why knowledge-sharing challenges persist is lack of awareness of the positive outcomes that knowledge-sharing brings to organisations' management. (Henttonen, Kianto, & Ritala, 2016). The very awareness of the benefits of sharing knowledge is itself an enabler of knowledge-sharing within teams. Benefits occur on an individual level (rewards), on a team level (collective intelligence), and on an organisational level (organisational learning) (Hall, 2001).

## **2.4 Social technologies**

'Social technologies' refers to those technologies that enable and facilitate social interactions occurring online (via the Internet) or via mobile devices. This term encompasses social media tools and enterprise social software, defined in section 2.4.4 below. In order to understand the contributions these tools have brought in terms of online interpersonal communication and knowledge sharing, earlier technologies will first be presented.

Prior to the emergence of social media, knowledge-sharing and online collaboration had already been studied and applied in organisations and private firms. For example, intranets (online platforms enabling knowledge sharing, access to information, and online collaboration) had been widely used by organisations that wish to manage knowledge since the late 1990s, as noted by Hall (2001). Hall also specifies that the types of Knowledge Management tools promoted by vendors (for example intranets, data warehouses and software agents) were those most often chosen by knowledge workers to enable knowledge-sharing. Of greater significance, Hall states that the benefits of direct access to common knowledge assets and resources (as provided by intranets) include the possibility of retaining the knowledge of employees who leave organisations, thus preventing knowledge-loss. Another relevant aspect noted by Hall concerns knowledge-sharing incentives, such as rewarding employees who contribute to storing organisational knowledge on intranets. Intranets also have the capacity to become knowledge repositories (Vaast, 2004). For example, they can prompt people to share knowledge (Child & Shumate, 2007) including 'best practices' (Smith, 2001).

### **2.4.1 Social media tools**

The creation of social technologies has increased so rapidly (Treem & Leonardi, 2012) that professionals and academic researchers cannot agree on an appropriate term to define them, or a precise meaning of the term (Kaplan & Haenlein, 2010). This problem is exacerbated by new terminologies appearing alongside new technologies. For the purpose of this research, the term 'social media' is favoured over other terms, even though different terminologies will sometimes be used, depending on the topic analysed.

For instance, the social web covers all the social interactions that exist on the Internet, including social media (tools and usages), and social networking sites.

Since the first social media tools (such as Facebook and Wikipedia) were launched, many new tools have appeared on the market. These have generated several reviews in Information Science. (See, for example, Kim, Sin, & Tsai, 2014; Khoo, 2014; (Oh & Syn, 2015). The following table summarises a selection of studies that investigate the positive influence of social media within the field of information science in the three previous years.

*Table 5 - Social media's positive influences on Information science*

<b>Social media positive influences</b>	<b>Contributions</b>
Collective intelligence	Razmerita et al., (2014); Juárez-ramírez, Pimienta-romo, & Ocegueda-miramontes (2013); Yates & Paquette (2011)
Tacit knowledge-sharing	Panahi et al. (2013); Juárez-ramírez et al. (2013); Treem & Leonardi (2012); Nezakati et al., (2015)
Socialisation	Panahi, Watson, & Partridge (2015), Treem & Leonardi (2012); (Nezakati et al. (2015); (Treem & Leonardi, 2012)

In order to understand the concept of social media, it is necessary to briefly cover the origins of their emergence, because they are often confused with concepts such as the social web or social networks. Kaplan & Haenlein (2010) suggest that Web 2.0 is a platform that enabled the evolution of social media that very often share the technological and ideological characteristics of Web 2.0. One of the main characteristics of social media, according to (Kaplan & Haenlein, 2010), is their participatory and collaborative aspect.

This argument is strengthened by O'Reilly (2012), who stated that the creation of collective intelligence is one of the fundamental ideas of Web 2.0. (Kaplan & Haenlein, 2010) have defined three categories of attributes:

- The first one concerns technological innovations brought by computing tools (such as AJAX, Flash and XML) that, for instance, enable individuals to share online content easily and quickly.
- The second one concerns the use of several applications based on the technological innovations mentioned above (blogs, wikis, tags, podcasts, RSS).
- The third one concerns the value added by these technologies, enabling users to create content (knowledge generation) in collaborative manners (collective intelligence), easily and quickly (work-efficiency enhancement).

The concept of social media relates to participatory digital media, in the sense that people can contribute to online content (Zeller, Chatterjee, Bräuer, Steinicke, & Lapteva, 2010). It is also characterised by two aspects: (1) 'user-generated content' (UGC); (2) 'produsage' – specifically the content that is produced and used by users themselves (Bruns, 2007).

Besides these technological improvements, social technologies are also characterised by the possibility of accessing content, networks and contacts 'anywhere anytime' (Beer & Burrows, 2007) – as long as an Internet connection is available. This continuous access is also enhanced by mobile technologies.

#### **2.4.2 Social media and tacit knowledge**

Given the potential power ascribed to social media as agents of knowledge-sharing, further consideration must be given to the potential affordances that social media presents. Panahi et al. (2013) argue that social media can facilitate sharing of tacit knowledge by (1) initiating informal discussions among experts; (2) fostering collective intelligence (providing virtual, participatory and collaborative spaces in which new knowledge can be created); (3) making tacit and personal knowledge visible and accessible; and (4) decreasing the time and the effort needed for sharing knowledge. These themes are also addressed by other researchers. For example, (Jalonen, 2014) argues that social media can help employees become involved in informal discussions within their organisation. These discussions matter because they integrate the 'human factor' into the process of articulating problems and finding solutions. This was confirmed in a study by Chirumalla

(2013) who demonstrated that both blogs and wikis can efficiently capture unstructured information and so make it available to other teams. Social media tools also enable connection and addition of employees' intelligence, consequently enhancing collective intelligence (Razmerita et al., 2014). This happens, as Sirous Panahi & Watson (2012) state, when individuals work collectively to generate useful content, such as providing solutions to problems raised by individuals (Jalonen, 2014).

No matter whether knowledge is personal or collective, social media can also contribute by rendering tacit knowledge visible (Jalonen, 2014), because they enable people to share knowledge through online social interactions (Razmerita et al., 2016). They also provide opportunities to make employees' skills visible (P. M. Leonardi & Meyer, 2015). However, it has been argued that tacit knowledge is difficult to share using technological means (Haldin-Herrgard, 2000). One of the advantages of social media is their perceived ease of use (Hsu & Lin, 2008; Chen & Bryer, 2012). It has been argued that if only a small amount of effort is needed to learn how to use social media, this would help individuals decrease the effort and time needed to share knowledge online (Panahi et al., 2013).

### **2.4.3 Affordances of social technologies**

Social technologies are not only innovative at a technological level. They have also contributed to affordances that are specific to these new technologies. The term 'affordance' here must be understood as the perceived potential utility that an object has (Wagner et al., 2014). The way that these affordances are perceived depends on the implicit understanding one has on how to interact with them (Gibson, 1986; Treem & Leonardi, 2012). This means that a tool that has been initially created for a specific purpose might be used in a variety of different ways to fulfil its users' needs. This is even more the case when a tool provides multiples features (Treem & Leonardi, 2012). Therefore, social technologies might be used in ways that were not initially expected by the creators. Focusing on social and technological affordances (rather than solely on features and characteristics) enables better comprehension of their contributions, for instance to knowledge-sharing, regardless of the tools that are used.

Four social media affordances have been identified and defined by Treem & Leonardi (2012). These are: 'visibility', 'persistence', 'editability', and 'association', as explained in Table 6.

*Table 6 - Social media affordances*

<b>Social media affordances</b>	<b>Descriptions</b>
Visibility	Enable users to make their knowledge (skills, competencies) as well as their networks, visible.
Persistence	Enable users to access knowledge over time, which makes it reusable for new purposes (best practices, lessons learnt, etc.).
Editability	Enable users to edit the content of the knowledge they communicate, for instance by adding more context.
Association	Enable users to make their connections visible, either between them and other users, or between them and content.

The contribution of Treem & Leonardi (2012) has since been developed by other scholars, extending the understanding on organisational knowledge sharing (Gibbs, Rozaidi & Eisenberg, 2013), 'online communal knowledge sharing' (Majchrzak, Faraj, Kane & Azad, 2013), Enterprise Social Network sites (Ellison, Gibbs & Weber, 2014); and governance in the workplace (Vaast & Kaganer, 2013).

The affordance of 'visibility' is of particular interest to this study as explained in Chapter 6, section 6.3.5. To better understand how social technologies are integrated into an organisational environment, the following section explains how enterprise online social platforms contribute to the facilitation of sharing knowledge within organisations.

#### **2.4.4 Enterprise online social platforms**

As introduced earlier (section 2.4), intranets have played a significant role in supporting Knowledge Management and fostering knowledge-sharing practices within organisations. These online platforms have also benefited from social media affordances by including web 2.0 technologies in later versions.

These platforms, which are exclusively used for professional purposes, have been given different names (Enterprise Social Networks, Enterprise 2.0, ESN 2.0, Enterprise Social Media platform, Intranet 2.0, Social Intranet, Extranet 2.0, etc.). For the purpose of this study, the term 'Enterprise online social platform' has been favoured over the others.

#### **2.4.4.1 Virtual Communities of Practice**

As stated earlier, CoPs enable people to share their knowledge, experience and expertise within a community (which is usually based on shared interests), in order to learn from one another, to solve problems or to get new ideas. The emergence of social technologies such as Enterprise Social Networks (ESN) and social media tools has enabled CoPs to become virtual Communities of Practice (vCoPs) based on creating inter- or intra-organisational virtual groups (Corcoran & Duane, 2016). Unlike traditional CoPs, within which face-to-face interactions occur between members who are likely to know each other, vCoPs potentially imply a much larger group of users who may be geographically dispersed (Brown & Duguid, 2001). Because members might never know each other, and might even be anonymous, these online networks are characterised by weaker social ties than those in traditional CoPs. A sense of community, however, occurs when members share content online, no matter what the form of content shared (Dalkir, 2011).

The technical attributes of vCoPs have evolved with the emergence of innovative technologies. Intranets and conference phone-calls were favoured in the first decade of the twenty-first century (Dube, L., Bourhis, A, Jacob, 2006). Then Enterprise Social Network platforms, online discussion groups, other social media tools, and video-conferencing increasingly took the lead in terms of digital communication tools (Gimenez, Hernantes, & Sarriegi, 2014). The vCoPs can help to overcome organisational silos, by fostering learning processes, collaboration and knowledge sharing. This boundary-crossing is considered as being significant when members of the same community work in different organisations, challenging the level of trust between members, as well as their will to share knowledge. (Dube, L., Bourhis, A, Jacob, 2006).

Of particular interest to this study is vCoPs' unlimited geographical reach, enabling members to share common interests while being physically far from each other. When members of a community collaborate on a common issue without belonging to the same organisation, and/or without sharing the same professional profiles or positions, this has been described as 'cross-community boundary-spanning' (Hislop, 2013, p.170). Such groups inherently have an influence over the way knowledge will be shared. Due to these characteristics, cross-community boundary-spanning knowledge processes are more difficult to manage (Hislop, 2013, p.171). Because there is an increasing number of vCoPs and online social networks within organisations embodying very similar attributes, some of the potential challenges are presented below. The dynamics of these groups are shaped by the possible absence of common knowledge and the lack of shared identity (ibid., p171). When members of a CoP share the same values and identities, knowledge sharing processes are facilitated by a significant degree of common knowledge. This stems from the assumptions people share regarding any particular issue that they are working on. In contrast, the weaker ties that are likely to exist within a vCoP might challenge its knowledge sharing efficiency (ibid., p.171).

Moreover, there is a risk that epistemological differences (e.g. differing levels of knowledge and values) between members of a community might also hinder knowledge sharing processes because such differences could affect the shared understanding that is usually assumed in a CoP. This could consequently affect levels of trust, already weakened by specific boundary-spanning community context and therefore hinder knowledge sharing practices. To overcome these various challenges, and hence guarantee adequate levels of understanding, greater effort needs to be made by members to facilitate discussion between people (Majchrzak, More, & Faraj, 2012).

Social technologies encompass social media tools, social media affordances, Enterprise online social platforms and virtual Communities of Practice. The common denominator of these various technologies is that each of them enables the facilitation of online social interactions. The online social platform studied within the scope of this study is the public sector, which is explained further below.

## **2.5 Understanding the public sector**

Having explored tacit knowledge, knowledge sharing and social technologies, it is also important to consider the context within which this study is undertaken. This study is undertaken with specific concern to the public sector in Scotland, which comprises organisations involved in public services, governmental organisations, and public enterprises. Initiatives of Knowledge Management practices have been increasingly, if not regularly, applied to public sector organisations throughout the years, despite the fact that Knowledge Management was initially primarily applied within the context of the private sector. Indeed, the number of empirical studies situated in the public sector remains significantly lower than in the private sector (Hazlett, McAdam, & Beggs, 2008). One of the reasons is related to the specific, bureaucratic organisational structure of public sector organisations, which can hinder any research undertaking (P. Mc Evoy et al., 2016). It is necessary to address the extent to which Knowledge Management initiatives have been applied within the public sector, and why there is still a lack of studies in this area.

### **2.5.1 Characterising the public sector**

Public bodies are institutions belonging to the public sector, usually under some government oversight, whose mission is to provide quality services to populations in order to fulfil governmental objectives. They are usually owned by the state, and their finances depend on the funds allocated by the government. They are therefore political (that is, influenced by the decisions made by government) and non-profitable<sup>3</sup>: indeed, as Mullins (2007) notes, any earned surplus would need to be redistributed, with the aim of improving the quality of services. Because these organisations are answerable to government policies, they are inherently influenced by political strategies. These can potentially influence the ways managerial strategies are applied within organisations themselves. Social, economic and political factors all shape the institutional norms of the public sector (Pettigrew, 2005).

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<sup>3</sup> Not to be mistaken for not-for-profit organisations.

The management of public services therefore occurs in complex policy and political environments, including direct political oversight, with high levels of scrutiny and accountability (Rashman, Withers, & Hartley, 2009; Hartley & Skelcher, 2008).

Another aspect that characterises public bodies is their bureaucratic nature. Public sector employees apply procedures that stem from laws and regulations inherent to such institutions (Mullins, 2007). Employees work for the common good, applying procedures dependent on laws and regulations inherent to such institutions (Mullins, 2007). This emphasis on services means they can be distinguished from organisations that make products – these are usually considered as the private sector or industries. Unlike the private sector with its clear profit motive, the over-arching aim of the public sector is to add value through service delivery that maximises resource allocation.

The emphasis on provision of public services, efficiency and work enhancement distinguishes public bodies from private-sector organisations and industries, which focus more on the creation of products and profit. Also, the drivers for change in the public sector come from government policy rather than competitive pressures, and the culture of collaboration appears to be more challenging in the public sector than in the private one (Sveiby & Simons, 2002).

The differences between the private and public sector mentioned earlier are often discussed in the literature. The table below summarises these distinctions:

*Table 7 - Differences between private and public sector organisations.*

<b>Public sector</b>	<b>Private sector</b>	<b>Contributions</b>
Change and performance pressures driven by government policies.	Market pressures.	Rashman et al., (2009)
Efficiency and cost reduction demands. (To do more, better with less).	Performance measured by profits.	McAdam & Reid (2000)
High level of political influence.	Relative freedom of action. Influenced by competition.	(Ferguson, Burford, & Kennedy, 2013; Kothari, Hovanec, Hastie, & Sibbald, 2011)
High level of public accountability. (Including transparency on failures)	Limited or no public accountability.	(Kothari et al., 2011; McNabb, 2007; Rashman et al., 2009)
Low level of competition.	High level of competition, which drives business strategies and decisions.	(Rashman et al., 2009)
Low level of risk-taking.	More inclined to risk-taking (business strategy).	(Jain & Jeppesen, 2013)
No clear outcomes.	Tangible product.	North, (2017)
No financial rewards for employees.	Financial bonus to employees.	(Ferguson et al., 2013; McNabb, 2007)
Prevalence of bureaucratic & hierarchical organisational structure.	Greater variety of organisational structures (i.e. flat management).	(Hazlett et al., 2008; Mergel, 2013; McEvoy et al., 2016)

Decades of reform have seen governments push through fundamental changes in the leadership, management and organisation of public services, in attempts to achieve gains from the adoption of entrepreneurial and ‘customer focused’ approaches (Pettigrew, 2005). This adoption of the ‘New Public Management’ (NPM) approach is sometimes considered to be in conflict with the values promoted by the public sector because it does not take into consideration the public sector’s distinctive characteristics (Willem & Buelens, 2007).

## 2.5.2 Knowledge Management in the public sector

Many organisations, particularly those belonging in the public sector, are knowledge-intensive (Willem & Buelens, 2007). This means that their main 'product' is knowledge: not just knowledge that is used to fulfil organisational strategies, but also knowledge that is provided to the public (Henttonen et al., 2016; McAdam & Reid, 2000). This echoes Peter Drucker's stipulation of the mid-nineties: that knowledge is one of the most important economic resources in organisations (Drucker, 1995). This is particularly relevant when employees are considered as knowledge repositories (De Angelis, 2013). Knowledge-intensive organisations are also inherently linked to learning organisations (Riege & Lindsay, 2006). Under the influence of NPM, power and knowledge have been both centralised (De Angelis, 2013). This has directly affected the way knowledge is used or produced within an organisation, because knowledge is dependent on its environmental context. A culture of knowledge-hoarding in government bureaucracies has also been identified (Mergel, 2013). This has consequently influenced Knowledge Management's effects on managerial changes applied in public sector organisations.

The application of Knowledge Management in the public sector faces several challenges because of the nature of its organisational and political context, as mentioned above. The diversity of public service delivery environments (P. J. Mc Evoy, Ragab, & Arisha, 2018); the lack of understanding of the impact that Knowledge Management can have on performance (Cong & Pandya, 2003); (P. J. Mc Evoy et al., 2018). Additionally, it has been observed that public sector employees' lack of awareness of collective and organisational knowledge stems from the tendency to consider knowledge (particularly tacit knowledge) as personal intellectual property (P. J. Mc Evoy et al., 2018).

However, among the main processes of Knowledge Management, knowledge-sharing is gaining increasing attention within public bodies (Amayah, 2013; Chen & Hsieh, 2015) There is also a greater emphasis on the need for public sector professionals to share information and knowledge to foster learning and innovation, and to meet stakeholder expectations. Knowledge-sharing, therefore, has been considered as crucial to public-sector improvement, with wide

recognition that good ideas and practices should not be limited to one organisation or service, but should be transferred across services, and between levels within organisations (Ismail & Yusof, 2008). Despite this, relatively little attention has been paid to the means by which such knowledge-sharing can occur (Rashman et al., 2009). Some characteristics specific to the public sector can affect knowledge sharing practices which – due to their complexity – still represent hurdles that need to be overcome (Taylor & Wright, 2004; Rosen et al., 2007). Among these is the strong tendency to give too much importance to rules and guidelines in bureaucratic behaviours. This can have damaging consequences including: (1) suffocation of innovation and initiatives; (2) fear of making and admitting mistakes under the pressure of being constantly monitored by the media (This may ultimately hinder the transparency required to openly share knowledge.); (3) lethargy due to the tendency for organisational changes to come from higher authorities within the public sector (Taylor & Wright, 2004).

Other issues have also been identified as barriers to knowledge-sharing within the public sector. These include organisational culture, lack of recognition of employees (Hazlett et al., 2008), and lack of trust (Ardichvili, 2008); (Pee & Kankanhalli, 2016); (Seba & Rowley, 2010). Trust is a particularly important issue because it has been acknowledged as being necessary for the sharing of tacit knowledge (Huysman & Wulf, 2005); (Suppiah & Singh Sandhu, 2011).

The emergence of social technologies – which are based on networks that facilitate online participation and, to a certain extent, online knowledge-sharing – has challenged NPM methods, which are based on hierarchical (top-down) organisational structures, and consequently are more inclined to knowledge-retention (De Angelis, 2013).

Despite an increasing number of studies in Knowledge Management, it is acknowledged in the literature that there is a lack of empirical studies within the public sector, particularly in comparison with the private sector (Chen & Hsieh, 2015; Edge, 2005; Massaro et al., 2015; Tangaraja et al., 2015; Henttonen et al., 2016).

(Massaro et al., 2015) comment that the literature in this specific area appears to be fragmented in at least three ways: (1) studies are predominantly undertaken in educational settings, environments in which many scholars are naturally comfortable; (2) a significant amount of research comes from Asia (India and Malaysia); (3) quantitative research methods are favoured over qualitative ones.

The difficulty of accessing specific types of population (i.e. government and public sector employees) and content (due to confidentiality issues) could explain such inequality in research representation, but it could also be due to a lack of vision when it comes to the prioritisation of impactful research. For instance, environments such as governments or international organisations are under-investigated (Massaro et al., 2015). This scarcity of studies on Knowledge Management within the public sector can be therefore considered as incoherent and counterproductive because the benefits of this discipline (i.e. work efficiency improvement, organisational learning), have been acknowledged by the scientific community for several years (De Angelis, 2013).

Although the amount of studies in the field of Knowledge Management within the context of public bodies is increasing, it appears that there is a lack of investigation regarding solely the specific aspect of tacit knowledge. Few studies consider the themes of tacit knowledge-sharing and online social platforms, especially in respect of the public sector. Massaro et al. (2015) argue for the development of a distinct research agenda that takes full account of the specifics of the public-sector context.

### **2.5.3 Use of social technologies in the public sector**

The use of social media within the public sector has become widespread in the second decade of the 21<sup>st</sup> century, not only for strategic communication between stakeholders and citizens, but also – and increasingly so – between employees within their organisations (Mergel, 2011, Mergel, 2013; Sharif, Troshani, & Davidson, 2015; Zavattaro & Sementelli, 2014). This has also been confirmed in a survey (iGov Survey, 2013) that addressed the UK public sector's usage of social media on an organisational level (this survey covered local governments,

education bodies, central government, the NHS, Housing Associations and the civil society).

However, most of the studies refer to the use of social media as a communication tool between, for instance, governments and citizens. See, for instance, Chun & Luna Reyes, 2012; Criado, Sandoval-Almazan, & Gil-Garcia, 2013; Mergel, 2013). They do not focus on the use of social media affordances by employees solely within public sector organisations. This situation could stem from two factors: (1) the usage of social media tools in organisations usually relates to public relations between the institutions and the public they serve (e.g. between a government and its citizens) and often belongs to communication and marketing strategies; (2) the usage of social media tools as a way to contribute to knowledge-sharing within organisations is still at early stages of development.

There is therefore a lack of investigation of the ways in which social technologies can be used in the public sector as facilitators of tacit knowledge-sharing. This is addressed in section 2.6 below.

## **2.6 Tacit knowledge sharing and social media in the public sector**

It is acknowledged that few empirical studies have been conducted to deepen understandings of social media usage within organisations (Panahi, 2013, p.380). This is particularly true within the field of Knowledge Management, where knowledge-sharing practices benefit from social media technologies and affordances (Annabi & McGann, 2013). It appears that social media affordances enhance not only socialisation processes between employees, but also the sharing of tacit knowledge (Panahi et al., 2013). Tacit knowledge can be easily overlooked, due to its intangible nature. Because tacit knowledge is usually shared through social interactions, some scholars argue that the most effective way to it is through direct, face-to-face interactions (Mascitelli, 2000). Others, however, have asserted that it can be shared with equal efficiency through online virtual networks (Falconer, 2006; Tee & Karney, 2010; Panahi et al., 2013). While there is increasing use of social media within the public sector (Mergel, 2011, Mergel, 2013; Zavattaro & Sementelli, 2014), knowledge sharing practices – due to their complexity – still represent a hurdle which needs to be overcome (Taylor & Wright, 2004; Rosen et

al., 2007). There is, therefore, a need to investigate more thoroughly the roles that social media play with regard to tacit knowledge sharing practices within the environment of public sector organisations.

The study of tacit knowledge, in particular, may bring new understandings on how social media can potentially and positively affect the intellectual capital of organisations. To undertake this study, an empirical investigation was designed based on three research questions explained in the next section.

## 2.7 Research Questions and the conceptual framework

Three research questions emerge from the analysis conducted for the above literature review. These are articulated in order to define the scope of the study, and to provide a relevant contribution to the literature. The three research questions are formulated in such a way as to enable a scientific investigation that would answer them with empirical evidence. While based on the literature review and the identification of the gaps in the knowledge outlined in that chapter, the research questions provide the first indications of the most appropriate methodological approach for answering them. To help answer the research questions, a conceptual framework was built. This was based on concepts that were identified in the literature review. For each concept, references were added to show (a) the concepts' relevance to the literature review; (b) to a certain extent, the discussions in the academic literature regarding these concepts.

To understand the extent to which social media facilitate the sharing of tacit knowledge between employees, the first research question was articulated with reference to the appropriate tools and techniques as identified in the literature review (see Figure 8):

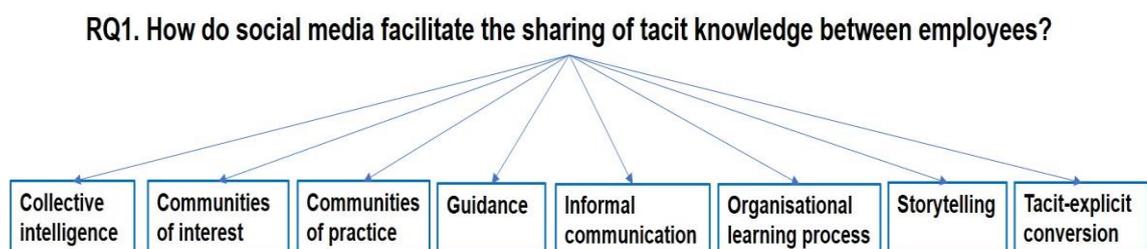


Figure 8 - Research question 1 & related concepts

Because this study is based on a deductive method, some of these concepts (e.g. tacit-explicit conversion) were articulated on a purposefully broad manner. Others, such as 'Collective intelligence' were added as a potential theme that might emerge within the data collection. Each concept, nonetheless, relates to tacit knowledge-sharing.

To understand whether social media bring new capabilities to the sharing of tacit knowledge (in comparison with analogue practices), the second research question was articulated. This highlights the possible capabilities as evident from the analysis of extant literature, as shown in Figure 9.

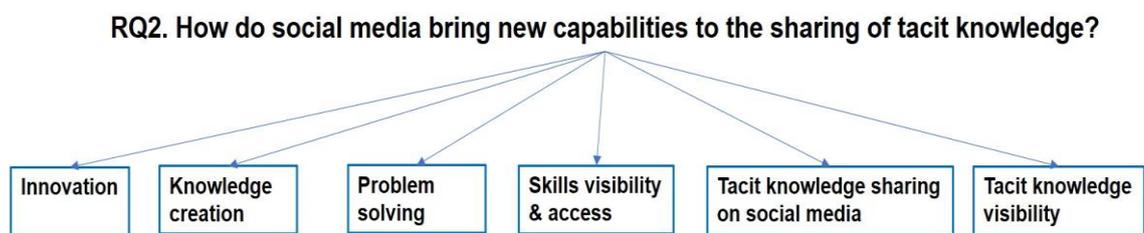


Figure 9 - Research question 2 & related concepts.

Because tacit knowledge is highly contextual, as mentioned in section 1.4.2, the third research question was articulated in order to investigate which situated factors provide appropriate contexts for using social media to enhance tacit knowledge sharing practices, as shown in Figure 10:

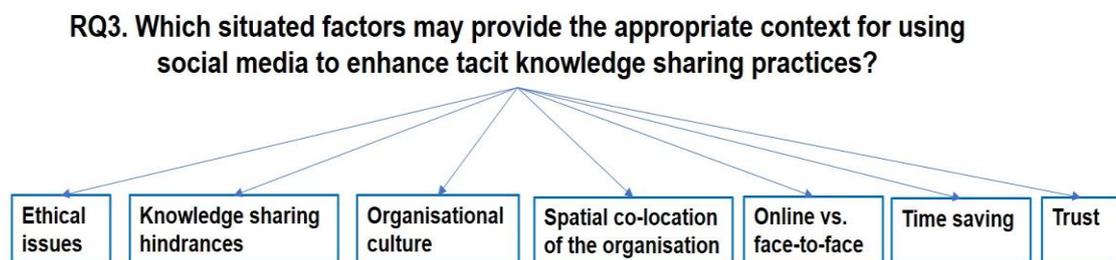


Figure 10 - Research question 3 & related concepts.

Time is addressed here because it has been stated that some social media tools can help people and organisations save time and effort (Badawy & Zakarian, 2014). It has also been argued that some social media can provide virtual spaces within

which users can potentially share their experiences, feelings or emotions, as if they were communicating face-to-face (Panahi, Watson, & Partridge, 2012; Juárez-ramírez et al., 2013). Because social media inherently exist online, this concept has also been identified as relevant to this question.

These research questions were identified from the foregoing extant literature analysis. The next chapter includes a discussion of research design and implementation in order to answer them, and hence furnish new knowledge on the extent to which social media affordances facilitate the sharing of tacit knowledge in the public sector.

## **2.6 Chapter conclusions**

The findings from this literature review on tacit knowledge, knowledge sharing, social technologies, and the public sector, have been used to inform the empirical work discussed in this thesis. An appropriate and pragmatic mixed-method research approach was designed and implemented to investigate the overarching research themes as they relate to the conceptual framework developed for this study, as detailed in the following chapters.

## 3 Methodology

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### 3.1 Introduction

The purpose of this chapter is to explain how the research was conducted and substantiate the choices that were made to undertake the empirical work. Knowledge Management and all of its elements (for example, organisational learning, knowledge sharing, and intellectual capital) is a multidisciplinary field of study (Dalkir, 2005, p.6) with roots in Economics and Information Science. It is therefore often associated with the larger field of social sciences. Therefore, research in this field is commonly based on social research methods. The broad objective of the research discussed in this thesis was to investigate to the extent to which social media affordances facilitate the sharing of tacit knowledge between employees within the public sector. To achieve this objective, the initial step was to define research questions that would indicate methods that could be used to answer them, and also provide the scope of the research.

The research questions which developed over the course of analysing relevant academic literature were:

1. How do social media facilitate the sharing of tacit knowledge between employees?
2. How do social media bring new capabilities to the sharing of tacit knowledge?
3. Which situated factors may provide the appropriate context for using social media to enhance tacit knowledge sharing practices?

The first section of this chapter examines the overarching philosophical considerations of relevance to a study of this nature. The 'research design decisions' section then explains in detail how the research questions and their empirical application were addressed in practice (choice of method, sampling). The fieldwork, explained in the 'Research design implementation' (see section 3.5) describes how the process of answering the research questions was operationalised (data collection, data analysis). The last section of this chapter explains how ethical issues were addressed in the study as a whole.

## **3.2 Research philosophy**

The need for the development of appropriate methodological approaches for studies of tacit knowledge sharing has previously been articulated. For example, (H. Kane et al., 2006) highlighted this when they reviewed studies of Knowledge Management. These and other researchers have argued that applying methodological approaches initially intended to study explicit knowledge to investigations of tacit knowledge is particularly problematic (H. Kane et al., 2006); (Venkitachalam & Busch, 2012). This is evident in a number of studies that use quantitative approaches and generate theory in a deductive manner (for example, Chung, Cooke, Fry, & Hung, 2014; Du, Ai, & Ren, 2007; Joia & Lemos, 2010).

In order to contribute to valuable research to extend knowledge in the domain, it is important to take into account two factors: the specific nature of the object of study (in this case, tacit knowledge), and the approaches used for its study in the past. This is in order to ensure that informed decisions are made regarding research design. These two factors are explored with reference to this doctoral study, with a firm focus on tacit knowledge, knowledge sharing practice, and methodological choice in section 3.2.1 below.

### **3.2.1 Ontological, epistemological and axiological stances**

Research in the domain of Knowledge Management has a bias towards exploring knowledge in its explicit form, largely because explicit knowledge is more easily observed than tacit knowledge (H. Kane et al., 2006, p. 142). It is also quantifiable, and therefore measurable (Virtanen, 2010). This is evident in much Knowledge Management research conducted in organisational settings (for example, Du et al., 2007; Hsu & Lin, 2008). Amongst the challenges of studying tacit knowledge and associated practices (such as tacit knowledge-sharing) are the intangible nature of the object of study (Desouza, 2003, p.86; Lin, 2007, p.412; Miller, 2002, p.6), and complexities in comprehending – and then articulating – its facets (Nonaka, 1994, p.24). Despite this, a number of researchers have explored tacit knowledge, often motivated by the recognition of the high value of tacit knowledge and a desire to capitalise on this (e.g. Huysman & Wulf, 2006; Ngah, Rohana; Jusoff, 2009; Nonaka, 1994).

Some studies of tacit knowledge have taken a positivist approach through the adoption of quantitative methods – particularly in attempts to model tacit knowledge-sharing, (for example, Salleh et al., 2013; Tsai, 2014). Others follow the tradition of interpretivist research, using qualitative techniques (for example, Abdullah, Ingram, & Welsh, 2009; Scully, Buttigieg, Fullard, Shaw, & Gregson, 2013). A number use mixed methods (for example, Desouza, 2003; Garcia-Perez & Mitra, 2007). Presented below are the key characteristics of each approach. Their relevance for research into tacit knowledge sharing practices amongst public sector employees is highlighted in this discussion.

Typically, studies of tacit knowledge that deploy quantitative methods are based around large-scale surveys, some of which make extensive use of Likert scales (for example, Borges, 2013; Lin, 2007; Tsai, 2014). Such studies have been criticised on the basis that these are often implementations of methods initially designed for the study of explicit knowledge, and thus they overlook the complex nature of tacit knowledge (H. Kane et al., 2006, p.143). A further deficiency of these studies is that their findings, and the models that emanate from them, are often untested (for example, Hendriks, 1999; Li & Zhang, 2010). More important, however, is that positivist approaches to this domain of study fail to recognise that knowledge is socially constructed, embedded within – and inseparable from – work activities and practice (Hislop, 2013, p. 31). Thus, positivist studies risk the production of findings that describe the assets generated from tacit knowledge (such as explicit knowledge in the form of information), rather than tacit knowledge per se. This is not to say that such work lacks value, but that the requirements of research validity may not be met if the approach used does not truly measure the topic in question.

In contrast, some Knowledge Management researchers who take an interpretivist stance accept from the outset that knowledge cannot be studied objectively (for example, Sirous Panahi, 2014, p.67). Therefore, they deploy qualitative techniques such as interviews, focus groups and surveys, in case-study settings (for example, Hall & Goody, 2007). Such work includes a number of studies that focus on questions related to tacit knowledge (for example, Murray & Peyrefitte, 2007;

Neve, 2003; Whyte & Classen, 2012). These studies usually do not generate models but, instead, provide nuanced understandings of particular aspects of Knowledge Management. This body of work is subject to the common criticisms of qualitative research in the social sciences: for example, claims that limited population-sampling results in findings that cannot be generalised, and are therefore not reliable (Bryman, 2012, p. 69-70; LeCompte & Goetz, 1982, p. 35).

However, it can be argued that deep analysis, for instance through the generation of a single case study, is valuable because it can contribute to a 'collective process of knowledge accumulation' (Flyvbjerg, 2006, p. 227). The 'power of good example' is emphasised by Flyvbjerg (2001, p.77). Here, close observation of the object of the study in depth – for example in a single information-rich case adopted for theoretical rather than statistical reasons – has the potential to deepen understanding of a phenomenon. This argument is supported by researchers such as Kane et al. (2006, p.147-148) who argue for the use of ethnographic studies in Knowledge Management research, especially for work that is focused on tacit knowledge-sharing. Equally, others have pointed to the value of Knowledge Management studies that collect data over long time periods to generate robust findings (for example, Milton, 2014; Rasmussen & Hall, 2016, p.366).

Case-studies have been criticised for their lack of robustness when it comes to methodology (Lyn, 2009) and for their lack of replicability (Bryman, 2012). These criticisms are refuted or nuanced by Lyn (2009) who advocates a rigorous approach when it comes to design a case study, among which the method of testing the quality of the research by using the 'Construct validity', the 'Internal validity', the 'External validity' and the 'Reliability' tests. These four tests, which are commonly used in empirical social research, occur at various phases of the research, and require different tactics. For example, the 'Construct validity' test can require using multiple sources of evidence during the data-collection process. The 'Internal validity' test happens during the data analysis process by analysing qualitative and quantitative data. The 'External validity' test needs to be defined during the research design, as is presently the case in this section. This specific test is the one that is usually criticised by researchers who point towards the absence of generalisability of the results. However, as Lyn (2009) states, a case study

focuses on the analytical approach of the phenomenon studied, and not on its replicability – a concept that fits quantitative methods and extensive use of statistics. Moreover, single case studies provide 'material' for new studies that can then further investigate what has been discovered in a single case. The 'Reliability' test requires research protocols that address the data-collection process, so that the experiment can be reproduced by another researcher. An explanation of the implementation of the research design in this study is given in section 3.5 below.

Some Knowledge Management researchers who focus on tacit knowledge suggest a 'gold standard' of deep ethnographic studies (for example Kane et al., 2006). These would be conducted over extended time-periods by researchers immersed in the environment under scrutiny so that they would be able to study information behaviours *in situ*. Kane et al. (2006) suggest that a methodological approach based on ethnography is more suitable for investigating tacit knowledge, because it enables researchers to observe individuals' experiences and cultural contexts in which tacit knowledge is embedded. An online ethnological approach – as defined by Hine (2016) – could have been relevant to this study, by providing direct observation of online sharing of tacit knowledge between respondents. For doctoral students, however, an obvious barrier to meeting this ideal is the time-limits imposed on their studies, especially because such research would be carried out as a form of research apprenticeship. Other compromises need to be made with respect to the object of investigation, for example, in order to access the selected population (in this case members of the Knowledge Hub platform) in an appropriate context.

Ethical issues peculiar to ethnography could also be problematic regarding researchers' involvement with respondents (Hine, 2016), such as the influence of researchers' presence and observation on the respondents (Kane et al., 2006) and the confidentiality of topics discussed. These issues, if not addressed, can bias the results and challenge the validity of the research.

Another option for Knowledge Management researchers is to adopt a mixed-method research design, i.e. one that incorporates both qualitative and quantitative strategies. This methodological approach, the origins of which can be

found in social research science in the second part of the 20<sup>th</sup> century, has sparked multiple debates among academics who adopt various positions, particularly when it comes to the ontological and epistemological assumptions involved. Indeed, the main drawback of this approach is the supposed lack of compatibility between the different epistemological roots of qualitative and quantitative methods (Bryman, 2016, p.636). The adoption of both approaches together could somehow 'betray' the commitment that scholars should adopt towards each (Bryman, 2016, p.629). It has also been suggested that those who combine methods, hoping that this will be recognised as 'scientific' by external audiences, are misguided in believing that this will guarantee the validity and reliability of their research (H. Kane et al., 2006, p.147). While it is routinely stated that a mixed methods strategy lends robustness to research, particularly in respect of triangulation, some Knowledge Management researchers with interests in explorations of tacit knowledge are critical of such claims. The mixed-methods approach has gained increasing interest among scholars in the last 20 years, particularly in the field of social sciences. Scholars who are supportive of the mixed methods approach tend to focus more on the data-collection and data-analysis processes (Bryman, 2016, p. 637). Because this approach considers the quantitative and qualitative methods as not antinomic but complementary, this more technical approach is also considered as being more pragmatic (Bryman, 2016, p.637).

It is shown in the literature that a variety of methodological approaches have been adopted to investigate the nature of tacit knowledge and its use in professional environments, whether by opting for strictly quantitative methods or for purely qualitative methods on ethnographic grounds. If both approaches present convincing advantages, the possibility offered by mixed-methods might provide a suitable pragmatic approach adapted to limited circumstances such as those within the context of this study.

### 3.3 Research design decisions

#### 3.3.1 Methodological approach

Based on the literature review and on an assessment of the research philosophies underpinning Knowledge Management research, a pragmatic interpretivist approach was chosen to allow for an examination of subjective experiences in an intra-organisational context. The key features of this approach are summarised in the Table 8 here below, followed by a diagram of the entire methodological approach (see Figure 11)

*Table 8 - Key features of the methodological approach of this study*

Feature of research design		Justification
<b>Approach</b>	Quantitative → Qualitative Sequential explanatory design  Inductive	<ul style="list-style-type: none"> <li>• Contributes to the existing dominant practice of knowledge management research in public sector settings (Massaro et al., 2015, p. 539)</li> <li>• Allows for an interpretivist perspective.</li> <li>• Reflects the philosophical standpoint that knowledge of reality is a social construction</li> <li>• Appreciates the standpoints of research participants, and situates these in the organisational landscape</li> </ul>
<b>Methods</b>	Mixed method	<ul style="list-style-type: none"> <li>• For triangulation purposes (with attention paid to risks identified by (Kane et al., 2006)</li> </ul>
<b>Research site</b>	Single case study	<ul style="list-style-type: none"> <li>• Follows dominant practice in knowledge management research in public sector settings (Massaro et al., 2015 p. 539)</li> <li>• Allows for depth of analysis within a bounded environment of a defined community</li> </ul>
<b>Data collection</b>	Two activities	<ul style="list-style-type: none"> <li>• Online survey to establish features of the participants' landscape and serve as preface for interviews, e.g. platforms available and how they are used, demographic data to profile the user population</li> <li>• Semi-structured interviews to explore individual perspectives, allowing a degree of flexibility on the part of the researcher and interviewees (recruited from survey responses)</li> </ul>

# Methodological approach

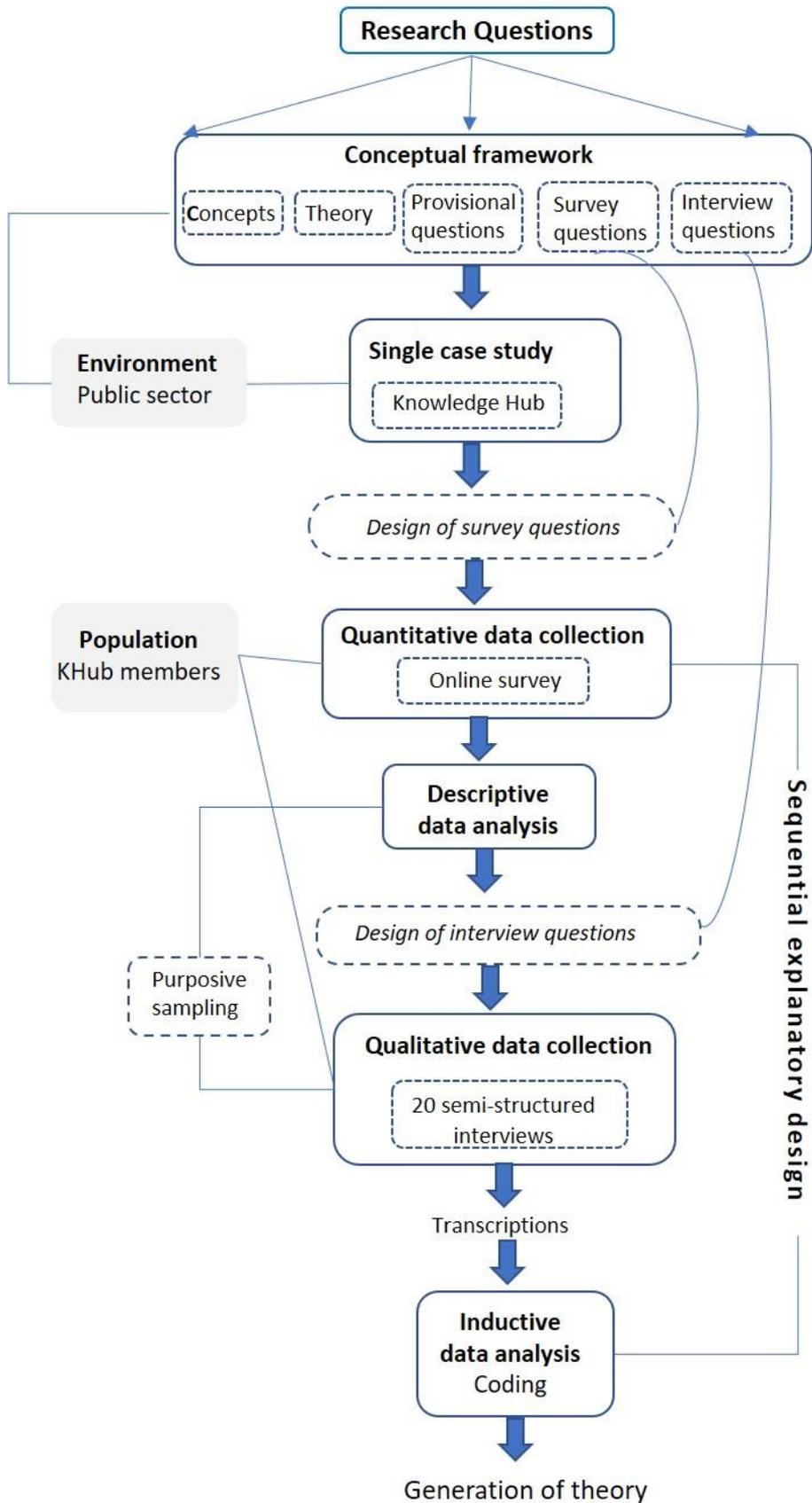


Figure 11- Methodological approach

### **3.3.2 Research questions and their empirical application**

The methodological approach viewed as most relevant within the frame of this empirical research was the deployment of mixed methods within an inductive case study. This approach takes into account the limitation imposed by the choices adopted. That is, it is a pragmatic interpretivist approach that allows for an examination of subjective experiences as explored in the literature evaluated above. This pragmatic compromise was also a way to minimise risks to the integrity of research findings. In practice, it implied undertaking an online survey followed by semi-structured interviews among selected respondents, within a limited timeframe.

A conceptual framework was derived from research questions (stated in section 2.7). Each concept was used to identify the data requirements and helped define relevant questions that could be operationalised for both the survey and the interviews used in this study, as shown in Appendix A: Conceptual framework. The criteria that distinguished between the survey questions and the interview questions depended on the data required (quantifiable or contextual). The process is illustrated in Table 9 and Appendix A: Conceptual framework.

Table 9 below illustrates the key steps in this part of the research design process.

Table 9 - Conceptual framework process by Research Questions

**RESEARCH QUESTION 1**

<b>How do social media affordances facilitate the sharing of tacit knowledge between employees?</b>				
<b>STEP 1</b>	<b>STEP 2</b>	<b>STEP 3</b>	<b>STEP 4</b>	<b>STEP 5</b>
<b>Concepts</b>	<b>Literature Review</b>	<b>Provisional questions</b>	<b>Question selected for the survey</b>	<b>Question selected for the interview</b>
<b>Social interactions</b>	Social media enable the sharing of tacit knowledge through social interactions.	Do social media enable social interactions between employees?	To what extent do you agree with the following statements? 'KHub has allowed me to discuss professional issues.'	<i>Not pursued for the interviews.</i>

**RESEARCH QUESTION 2**

<b>How do social media affordances bring new capabilities to the sharing of tacit knowledge?</b>				
<b>STEP 1</b>	<b>STEP 2</b>	<b>STEP 3</b>	<b>STEP 4</b>	<b>STEP 5</b>
<b>Concepts</b>	<b>Literature Review</b>	<b>Provisional questions</b>	<b>Question selected for the survey</b>	<b>Question selected for the interview</b>
<b>Tacit knowledge sharing &amp; social media</b>	Social media enable the sharing of experiences, feelings and emotions.	What are the social media affordances that enable the sharing tacit knowledge (i.e. experiences, feelings and emotions)?	Not pursued for the survey	What do you have to say regarding the pros & cons of using social media to share tacit knowledge?

RESEARCH QUESTION 3				
Which situated factors may provide the appropriate context for using social media to enhance tacit knowledge sharing practices?				
STEP 1	STEP 2	STEP 3	STEP 4	STEP 5
	→		→	
<b>Concepts</b>	<b>Literature Review</b>	<b>Provisional questions</b>	<b>Question selected for the survey</b>	<b>Question selected for the interview</b>
Spatial co-location of the organisation	The incursion of digital immersion coupled with the impact of mobile devices and video is having a positive impact on knowledge management.	What are the devices that employees use to undertake various tasks?	Which of these devices do you use to access these tools? Computer, Mobile computer (laptop, tablet), Mobile phone (Professional/Private)	Which social media do you use? For what purpose?

This method is based on sequential explanatory design, a two-phase process that enables the collection of quantitative data first, before collecting qualitative data based on the analysis of the first phase (in this case an online survey). The qualitative data collected in phase 2 helps in interpreting and completing the data collection of the first phase, as illustrated in Figure 12:

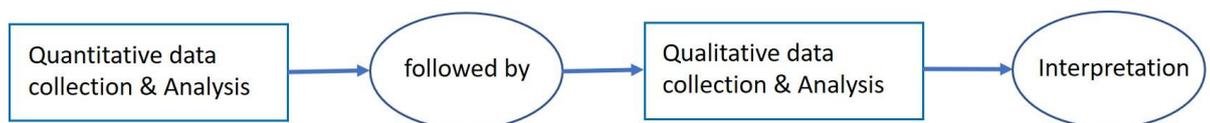


Figure 12 – Sequential explanatory design. (DeCuir-Gunby & Schutz, 2017)

The results gathered from the quantitative data collection enable the precise articulation of the questions needed for the qualitative data collection, in this case, semi-structured interviews. However, once the quantitative data are collected, questions for the interviews can be adapted again accordingly, to ensure that the qualitative data collection complements the results from the survey.

### **3.3.3 Single case study**

The research method chosen for the purpose of this study is the single case study. This method allows the study of unique cases which have not been investigated so far, or not thoroughly. In reference to the work of (Yin, 2009), the rationale for the KHub case investigated within this research is the study of a 'unique case', because the specific setting of the KHub platform, and the multiple online communities it hosts within the public sector, is indeed unique (at least within the UK).

This single case study can also be defined as an explanatory embedded case study design (Yin, 2009), for the two reasons that it involves several units of analysis: the KHub members, the KHub community (as a whole), the KHub platform (its technical features such as social media affordances) and social media tools. Hence this case study will help to answer the research questions and explain the meaning of the findings (explained in Chapter 6) in reference to the literature review. The theoretical background of this research refers to the 'theory development' that Yin (2009) states is essential to the case study design. It also contributes to the understanding of the findings, as shown in section 6.5.1.2 and 7.2.3.

To guarantee the rigour and quality of this approach, as illustrated in section 3.2.1, the four tests mentioned above have been addressed within this study.

## **3.4 Methods**

Among the approaches considered for this research was the technique of focus groups. These are often used in qualitative research. The strength of this technique lies in the possibility of exploring deeply a single topic, thanks to interactions that occur between the respondents. The answers or reactions of some participants can trigger complementary explanations from others. This can potentially enrich the data collected and allow a deeper understanding of the subject of study (Bryman, 2012, p.503-504). By providing an appropriate environment to enable the co-construction of knowledge arising from social interactions, the technique of focus groups echoes the Socialisation stage of the SECI model (Nonaka, 1994), within which the transfer of tacit knowledge occurs through social interactions. As tacit knowledge is often underestimated by individuals (Polanyi, 1966), exchanges of

comments and ideas during focus groups allow respondents to become aware of aspects that they would probably have never thought of if they were interviewed on their own.

This brings out a disadvantage of focus groups: their lack of anonymity (Bryman, 2012, p. 518). Further, depending on people's willingness to participate in focus groups, hierarchical differences between respondents, especially if they belong to the same organisation, could affect the way they express their opinions and therefore influence the reliability of their answers. This aspect could consequently bias the results (Bryman, 2012, p.518).

Hence, despite the advantages noted in this section, it appears that the use of focus groups can affect the reliability of the results. Given that the research environment is the public sector (i.e. public bodies related to government), respondents could be challenged by the constraint of holding back confidential information in the groups. The possibility of leading focus groups online was also considered for this research, especially with regard to the case study chosen for this research. However, the issues mentioned above (lack of anonymity, confidentiality) would still occur. This method of gathering data was therefore not chosen for this research.

### **3.4.1 Online survey**

The initial aim of this survey was to establish the features of the participants' landscape so that it served as a preface for qualitative interviews, e.g. platforms available and how they are used, demographic data to profile the user population. It served two purposes: (1) to gather data regarding the use of online tools and social media by the employees or users (which ones, how often, to what purpose, etc.); and (2) to identify potential respondents for the interviews. Because the population studied is an online community of users, an online survey was chosen as the most appropriate technique.

The use of Web surveys offers various advantages (Bryman, 2012):

- They get a faster response than postal questionnaires,
- There is no restriction in terms of geographical coverage

- They are low cost, opposite to postal questionnaires which require paper, envelopes, administration work and postage
- They can be more visually attractive (design-wise)
- The response rate is usually greater than with postal questionnaires
- The data accuracy is enhanced thanks to automated data entry.

### **3.4.2 Semi-structured interviews**

One of the aims of this study was to understand the extent to which social media affordances facilitate the sharing of tacit knowledge. Interviews enable researchers to explore thoroughly one or more aspects of the object(s) of study and to collect rich data that would be difficult to gather through a survey. Therefore, the method that was considered as the most appropriate was the use of qualitative interviews. Interviews enable respondents to answer questions such as 'why' or 'how' and give the possibility of taking into account the context(s) within which these answers are given (Pickard, 2007). Amongst the various types of interviews, semi-structured interviews enable researchers to guide interviews by asking pre-formulated questions, while allowing interviewees enough time and space to provide substantial answers. This form of interview is particularly suitable if the time allocated for the interview to occur is limited (which is often the case with professionals interviewed during their working hours). Semi-structured interviews also give enable researchers to interact with their respondents, either to clarify concepts or to obtain complementary information.

Semi-structured interviews also offer several other advantages: unlike unstructured interviews, semi-structured interviews allow a degree of flexibility both to researchers (who can adapt the questions initially asked if needed) and to interviewees, who are invited to express themselves freely. The structural aspect is reflected in the fact that the questions were constructed beforehand with the aim of objectively orientating the unfolding of the interview. This has also facilitated the coding of results during data analysis processes.

Reflexivity has been considered here to guarantee trustworthiness in the way this methodological approach has been undertaken and managed. It is understood and acknowledged by social science researchers who undertake similar qualitative studies using inductive approaches that they will be personally involved, to a certain extent, with the data collection and analysis (Haynes, 2012). This is particularly the case when the methodological approach includes semi-structured interviews, in which the interviewer is involved in the discussion. The personal involvements of some researchers can even be considered sometimes as a source of data itself (James & Vinnicombe, 2002). That seems to be particularly the case in ethnological or anthropological studies. However, this subjective implication does not reflect the data-collection process here, nor the data analysis. The interview protocol and the conceptual framework both contributed to the minimisation of the risk of strong subjective interpretations that would ultimately bias the results.

### **3.4.3 Sampling options**

The choice of the research environment resulted from a review of the literature that revealed a lack of studies on social media's influences on the sharing of tacit knowledge within the public sector, as mentioned in section 2.5.3.

A governmental organisation in Scotland was one environment that was considered as a case study. This choice was justified by the fact that various social media initiatives had already been introduced to facilitate knowledge-sharing among its employees. However, this option was ruled out after some managers of that organisation expressed concerns about being able to fully participate in the study, due to an intense period of work that would coincide with the implementation of data-collection plans. An organisation with teams distributed across Scotland, where the use of online technologies was considered to be mandatory, was another environment that was considered. Also, the possibility of conducting several small case studies (instead of a single large one) was not excluded. This would have secured the participation of a number of organisations, to allow for potential participant organisations withdrawing. Hence, another organisation – an executive non-departmental public body – was therefore taken

into consideration. This option was eventually not pursued as this organisation's participation could not be secured within the limited timeframe of this study.

#### **3.4.4 Survey sampling**

In order to enhance the likelihood of accessing a significant number of respondents, the Knowledge Hub (KHub) platform finally emerged as a relevant case study. KHub was originally created by the Local Government Association (LGA) in 2012 to enable its users to connect and share knowledge online. After going through several managerial changes, the KHub became an independent company run by four organisations: the LGA, the Society of Local Authority Chief Executives and Senior Managers (Solace), the Society of Chief Information Technology Managers (Socitm) and the Improvement Service in Scotland. The Improvement Service is the publicly-funded national improvement organisation for local government in Scotland. Amongst the range of products and advisory services it provides are consultation and facilitation, training, performance management and improvement, and research. KHub is a significant element of that work, and, in Scotland, the Improvement Service is responsible for the delivery of this online social platform. KHub is now a self-funded national online platform dedicated to public service conversations across the UK and is the UK's largest cross-organisational public sector online collaboration platform. Its members are employees working across hundreds of public service organisations. At the time of writing, an estimated number of more than 120,000 members are registered, each taking part in at least one of the 2000 online communities freely available online. The aim of this platform is to help its members and communities to share knowledge and foster discussions so that work efficiency is enhanced. It is an online virtual space in which members can cooperate, exchange knowledge, ideas, insights and experiences, with the aim of continuously improving the quality of public services. This platform also provides access to several online tools and resources online, including forums, wiki, video clips, and a library. These facilities are offered free of charge to support knowledge sharing amongst public sector workers – as individuals and as communities of practice – with the ultimate aim of promoting continuous improvement in UK public service delivery. The majority of KHub's membership belongs to by various UK public and third sector bodies

organisations such as national and local government, and providers of social services, and charities. Members work across a wide range of sectors such as health, education, housing, police, fire services, and professional membership associations. Given the number of users, community managers are needed to look after the platform to ensure its proper working.

The choice of undertaking a survey of KHub members derived from the need to gather data about the use of social media tools by employees, and on the effects of such tools on their knowledge sharing practices. This option was initially discussed with the KHub manager at the Improvement Service. His interest in this approach was evident from the very beginning of the study, as he acknowledged the reciprocal benefit for both stakeholders, namely the Improvement Service and Edinburgh Napier University, where he had studied. Indeed, gathering data for this study would also provide the opportunity for the KHub management team to obtain information relevant to the development of their platform.

To access a manageable amount of data for analysis, the decision was taken to survey a section of the KHub membership; given the location of the research team, a survey of members of KHub active in Scotland was deemed appropriate. Moreover, the population studied is an online community of users that happens to be a captive audience.

### **3.4.5 Interviews and purposive sampling**

Purposive sampling is a nonprobability sample design, which consists of making a selection of specific aspects of the population targeted. These must tally with the objectives of the study, using particular inclusion and exclusion criteria (Daniel, 2012). The subtype of purposive sampling chosen for the sake for this study is the one that uses the criteria based on 'central tendency' with a 'typical case sampling' which consist of selecting aspects with the 'highest frequency of occurrence' (Daniel, 2012).

Purposive sampling presents several benefits, such as providing more control over who will be included in the sample. To target a population based on the central tendency criteria allows selection of a relevant population that will fit the purpose of data-collection to answer research questions. This also helps to reduce the selection bias.

There are several drawbacks of purposive sampling that cannot be ignored. For instance, it can reduce the possibility of making valid generalizations beyond the selected population. In certain cases, it may also require a substantial amount of resources (time, money) to find the appropriate population. Bias due to incorrect information provided by the targeted population is also possible. However, with regards to this study, none of these drawbacks were an issue: the necessity to choose respondents who were heavy users of social media was relatively easy to detect based on the data provided by the survey, no supplementary resources were required, and the information was considered as reliable based on the results of the survey (Daniel, 2012).

## **3.5 Research design implementation**

### **3.5.1 Scholarly work assessment**

From the beginning of this study and throughout the entire research, an evaluation of the literature was undertaken to access, find and use relevant academic literature that would not only serve the literature review but also provide an academic basis to the entire research. The aim of such process was to find reliable, accurate and up-to-date material on the various topics addressed within the study. The assessment of scholarly work helped to underpin information, statements and arguments on specific themes, to identify areas of controversy, to find various methods that have been used within the scope of the research, and to clarify neighbouring concepts that are related to the main themes addressed within the scope of this research.

This ongoing and iterative process required the use of specific methods and tools. To that end, a systematic search of academic papers was undertaken by using

academic databases such as ABI/Inform, Library & Information Science Abstracts (LISA) and Social Science Database. This helped by identifying journals relevant to the themes studied, such as the *International Journal of Knowledge Management*, *VINE journal of information and Knowledge Management systems*, and the *Electronic Journal of Knowledge Management* (EJKM). In order to evaluate the impact of some specific articles, the Social Science Citation Index provided access to some relevant indicators such as the h-Index<sup>4</sup>.

### **3.5.2 Empirical data collection**

The online survey was designed with regard to the criteria mentioned above, and in agreement with the KHub managerial team's strategic objectives. To ensure the questionnaire's reliability and quality, a pilot survey was first sent to four people (three academics and one professional). This online questionnaire was then tested in several successive stages by colleagues from the School of Computing, by selected KHub users, and finally by employees of the Improvement Service once the survey was launched. The feedback was taken into account to update the questionnaire into its final version.

#### **3.5.2.1 Online survey**

The survey had four different sections:

- Consent form and ethical approval
- Questions from the literature review, along with questions from the KHub management team, in order to collect data that would help them with future developments<sup>5</sup>
- Demographic questions, to provide information that would help identify potential respondents for the interviews (type of organisation, function, localisation)
- Invitation to participate in further interviews

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<sup>4</sup> The h-index is based on a list of publications ranked in descending order by the Times Cited count (Social Sciences Index)

<sup>5</sup> Some of these questions were merged with the questions for this study, while others were purely technical to help the development of the platform.

The software used to build the online survey was Smart Survey, for which KHub holds a professional licence. The option of using the official software from Edinburgh Napier University (NoviSurvey) was discarded, because the KHub management feared it would discourage respondents from answering, adversely affecting the response rate. A collaborative approach to the research design resulted in the decision to build the survey using the Improvement Service's licensed Smart Survey software. Smart Survey is regularly used by the Improvement Service for on-going engagement work with the KHub community, and thus the membership is familiar with its look and feel. Smart Survey is also widely used by international and national organisations. In order to respect the 'Code of Practice on Research Integrity' published by the Edinburgh Napier University (2013), an agreement letter was written and acknowledged by both stakeholders (KHub management team and the School of Computing) to guarantee the anonymity of the respondents and the confidential access to the data. The vocabulary used to articulate the questions was agreed by the KHub management team. For instance, the term 'Knowledge' was used in the survey to help respondents understand what was meant by 'expertise', because many of them work in public sector organisations that are known to be 'knowledge organisations'.

The survey was launched on the 11<sup>th</sup> of July 2016 and sent as a hyperlink by e-mail to the 17,000 members of the Scottish Knowledge Hub platform. (According to the manager of the platform, around 4,250 are contributing users. A reminder was sent on the 22<sup>nd</sup> of August to inform the online community on the survey closure deadline. The survey was closed on the 26<sup>th</sup> of August 2016.

Access to the section of Scottish members of KHub was facilitated by the Improvement Service management team, located in Scotland. The aim was to get direct access to all KHub members working in public services institutions in Scotland, to enhance the chances of having a reliable response rate, and eventually, to select enough individual members who could take part in the interviews.

There were altogether 1062 responses to the survey, so the response rate was 6.24%. Among the completed surveys, 102 people expressed interest in taking part

in interviews. An executive summary of the preliminary results, initially written for the KHub manager, enabling the evaluation to what extent the research questions have been answered.

Because KHub (i.e. the Improvement Service) would own the data, an agreement was made to give Edinburgh Napier University full access to the data during the study. While the presentation of the survey made it obvious that it was disseminated by the Improvement Service, the academic credentials of the study were emphasised in the invitation to complete it. This was to ensure that the participants understood the academic nature of the work.

The survey questions (see Appendix B: Online survey questionnaire sample) were set out in the form of statements. Participants were invited to state the extent of their agreement with each statement on Likert scales (one per statement). For instance, respondents were asked to indicate their level of agreement with the following statement: '*KHub helps me to do my work with more efficiency*'. Matrix-type questions were also used to gather additional detail. Here respondents were invited to indicate the tools and/or services that they use on KHub (for example, messaging, wiki, forums) and their purpose (for example, to develop learning, or request help).

### **3.5.2.2 Interviews**

Following the sequential explanatory design mentioned earlier, the construction of the qualitative semi-structured interview was facilitated by the analysis of the survey results, and by referring to the conceptual framework. The interview questions were designed to fulfil two aims: (1) to expand understanding of the survey results; (2) to help fully answer the research questions, by asking questions which referred to concepts that were not addressed in the survey. To that end, an interview guide was created to facilitate the elaboration of the questions (see Appendix C: Interview guide (sample)).

The access to the survey results of the twenty interview respondents also helped to ask more relevant and targeted questions when needed. For instance, if a survey question was mostly answered 'Neither disagree nor agree', there was the possibility of directly asking the respondents to explain their answers.

*Table 10 - Semi-structured interview questions.*

Themes	Semi-structured interview questions
KHub and tacit knowledge sharing practices	<ul style="list-style-type: none"> <li>▪ What motivated you to join Knowledge Hub and why?</li> <li>▪ What are the main reasons why you're using KHub now?</li> <li>▪ How does KHub help you doing your work?</li> </ul>
Social media usage	<ul style="list-style-type: none"> <li>▪ Why are you using social media?</li> <li>▪ For what purpose?</li> <li>▪ How does social media help you do your work?</li> </ul>
Open-end questions on tacit knowledge sharing	<ul style="list-style-type: none"> <li>▪ What do you have to say regarding the +/- of using social media to share tacit knowledge?</li> <li>▪ Are there any reasons why you would not share your tacit knowledge through social media?</li> <li>▪ Generally speaking, do you prefer to share tacit knowledge online or face-to-face?</li> <li>▪ Do you see a difference between sharing your knowledge online vs face-to-face?</li> <li>▪ If you would like to discuss a sensitive issue, how would you preferably do that?</li> <li>▪ Is there anything else you would like to add?</li> </ul>

To ensure the interviews' reliability and quality, pilot interviews were held with two people (one academic and one professional). Their feedback was taken into account to update the interview questions to their final versions.

Prior to each interview, respondents received a reminder of the research topic, including a short explanation of the two main concepts that would be addressed during the meeting: the cognitive and technical dimensions of 'tacit knowledge', the KHub platform, and social media tools. To facilitate understanding of the cognitive and technical dimensions of tacit knowledge, the following schema was shown and explained to each respondent at the beginning of the interview:

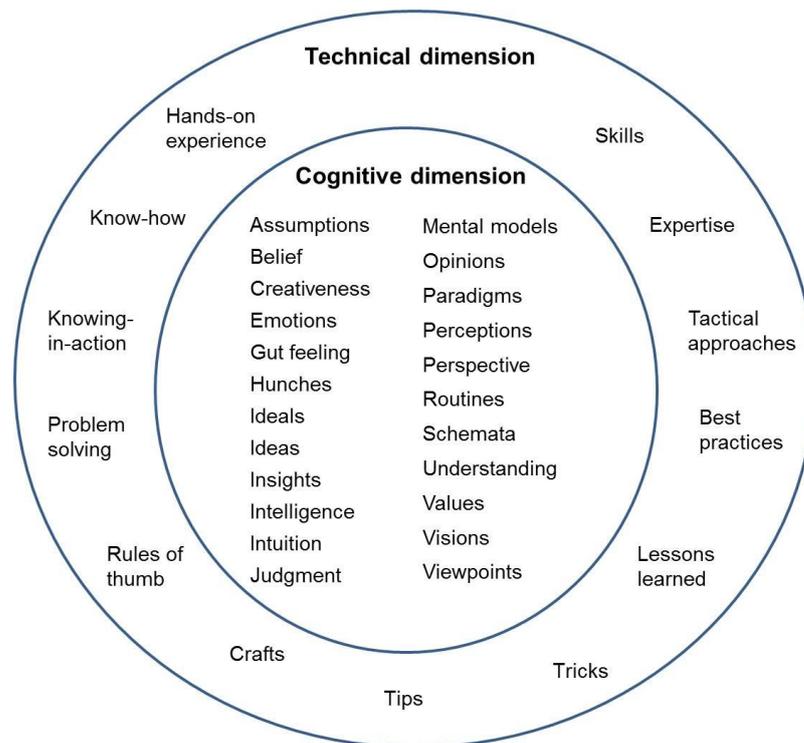


Figure 13 Tacit knowledge examples in Nonaka's two dimensions (adapted from Nonaka, 1994)

The interviews took place between November 2016 and March 2017, either face-to-face (in Edinburgh or in other cities in Scotland), or online by using a video-conferencing tool (Skype or WebEx). Interviews were recorded on two different recording devices so that one of them would be used as a back-up in case the other one malfunctioned<sup>6</sup>. Prior to each meeting, a consent form was given to the respondent in which the approval for the recording of the interview was required. Respondents were reminded that they were not obliged to answer questions if they did not wish and that they could withdraw from the study at any time. After a brief explanation of the research aims, the respondents were invited to answer a few general questions (for example, their name, professional positions, and professional responsibilities). The aim was to invite them to start talking about their professional experience, leading to a conversation about their general use of social media tools. The second part of the interview addressed questions specifically related to the sharing of tacit knowledge, and how social media were supportive of this process.

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<sup>6</sup> The recording devices were a portable recorder provided by the School of Computing and a personal iPhone. After each meeting, the data was saved on the Edinburgh Napier University server.

The third and last part included more open-ended questions, allowing the respondents to provide any complementary knowledge that they thought could be relevant.

An explanatory diagram about tacit knowledge was also available for them during the interview as support. A conceptual grid served as a guideline to track the various concepts addressed by the respondents by the interviewer.

### **3.5.2.3 Interview sampling**

Survey respondents were invited to provide their contact details if they agreed to be interviewed. 102 survey respondents indicated that they would be willing to take part in follow-up interviews. Sampling of respondents for the interviews was made soon after survey data-collection was finished, in late summer 2016. The sampling strategy chosen was 'criterion sampling', a purposive type of sampling commonly used in qualitative studies (Palys, 2012), as explained in section 3.4.5.

The criteria that were considered related to social media usage, age range (e.g. 25-34 years old), and professional positions (e.g. Chief Officer, Middle Manager, Officer/Front-line service). Only heavy users of social media tools were considered for interview in order to investigate further the influence of online social platforms and social media tools (in particular) on tacit knowledge sharing practices. Hence respondents who were willing to be interviewed were ranked according to the number of social media tools they used, and their self-reported frequency of KHub use. Those who ranked highest were invited to interview. This process recruited 20 individuals from the top ninety-four survey respondents listed. These twenty selected respondents all came from public sector organisations, with a majority working for local governments or the Scottish government itself. Others worked in a public health organisation or in higher education institutions. The demographic profiles of the respondents are described in detail in Chapter 5.

### **3.5.3 Data analysis**

#### **3.5.3.1 Analysis of survey results**

The survey responses were analysed to explore the place of KHub in the participants' information landscapes, and the affordances offered by social media therein. In addition, indicative demographic data provided by the respondents were useful for profiling the user population. Descriptive statistical analysis of responses to a subset of the survey questions brought out the main findings, as reported in Chapter 4)

This selective approach enabled clear and straightforward reporting, and also aided transparency in the interpretation of the data of significance to the research themes. By providing quantitative measures and graphical representations, descriptive statistics enable synthesis of the data in a practical form (Frey, 2018), and allow identification of how the data needs to be completed by, in this case, qualitative data.

Because the survey was undertaken using the professional version of the Smart Survey software, the data was accessible in various forms. For instance, the raw data was available in an Excel file, which could then be examined either with data analysis software (e.g. SPSS), or manually by displaying charts or histograms when relevant. Predefined statistics and visual representations are other features provided by Smart Survey. This enabled quick access to the data. For the purpose of this study, it was decided to use Excel, and to visually represent each question's responses individually.

#### **3.5.3.2 Analysis of interview results**

The data analysis process involved coding the textual transcription of the audio-recorded interviews. This was undertaken both manually (in the first instance) and with NVivo software. The codes were based on the concepts addressed in the literature review. This methodological approach follows grounded theory methods, where systematic and flexible guidelines to the collection and analysis of data are applied, and theories are later constructed (Charmaz, 2014).

Grounded theory is an analytical approach broadly used in social sciences for analysing qualitative data. Several approaches, understandings and applications of grounded theory exist and have been intensively debated in the literature. The debate usually refers to the work of Glaser and Strauss (1967), and to their distinctive approaches, to the extent that researchers adopt either a Glaserian or a Straussian version of the grounded theory. The discussion usually relates to the degree of flexibility allowed in the analytical process, and whether the data truly generates theories, and not only concepts (Bryman, 2012). Beyond this theoretical argumentation, it is acknowledged that despite the difficulty of finding only one definition of what grounded theory is (Charmaz, 2014), there are specific characteristics which define it distinctively. These are a set of procedures, which are explained below.

The concepts defined within the conceptual framework were used as categories and increasingly complemented with new ones as new concepts emerged during the data-analysis. This approach enabled respect of the initial conceptual framework while adopting new categories that could not have been foreseen before the start of data-collection. The number of occurrences of specific codes was used to evaluate how significant was each concept. This process is explained in more detail below.

One of the main processes used in grounded theory coding. The data collected is interpreted and coded into various concepts (labels), organised in thematic categories of various levels (sub-categories). This iterative process is done until a 'theoretical saturation' is reached (Bryman, 2012)(Bryman, 2012), implying that no more interpretation is needed. For the purposes of this study, this analytical process was first made in an inductive way, without necessarily referring to the conceptual framework, to allow some flexibility and space for potential new concepts to emerge.

This coding practice is, according to the work of Strauss & Corbin (1990), at the intersection between 'open coding' and 'selective coding'. Memos were also used along the way to remember the meanings given to some of the concepts and facilitate the reflection process needed for the generation of theories and

contributions. This process was facilitated by the software NVivo which allows colour-coding of words, sentences, or paragraphs within the transcriptions of each interview along with the attribution of a pre-defined semantic coding (see Appendix D and E).

The analytical process is as follows:

1. Setting of temporary categories based on the conceptual framework
2. Setting of potential/expected categories based on a pre-analysis of the interviews
3. Coding of the interviews based on the temporary categories, potential/expected categories, and creation of new concepts later sorted in new categories.

### **3.6 Ethical aspects**

The qualitative work in this research entailed direct interviews with employees. Therefore, ethical issues were taken into consideration. To address these ethical issues, the empirical work was undertaken in accordance with the 'Code of Practice on Research Integrity' published by the Edinburgh Napier University (2013).

Ethical issues are usually most sensitive within the fields of health and psychology. However, some aspects regarding the specific context of organisations belonging to the public sector are nonetheless important. Even though it was believed that it was unlikely that any harm would be done in the process of this research, potential lack of informed consent or potential invasions of privacy could not be overlooked. Therefore, prior to all semi-structured interviews, participants were asked to sign a comprehensive consent form. This gave them the opportunity to be fully informed of the nature of the research. If any participant had not signed his or her form, he or she would not have been interviewed or included in the findings in any way. However, such refusals did not happen.

Concerns about privacy implied that anonymity and confidentiality needed to be ensured. This was not only relevant to the employees themselves who would probably share their experiences of potentially sensitive information, but also to

the Improvement Service in regard to data protection. Several guidelines provided by the UK government were followed<sup>7</sup>.

### **3.7 Chapter conclusion**

The methodological approach that was chosen in this study for data collection employed a mixed method (combining both quantitative and qualitative aspects), with a stronger emphasis on qualitative data, and hence on qualitative data analysis. This mostly inductive approach was deemed to be the most pragmatic, in regard to the research questions and to the context within which this study was undertaken.

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<sup>7</sup> Improvement Service's privacy statement: <http://www.improvementservice.org.uk/privacy-statement.html>

## **4 Survey findings**

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### **4.1 Introduction**

The questionnaire was designed to discover the attitudes of the members of the online platform Knowledge Hub (KHub) towards knowledge-sharing practices. (The larger community of KHub members in the rest of the UK was deliberately excluded.) As mentioned in the Methodology chapter, most of the questions asked in the online questionnaire were generated following insights from the literature review. The questions belong to three categories: (1) questions that were designed to address this study's research questions (RQs) – these constituted the main part of the questionnaire; (2) supplementary questions added at the request of the KHub management team to collect data that would inform them on possible future developments of the platform; and (3) demographic questions to understand respondents positions and organisations.

### **4.2 Findings of the online questionnaire**

The results of the survey questionnaire are presented in this chapter. They are broken down into the following three broad sections: demographics, digital landscape and research questions.

#### **4.2.1 Demographics**

In agreement with the KHub management team, it was decided to collect data in order to get an overview of users' demographic profiles. These are summarised below.

#### 4.2.1.1 Gender distribution

More than half of the respondents are female (58%), while 41% of them are male. Only 1% preferred not to specify their genders.

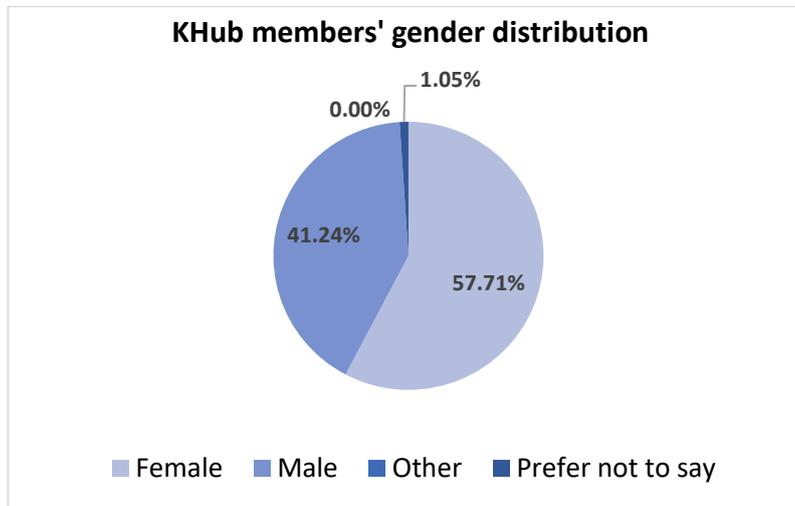


Figure 14 – Demographics - KHub gender distribution

#### 4.2.1.2 Age range

As can be seen in the chart below, more than third (42%) of respondents were aged between 45 and 54 years old when answering the questionnaire. This is the biggest tranche of the respondents. Just over a quarter (27%) of respondents were aged between 55 and 64 years old, and less than a quarter (20%) were aged between 35 and 44 years old. Fewer than 10 per cent (8%) were aged between 25 and 34 years old.

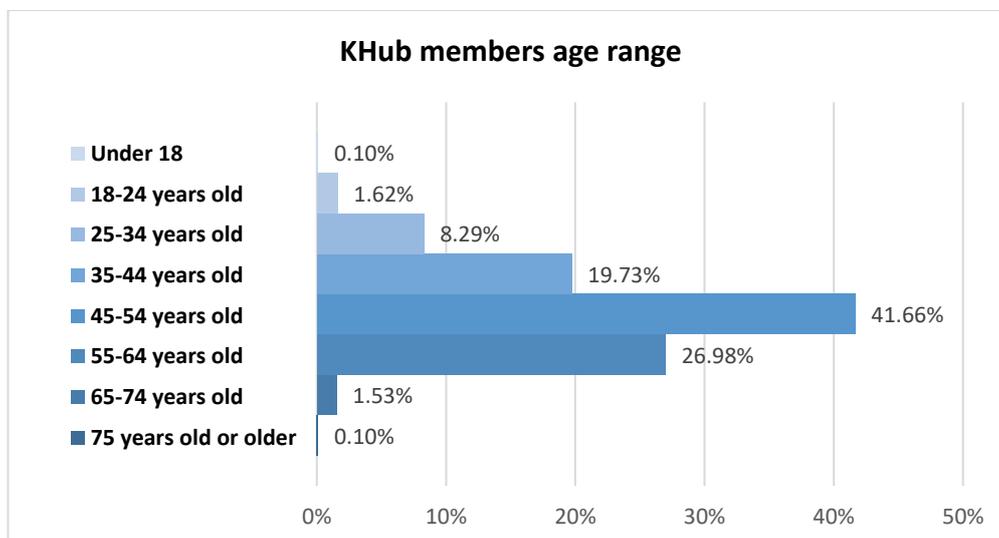


Figure 15 – Demographics – KHub age range

#### 4.2.1.3 Professional positions

The majority of respondents were officers/in front-line service delivery (36%) or as 'middle managers' (35%). Fewer than a quarter (16%) of respondents were front-line manager or supervisors.

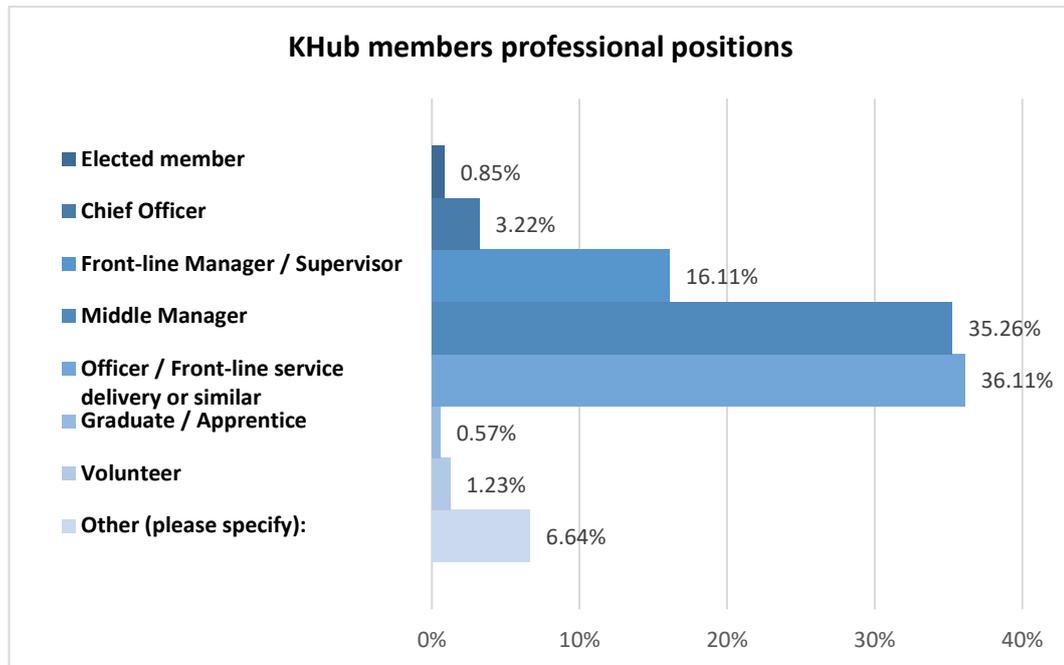


Figure 16 – Demographics – KHub professional positions

#### 4.2.1.4 Professional sectors

A majority of respondents (57%) worked in local Government, while 13% worked for the Scottish Government, and 12% worked at the NHS. The small percentage of respondents who worked in the private sector can be explained by the fact that Knowledge Hub is mainly used within the public sector.

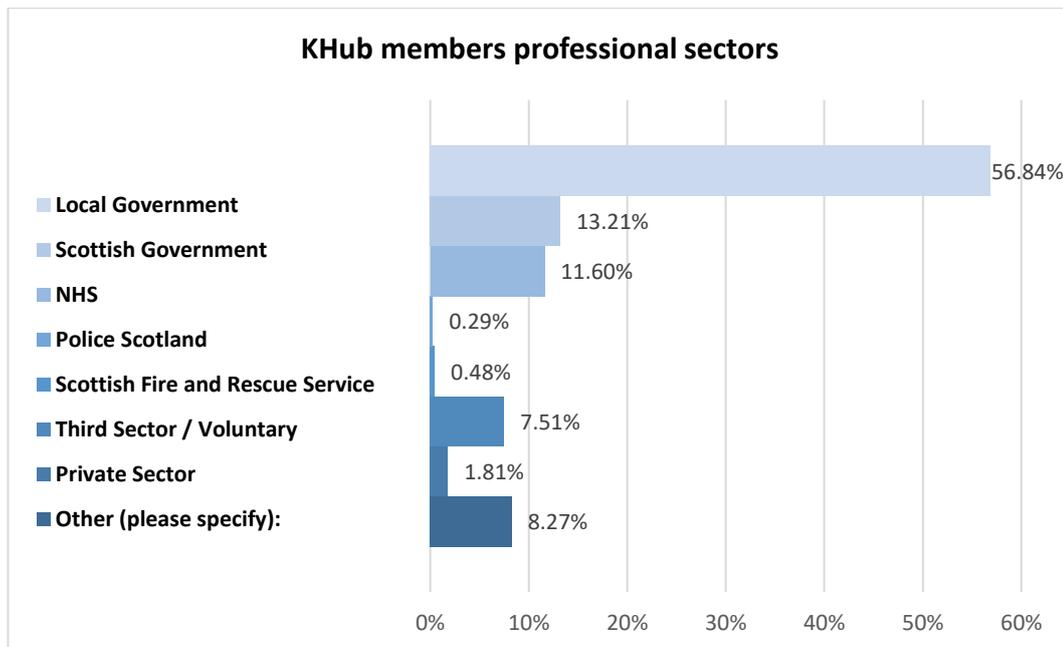


Figure 17 – Demographics - KHub professional sectors

## 4.2.2 Digital landscape

In agreement with the KHub management team, it was decided to collect data in order to get an overview of users' digital landscapes, i.e. their use of KHub and other social media tools. These data provide a better understanding of the context within which KHub members use digital tools.

### 4.2.2.1 KHub frequency of use

Fewer than a third (30%) of KHub members use the platform at least 2-3 times a week, and slightly less than a third (32%) use it about once a month. Less than a quarter (20%) use KHub 2-3 times a month. Only 6% of respondents use KHub every day. More than a tenth of members (12%) were new members at the time of the questionnaire.

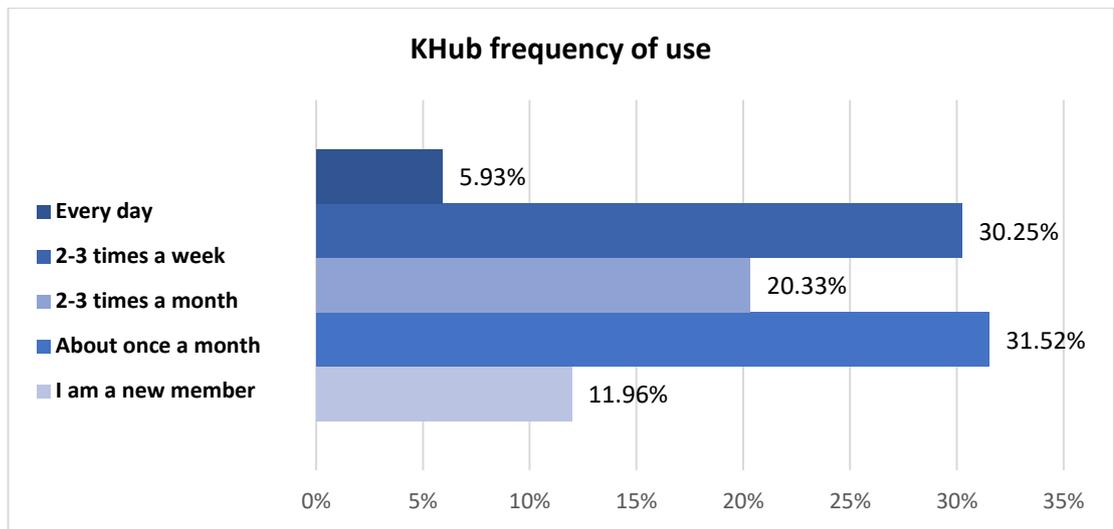


Figure 18 - KHub frequency of use

More than a third (36%) of the members use KHub either every day or 2 to 3 times a week. Comparatively, more than half of KHub members (52%) use the platform once or 2 to 3 times a month.

#### 4.2.2.2 KHub usage by location

KHub is primarily used at the office (58%), while one quarter of respondents (24%) use it from home. A small percentage of respondents (4%) access KHub while commuting and even fewer access it while they are in public spaces (3%).

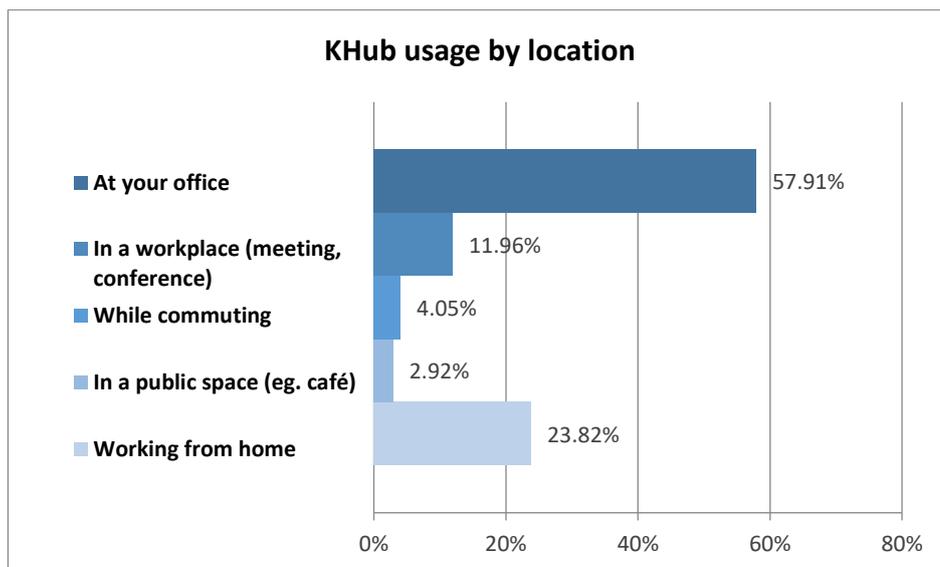


Figure 19 - KHub usage by location

#### 4.2.2.3 KHub usage by devices

Almost a third (60%) of KHub members use the platform on desktop computers, which correlates with the number of members who use the platform at the office as indicated above.

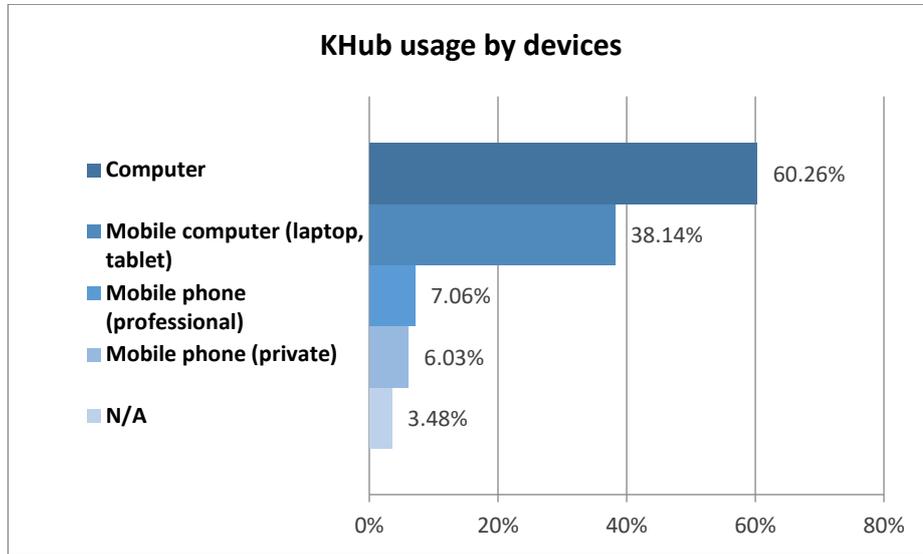


Figure 20 - KHub usage by devices

#### 4.2.2.4 Profession and KHub usage frequency

To test the relationship between the 'Professional positions' and 'KHub usage frequency', one-way ANOVA test was conducted.

Professional positions	KHub usage frequency					Total	
	Every day	Two-three times a week	About once a month	Two-three times a month	I am a new member		
Officer/Front-line service delivery	Count	31	133	109	71	24	368
	%	8.4%	36.1%	29.6%	19.3%	6.5%	100.0%
Front-Line Manager/Supervisor	Count	9	34	55	38	28	164
	%	5.5%	20.7%	33.5%	23.2%	17.1%	100.0%
Middle Manager	Count	15	114	121	76	38	364
	%	4.1%	31.3%	33.2%	20.9%	10.4%	100.0%
Elected Member/Chief Officer	Count	1	12	13	10	14	50
	%	2.0%	24.0%	26.0%	20.0%	28.0%	100.0%
Total	Count	56	293	298	195	104	946
	%	5.9%	31.0%	31.5%	20.6%	11.0%	100.0%

Table 11 - Profession and KHub usage frequency

As shown in Table 9, the following respondents' professional positions use Knowledge Hub at least two to three times a week:

- 44.5% of Officer/Front-line staff
- 26.2% of Front-Line managers and supervisors
- 36.4% of Middle managers
- 26.0% of Elected members and chief officers.

Using the one-way ANOVA test, the relationship between profession and frequency of using KHub is found to be statistically significant  $F(3, 942) = 10.99, p = .000$ . The Scheffe post hoc test shows that the significant difference in mean scores is between 'Officers/front-line staff' and all other groups: 'Front-line managers' ( $p < .001$ ), 'Middle Managers' ( $p < .050$ ), 'Elected Members' ( $p < .001$ ).

### 4.2.3 Research question 1: how do social media affordances facilitate the sharing of tacit knowledge between employees?

#### 4.2.3.1 Learning process

The analysis of survey data suggests that the online social platform KHub supports the learning process. More than half of the respondents (58%) agreed (49%) or strongly agreed (9%) with the statement '*On Knowledge Hub I find it easy to develop my learning*', while a smaller percentage of the respondents (12%) disagreed (9%) or strongly disagreed (3%) with that statement.

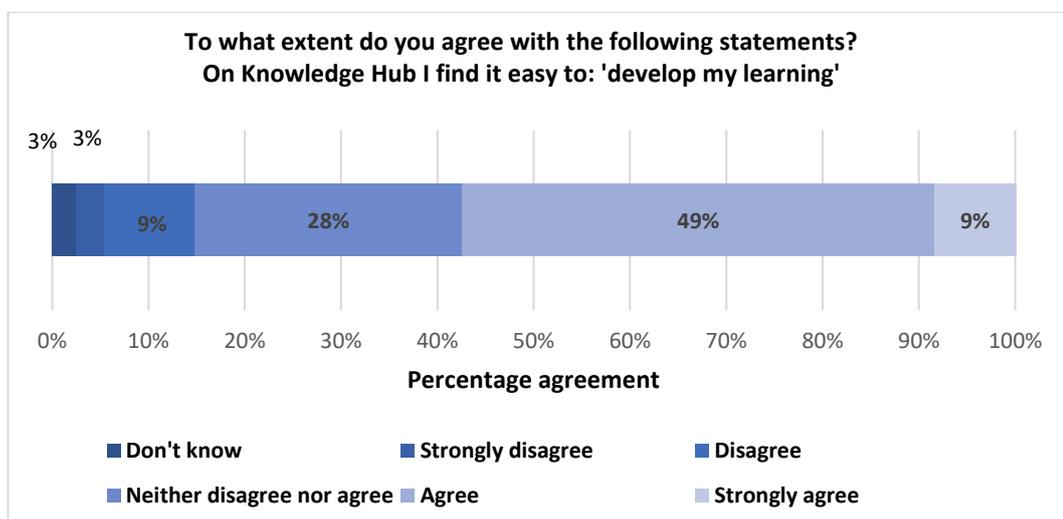


Figure 21 - KHub learning easiness

A majority of respondents confirms that the usage of the KHub platform enables them to develop their learning and that this process is facilitated by the platform.

#### 4.2.3.1.1 KHub features used to develop the learning process

Several technical features are available on the KHub platform. These mainly facilitate social interactions between members, but they also support working practices. When asked about "Which of these KHub tools or services have you used and for what purpose?" the main features that are indicated by the members to develop their learning are the Forums (35%) and the Groups (32%). Both groups and forums were equivalent to virtual Communities of Practice that allow people to interact and discuss various issues related to their professional practice. Another much used feature is the Library (24%), a virtual space that enables people to share documents in support of their discussions. The use of e-mail (usually sent as automatic notifications or newsletters) is the fourth-most preferred feature (20%).

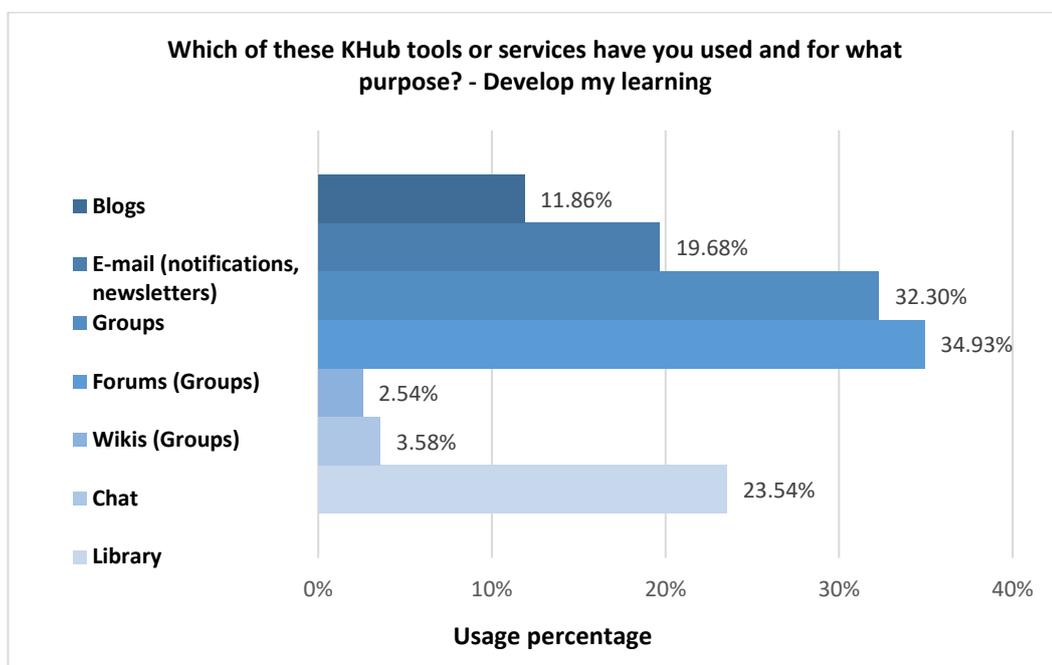


Figure 22 - KHub tools/services for learning development

Prior surveys undertaken about KHub's members' satisfaction had already mentioned that the lower use of Wikis and Chat stem from their lack of visibility on

the platform. However, they could also be perceived as a lack of the digital and technical skills required to use such tools, particularly the language used to add information to wikis.

#### 4.2.3.1.2 Preferred ways to develop learning

Almost two thirds of respondents indicated that their preferred way to develop their learning is 'Face-to-face' (60%). Respondents then ranked social media platforms as their second preferred way (53%) and particularly KHub (49%). This emphasises how much online social platforms prevail over other more traditional ways of communication such as e-mails (28%) or phone-calls (18%), for the development of learning.

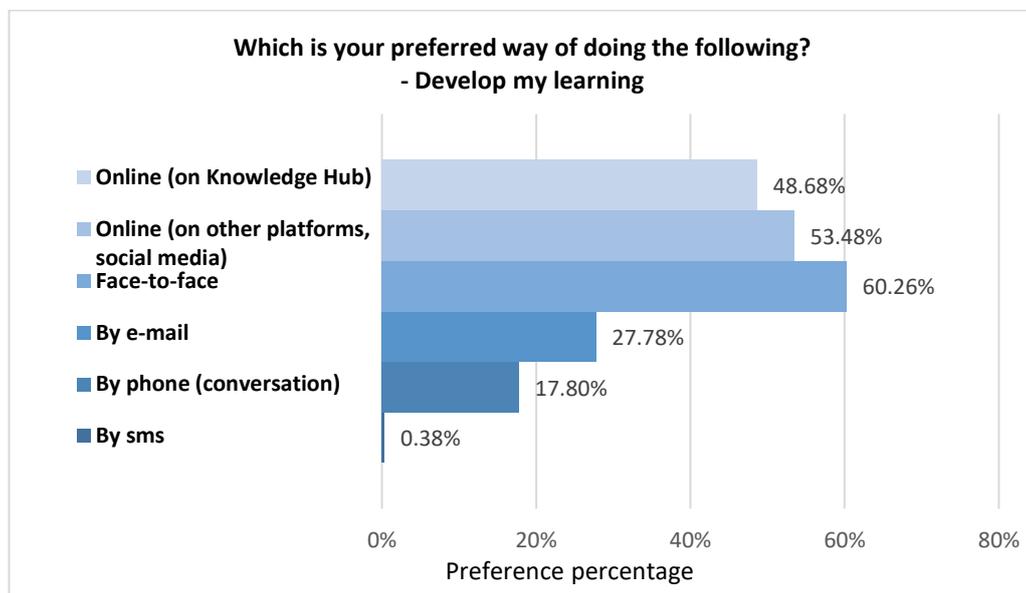


Figure 23 - KHub tools learning development usage

The preference of face-to-face communication as a way to develop the learning process indicates that this mode of communication is the most efficient channel for sharing tacit knowledge. However, this does not diminish the appreciation of KHub members of online social media or platforms.

#### 4.2.4 Initiation of informal and professional discussions

The questionnaire was designed to allow for investigation of the role of KHub in the initiation of both professional and informal discussions. This topic was

explored through two questions. The first one addressed KHub’s position as a platform for both professional and informal discussions. The other examined the specific communication tools used for these discussions in more detail. It is clear that the platform does support such discussions through the provision of a range of useful tool, as can be seen in Figure 24.

KHub provides functionality that enables users to discuss professional issues. While there is overall strong agreement on this point, the agreement is not unanimous and the data suggest a degree of diversity of opinion. Almost two-thirds (65%) of the respondents agreed (11%) or strongly agreed (54%) with the statement ‘Knowledge hub has allowed me to discuss professional issues’, while a minority of respondents disagreed (8%) or strongly disagreed (3%).

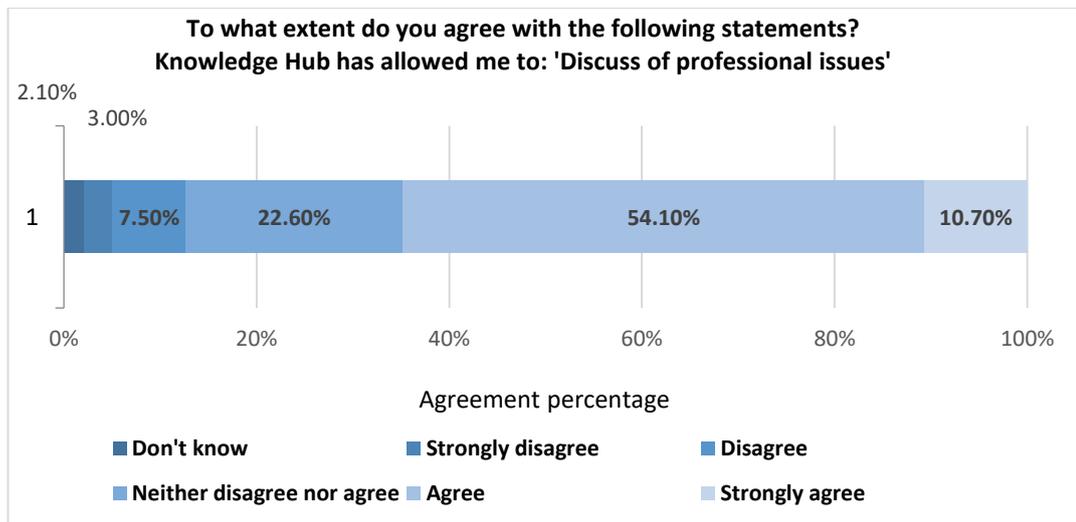


Figure 24 - KHub professional discussions easiness

Almost half (49%) the respondents agreed (44%) or strongly agreed (5%) with the statement ‘Knowledge Hub has allowed me to have informal discussions. A small percentage of the respondents (14%) disagreed (11%) or strongly disagreed (3%) with that statement.

KHub also plays a role in enabling informal communication between users:

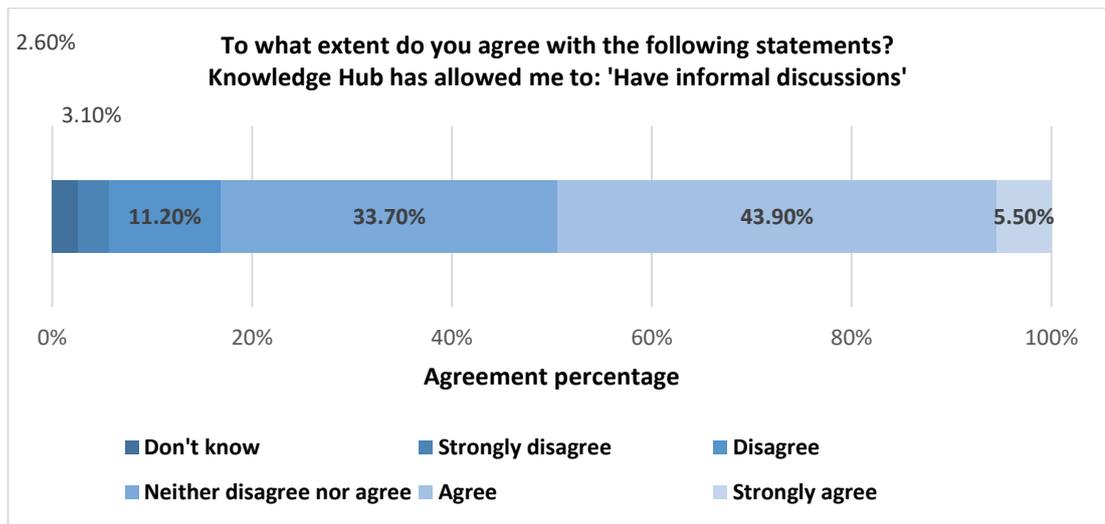


Figure 25 - KHub informal discussions

The data on informal and professional discussions indicate that these are both supported on KHub. As might be expected, there is a greater percentage of members who use KHub for professional discussions, because that is KHub's primary role. However, the data on informal discussions show that KHub provides a 'safe space' for members to indulge in such discussions.

#### 4.2.4.1.1 KHub tools used to have discussions

As shown in the chart below (Figure 26), Groups and Forums are used respectively by a third (32%) or more than a third (38%) of respondents for discussions with other KHub members. The use of email is significantly lower (12%). This can be explained by the fact that emails are used on KHub to notify members about specific information or newsletters. They initiate dialogue only if members reply to them or forward them to other members. The Chat (online messaging tool) is used by only 6% of respondents, and the Blog only by 4%. At the time of the questionnaire, these tools and the wiki were not strongly advertised by the KHub team, with the possible consequences that KHub members either ignored them or did not know they existed.

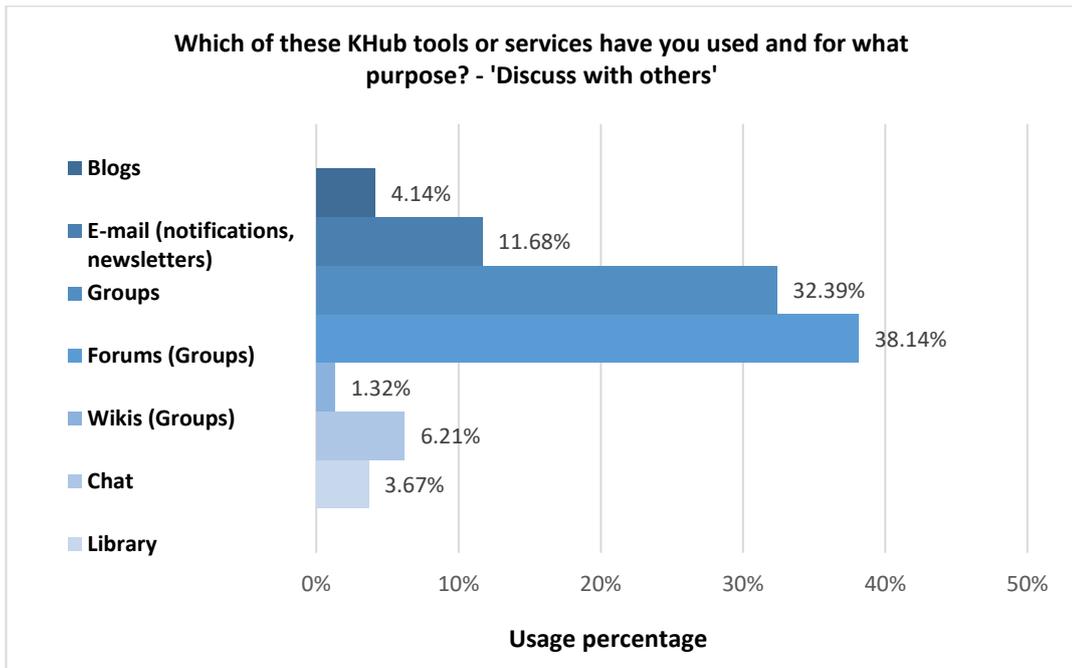


Figure 26 - KHub tools to discuss with others

#### 4.2.5 Expertise sharing

More than half of the members have confirmed that it is easy to share their expertise on KHub. As seen in the chart below, over half (58%) of the respondents agreed (51%) or strongly agreed (7%) with the statement 'On Knowledge Hub I find it easy to share my knowledge and expertise'.

In contrast, a small percentage (11%) of the respondents disagreed (8%) or strongly disagreed (3%) with this statement.

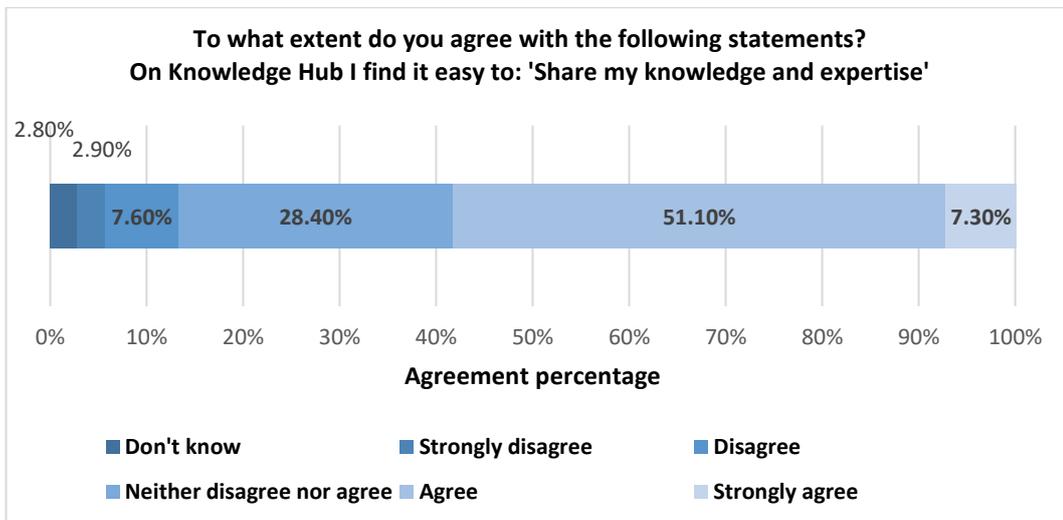


Figure 27 - KHub Knowledge & Expertise sharing easiness

#### 4.2.5.1 Preferred ways of sharing knowledge and expertise

It is apparent from the graph below (Figure 28) that face-to-face interactions are the preferred way (64%) to share their knowledge and expertise. It might seem surprising that the second preferred way to share knowledge and expertise was by e-mail (47%), i.e. more than on KHub (41%), but this comes from KHub emailing community-members when new online conversations have occurred in their community. Technically, the conversation can move from the platform to email conversations, though that might not include the entire group network.

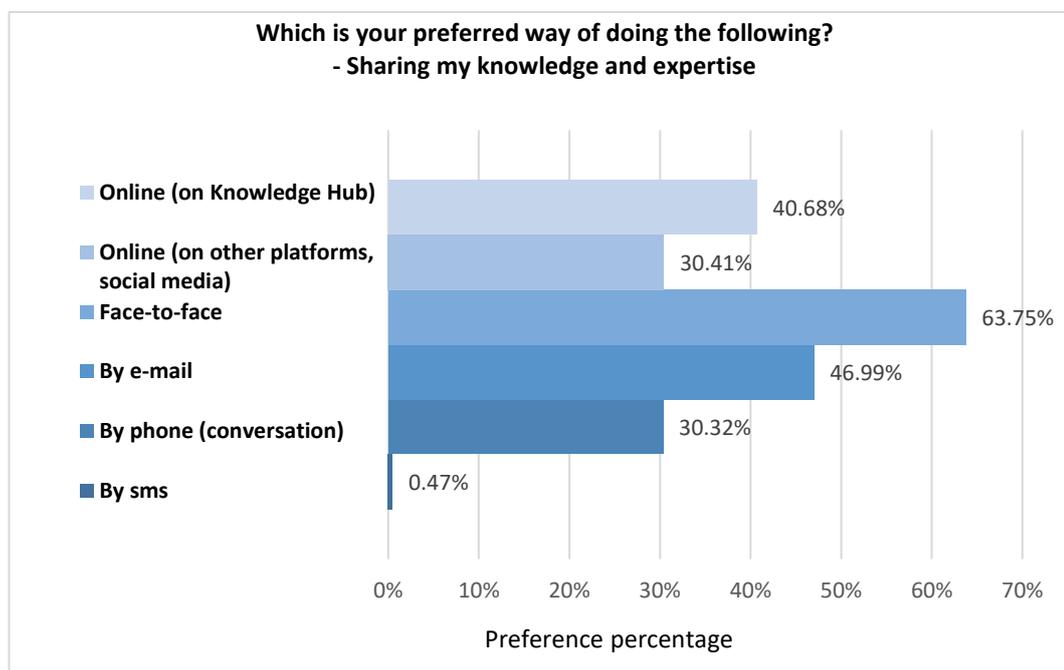


Figure 28 - Knowledge & Expertise sharing preferences

##### 4.2.5.1.1 KHub features used for the purpose of expertise sharing

The tools most used by respondents to share knowledge and expertise were the Forums (36%) and the Groups (34%). These were the two main features that enable members of Communities of Practice to discuss issues related to their professional practice.

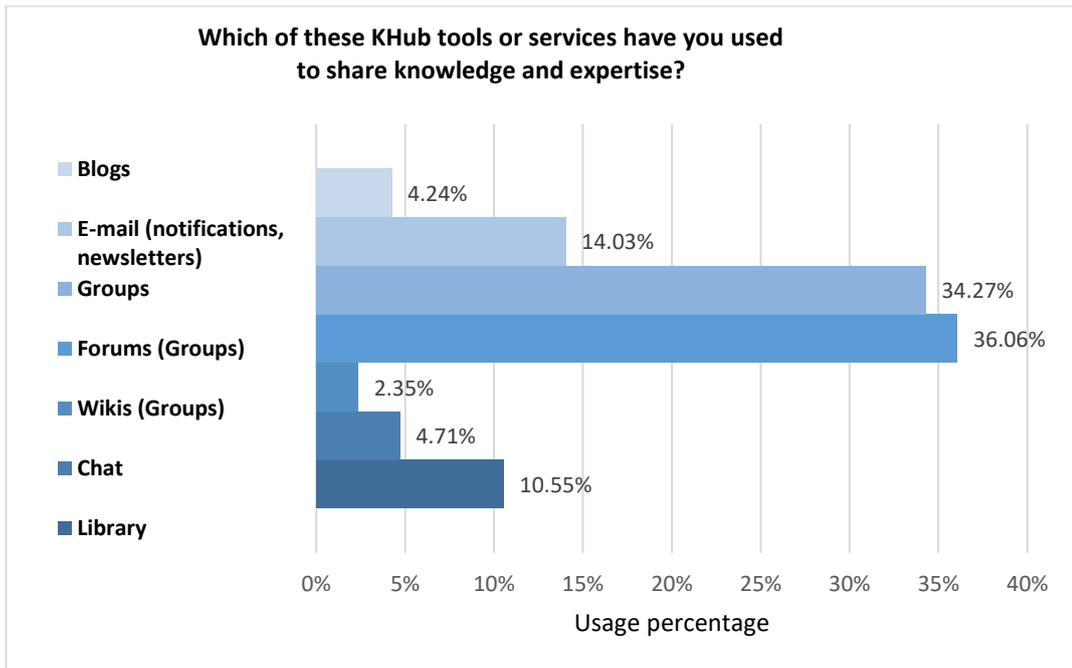


Figure 29 - KHub tools/services to share knowledge & expertise

#### 4.2.6 Research question 2: how do social media affordances bring new capabilities to the sharing of tacit knowledge?

##### 4.2.6.1 Ideas generation

Over half (52%) the respondents agreed (45%) or strongly agreed (8%) with the statement 'On Knowledge Hub I find it easy to discover new ideas.' A small percentage of the respondents disagreed (11%) and strongly disagreed (3%) with that statement. Hence, the use of the KHub platform appears to facilitate the acquisition of new ideas.

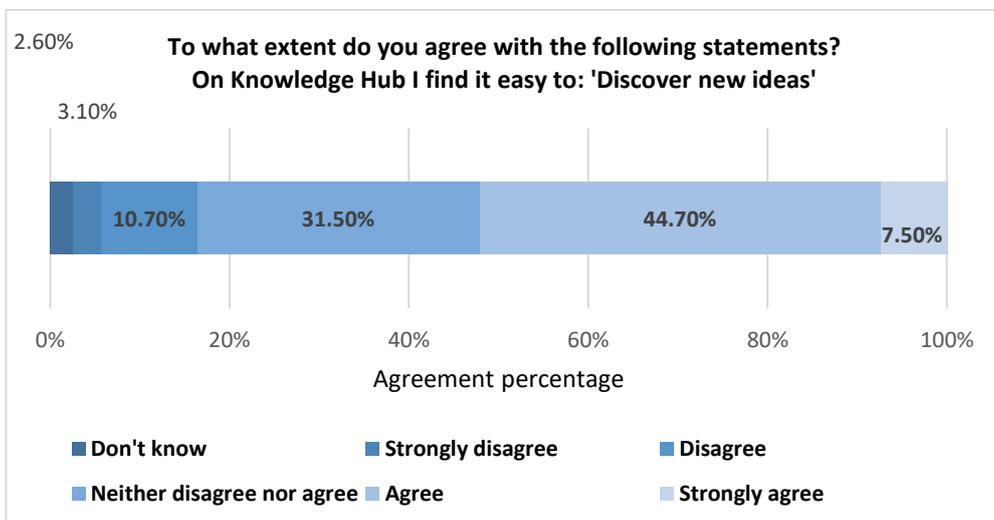


Figure 30 - KHub easiness of ideas discovery

#### 4.2.6.2 Knowledge creation

##### 4.2.6.2.1 KHub tools or services used to discover new ideas

Respondents' favourite KHub features for discovering new ideas were the Forums and the Groups. E-mail notification was the third favourite.

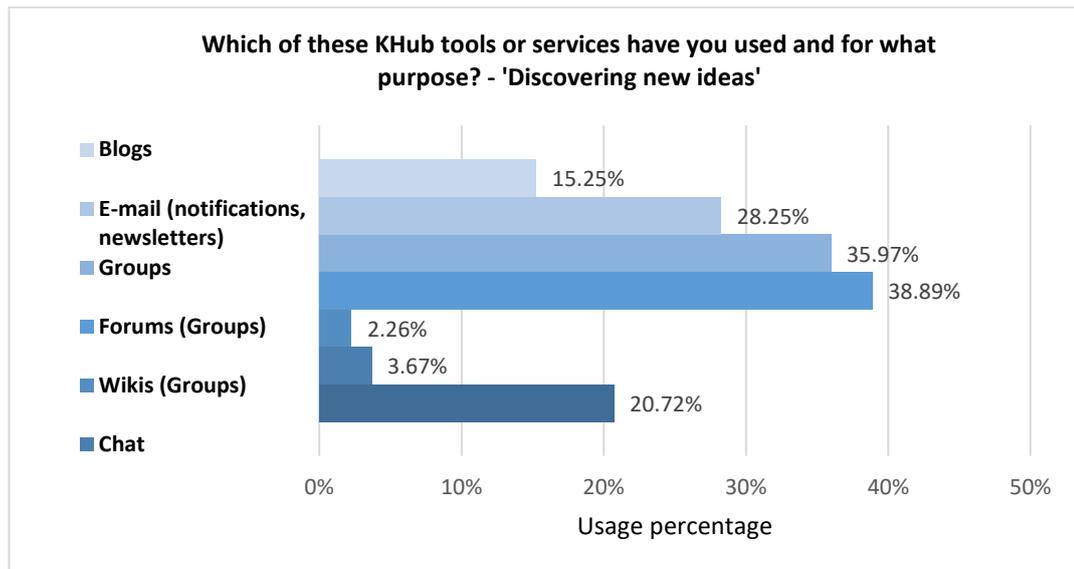


Figure 31 - KHub tools/services to discover new ideas

##### 4.2.6.2.2 Preferred way to discover new ideas

The preferred way to discover ideas is by face-to-face (54.71%). Almost equally so, members indicated that their preferred way to discover ideas was online, either on KHub (47.55%) or on any other social platform (50.85%).

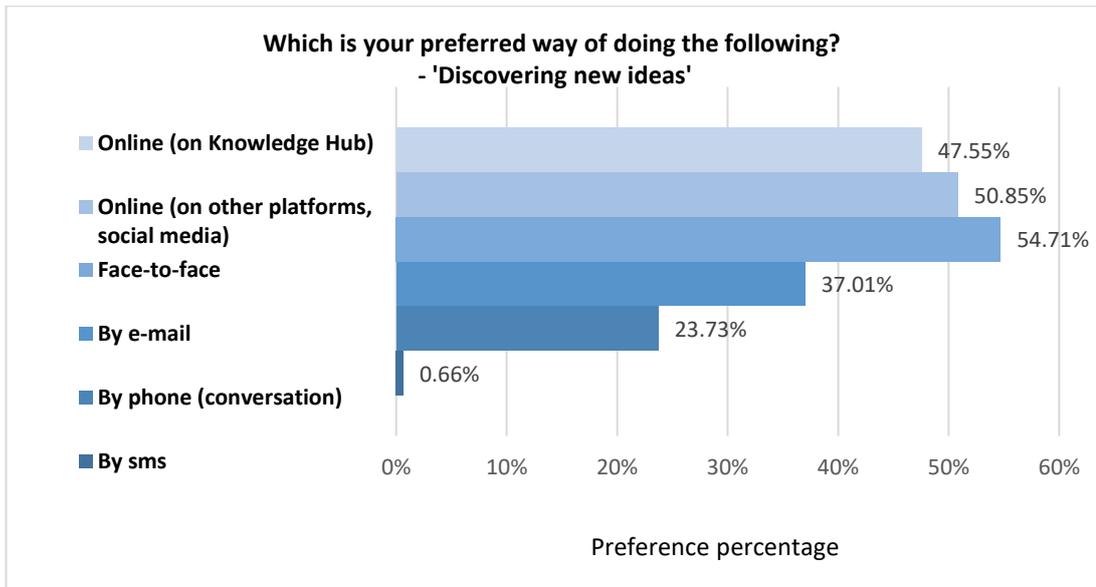


Figure 32 - Discovering ideas preferences

#### 4.2.7 Networks and networking

Almost two-thirds (61%) of the respondents agreed (11%) or strongly agreed (50%) with the statement 'KHub has allowed me to expand my network'. A small percentage (12%) disagreed (9%) or strongly disagreed (3%) with this statement.

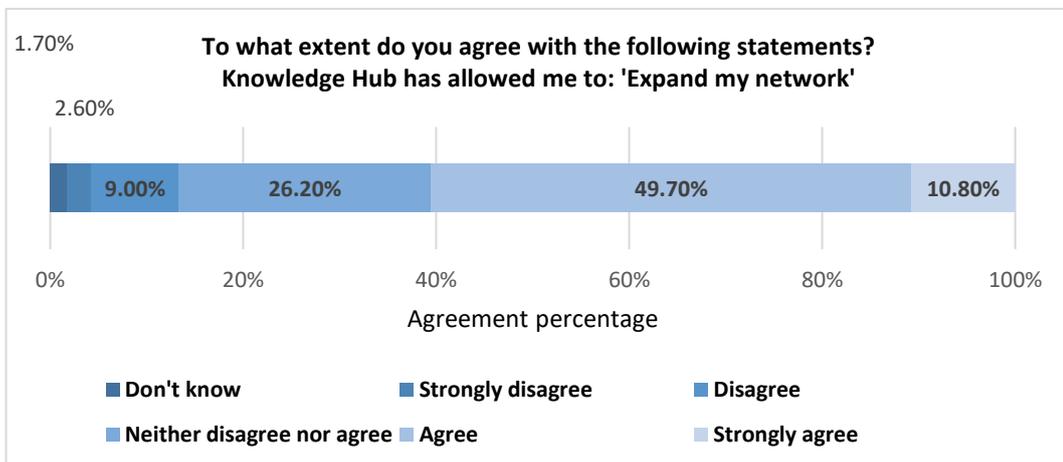


Figure 33 - Expansion of network on KHub

The data suggest that online social platforms can widen networks, leading to the potential for opening up opportunities for collaboration and access to new resources, and therefore making tacit knowledge more visible.

#### 4.2.7.1 Professional positions and network expansion

To test the relationship between the 'Professional positions' and 'KHub and network expansion', one-way ANOVA test was conducted.

Professional positions		KHub and Network expansion						Total
		Strongly agree	Agree	Neither agree or disagree	Disagree	Strongly disagree	Don't know	
Officer/Front-line service delivery	Count	55	182	100	28	3	7	375
	%	14.7%	48.5%	26.7%	7.5%	0.8%	1.9%	100.0%
Front-Line Manager/Supervisor	Count	21	85	42	13	4	5	170
	%	12.4%	50.0%	24.7%	7.6%	2.4%	2.9%	100.0%
Middle Manager	Count	30	190	98	38	9	3	368
	%	8.2%	51.6%	26.6%	10.3%	2.4%	0.8%	100.0%
Elected Member/Chief Officer	Count	4	24	9	7	7	0	51
	%	7.8%	47.1%	17.6%	13.7%	13.7%	0.0%	100.0%
Total	Count	110	481	249	86	23	15	964
	%	11.4%	49.9%	25.8%	8.9%	2.4%	1.6%	100.0%

Table 12 - Professional positions and network expansion

As shown in Table 10, there is an inverse linear relationship between occupational status and use of K-Hub for network expansion. For example, the following agree that Knowledge Hub helps them to expand their network:

- 64.2% of Officer/Front-line staff
- 62.4% of Front-Line managers and supervisors
- 59.8% of Middle managers
- 54.9% of Elected members and chief officers.

Using the one-way ANOVA test, the relationship between 'profession' and 'network expansion' using Knowledge Hub is found to be statistically significant  $F(3, 960) = 3.08, p=.027$ ). The Scheffe post hoc test shows that the significant difference in mean scores is between 'Officers/Front-line staff' and 'Elected members/Chief officers' with a p-value of  $(p<.05)$ .

## 4.2.8 Problem solving

Almost two thirds (63%) of the respondents agreed (51%) or strongly agreed (12%) with the statement 'On Knowledge Hub I find it easy to request help from others.' A small percentage of the respondents disagreed (7%) or strongly disagreed (3%) with this statement. These data demonstrate the clear utility of the KHub platform for problem solving.

### 4.2.8.1 Degree of easiness to request help from others on KHub

Almost two thirds (63%) of respondents agreed (51%) or strongly agreed (12%) that it is easy to request help from others on the KHub platform, against a small percentage who disagreed (7%) or strongly disagreed (3%).

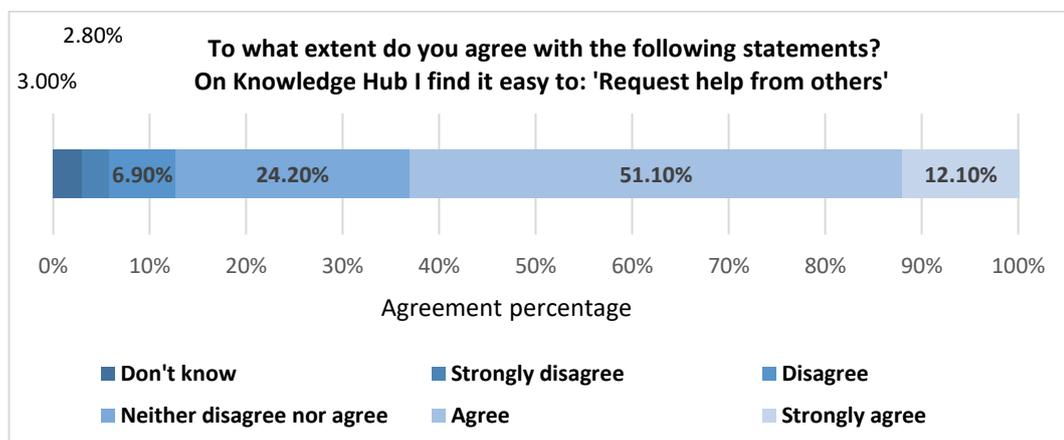


Figure 34 - KHub help request easiness

### 4.2.8.2 Degree of easiness in helping others to solve their problems of KHub

Over half (52.9%) of the respondents agreed (47%) or strongly agreed (6%) with the statement 'On Knowledge Hub I find it easy to help others to solve their problems'. A small percentage of the respondents disagreed (6%) or strongly disagreed (3%) with this statement.

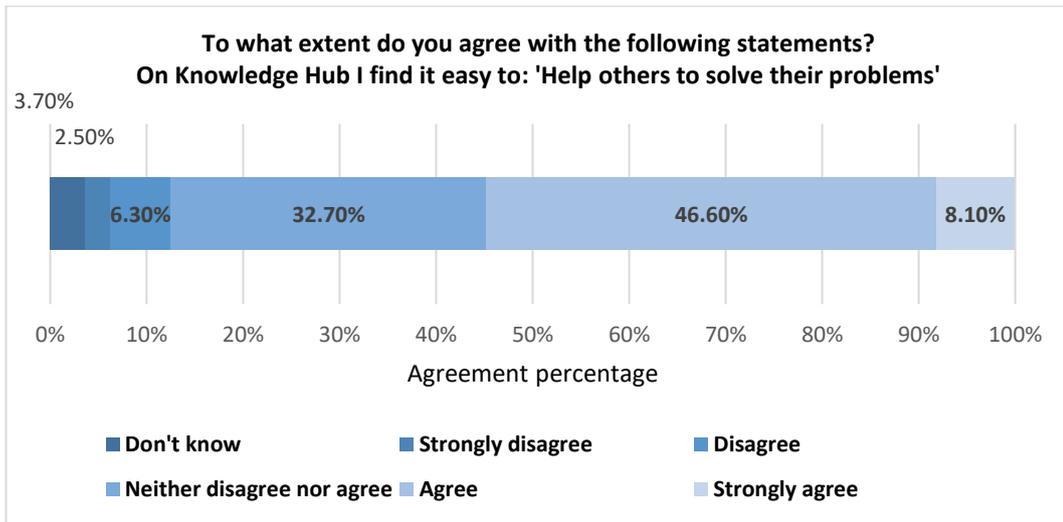


Figure 35 - KHub helping others easiness

The percentage of respondents who confirmed that it is easy to help others on KHub is slightly lower than when respondents receive help from others. To help others implies a certain amount of effort and willingness that is not needed when one benefits, sometimes passively, from others' help. This could explain the difference of 10% in the results.

#### 4.2.8.3 KHub features used to request help from others on KHub

It is apparent from this chart that the features that are most used by KHub users are the Forums (35%) and the Groups (30%).

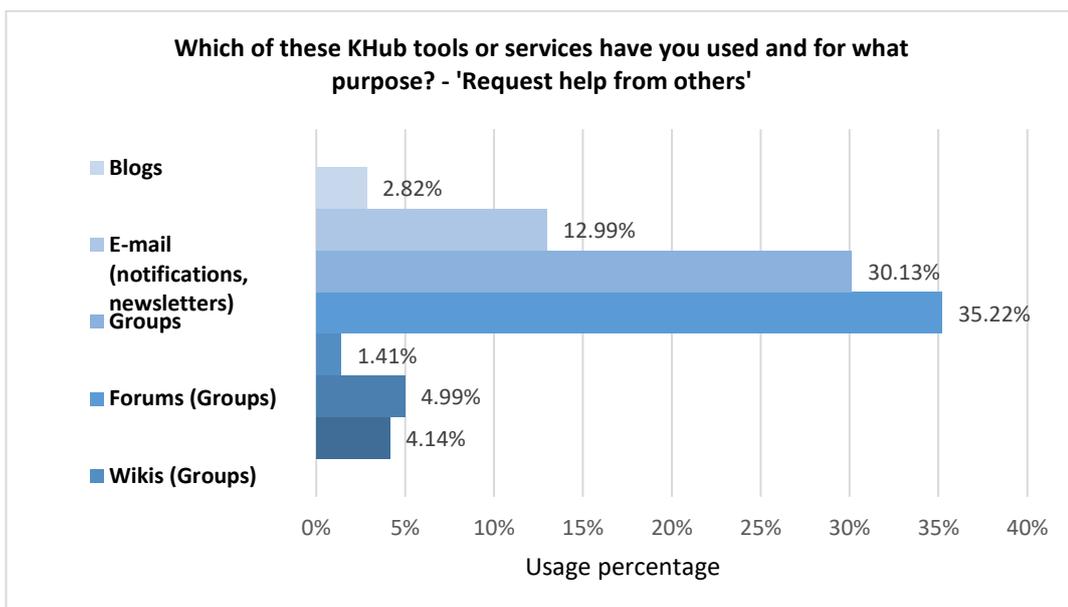


Figure 36 - KHub tools/services to request help from others

#### 4.2.8.3.1 Preferred ways to request help from others

Two thirds (65%) of respondents indicated that their preferred way to request help from others was by e-mail. This contrasts with other reasons for communication where 'face-to-face' communication was clearly favoured. This is likely related to respondents' working in various locations, at different schedules.

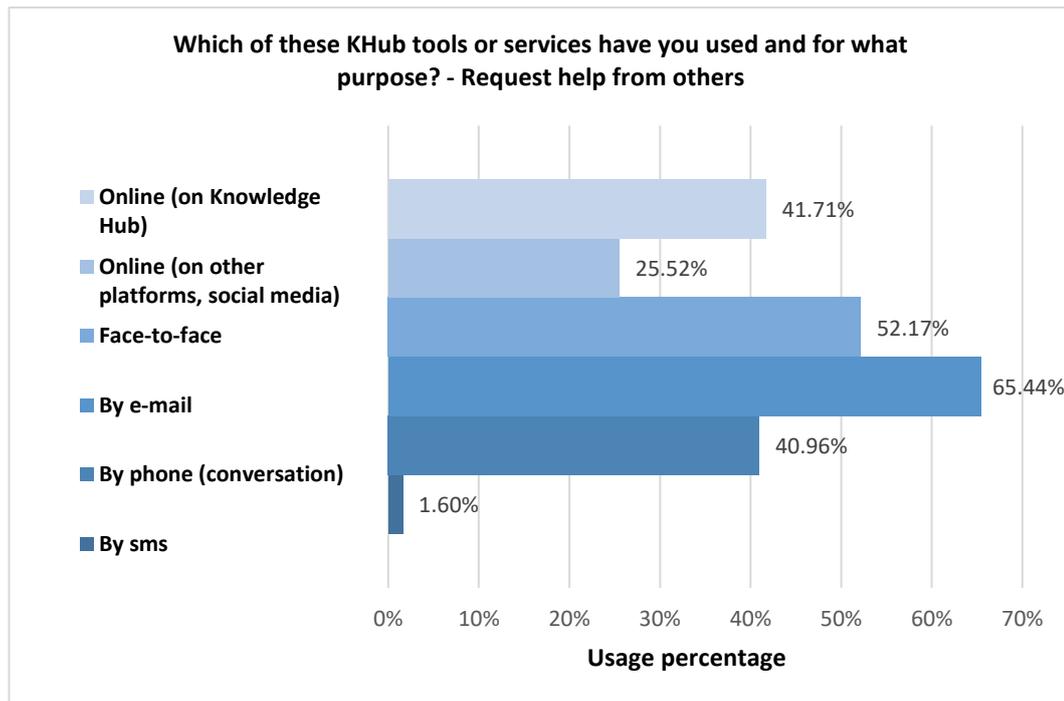


Figure 37 - KHub tools/services to request help

#### 4.2.8.3.2 KHub features used to help others solve their problems

The Forums (Groups) is the KHub feature that is most used by respondents to help others solve their problems.

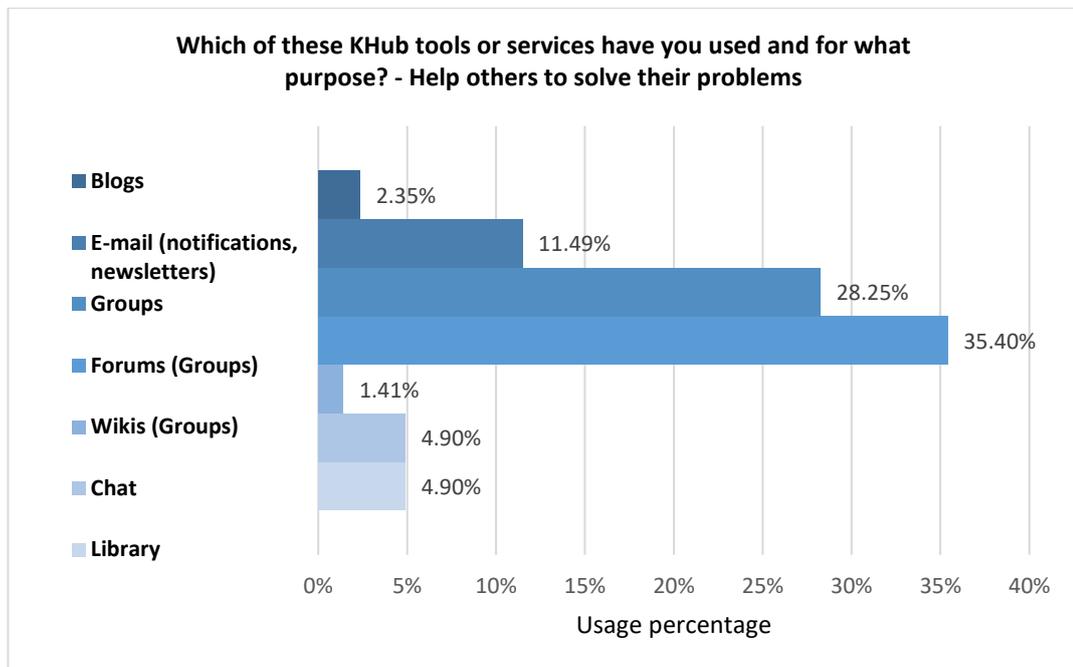
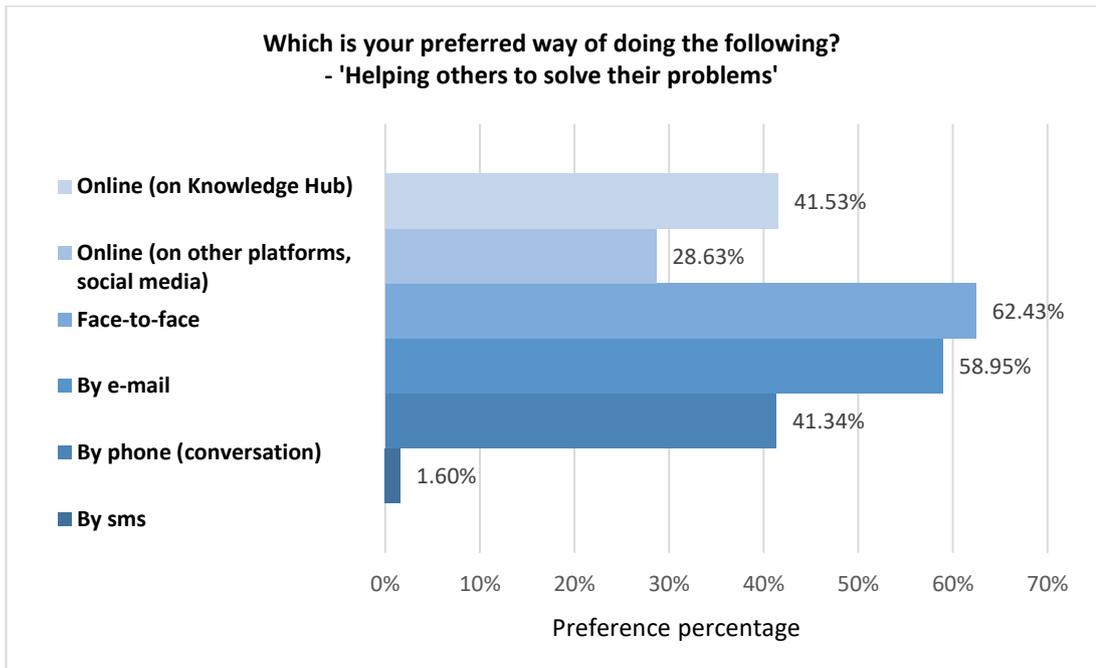


Figure 38 - KHub tools/services to help others

Forums and Groups are clearly the features most used when members are providing help to others, against a small number using emails.

#### 4.2.8.3.3 Preferred way of helping others to solve their problems

Two third of respondents indicated that their preferred way to help others solve their problems was by 'Face-to-face', which is the favoured way by members to helping others solve their problems. E-mails are still a way that is preferred over other means of communication. KHub or the use of phone would be equally be used to provide help, while other social media would be one of the last option chosen by members (besides SMS).



*Figure 39 - Preferred way of helping others*

## 4.2.9 Research question 3: which situated factors may provide the appropriate context for using social media to enhance tacit knowledge sharing practices?

### 4.2.9.1 Investment in time and effort for knowledge sharing

Because Research Question 3 addresses contextual factors related to social media usage and tacit knowledge sharing, the majority of findings that provide answers stem from qualitative data presented in chapter 5. However, one of the questions asked in the questionnaire addressed time-saving resulting from use of KHub.

Less than a third (30%) agreed (25%) or strongly agreed (5%) with the statement 'Knowledge Hub has allowed me to save time at work'. Almost one quarter (24%) disagreed (19%) or strongly disagreed (5%) with that statement. The majority of respondents (43%) neither agreed nor disagreed with that statement.

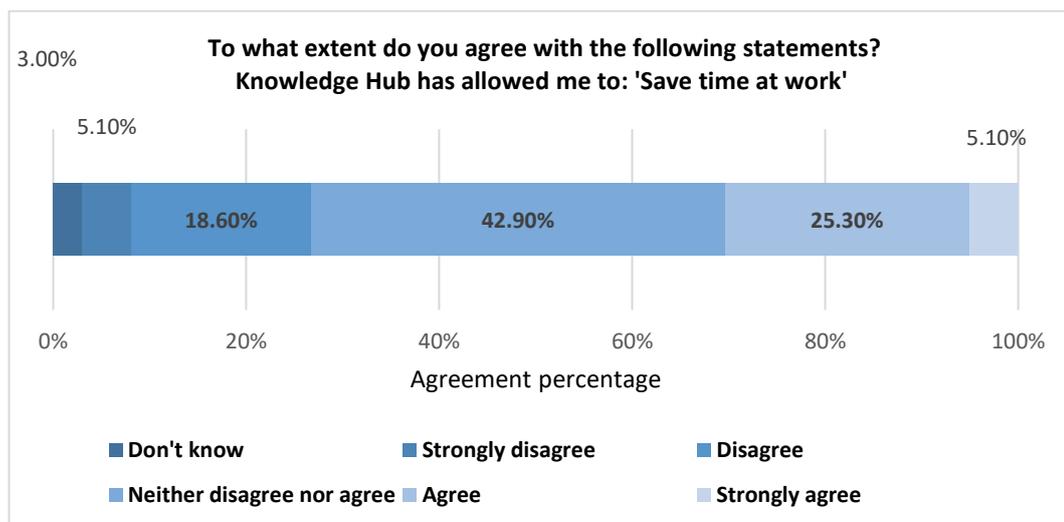


Figure 40 - Time-saving on KHub

These findings show that almost a third considered that KHub helps them save time at work. However, the percentage of respondents who have a more nuanced position (43% who neither disagreed nor agreed) is explained in the next chapter (section 5.1.3.7).

### **4.3 Chapter conclusion**

In this chapter, it has been shown that KHub is supportive of tacit knowledge sharing practices. Overall, a majority of members have confirmed that the Groups and Forums were their favourite feature on KHub. Also, face-to-face interactions are still preferred over any other KHub features or social media tools.

The findings have also shown that KHub supports and facilitates the learning process, informal and professional discussions, the discovery of new ideas, expertise sharing, network expansion, and problem-solving. The time-saving aspect was more nuanced, but in the next chapter, complementary information will allow for better understanding of the reasons why it is the case.

## 5 Interview findings

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This chapter presents findings from an analysis of the interview data as relevant to the purpose of this study. They are classified by research questions and concepts that correlate with the conceptual framework, and further by themes that emerged from the data analysis. These are as follows:

- **Research Question 1:** Collective Intelligence, Opportunities for learning, Informal discussions, Best practices sharing;
- **Research Question 2:** Widening networks and collaboration opportunities, Problem solving, Skills visibility;
- **Research Question 3:** Ethical issues, Knowledge sharing hindrances, Spatial co-location, Organisational culture, Technological hindrances, Face-to-face vs online communication means, Time and money-saving, Trust;
- **New themes:** Access to resources, Awareness, Ambient awareness, Knowledge awareness, and the Relevance of rich media tools.

Participants' profiles are displayed below.

## 5.1 Participants' profiles

As explained in the Methodology chapter, selection of interviewees was based on their use of social media other than KHub (see section 3.5.2.3). In order to understand the context within which respondents provided answers, the table below displays the demographic profiles of each interviewee.

*Table 13 - Interviews participants' profiles*

<b>Respon-dents</b>	<b>Position</b>	<b>Sector/ Organisation</b>	<b>Place</b>	<b>Age</b>	<b>Gender</b>
R01	Front-line Manager/Supervisor	NHS	Edinburgh	45-54	M
R02	Middle Manager	Third Sector /Voluntary	Fife	35-44	F
R03	Front-line Manager/Supervisor	Local Gov	Doncaster <sup>8</sup>	55-64	M
R04	Officer/Front-line service delivery	Scot Gov	Edinburgh	45-54	M
R05	Middle Manager	Scot Gov	Edinburgh	55-64	F
R06	Lead Professional	Local Gov	Fife	35-44	F
R07	Officer/Front-line service delivery	Local Gov	Perth and Kinross	25-34	M
R08	Middle Manager	Third Sector /Voluntary	Dundee	45-54	M
R09	Front-line Manager/Supervisor	Scot Gov	Edinburgh	55-64	M
R10	Middle Manager	NHS	Glasgow	45-54	F
R11	Officer/Front-line service delivery	Further education	Glasgow	45-54	F
R12	Middle Manager	Education	St Andrews	35-44	F
R13	Middle Manager	Local Gov	Fife	35-44	M
R14	Middle Manager	NHS	Edinburgh	55-64	M
R15	Officer/Front-line service delivery	Local Gov	Aberdeen shire	35-44	F
R16	Middle Manager	NHS	Glasgow	55-64	M
R17	Middle Manager	Local Gov	North Ayrshire	55-64	F
R18	Middle Manager	Scot Gov	Edinburgh	35-44	F
R19	Front-line Manager/Supervisor	Local Gov	Midlothian	35-44	M

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<sup>8</sup> The site of data collection – the Scottish section of the Knowledge Hub – allows for participation for others from across the UK. This was the case for this participant.

### **5.1.1 Research question 1: how do social media affordances facilitate the sharing of tacit knowledge between employees?**

Interviews pursued this research question with a range of questions designed to address such concepts as collective intelligence, opportunities for learning, informal discussions and the sharing of best practices.

#### **5.1.1.1 Collective Intelligence**

Social media affordances contribute to organisational collective intelligence by providing technical capacities for employees to collaborate with one another across the organisation to an extent that was not possible prior to the advent of social media. As Respondent 7 said, a platform such as KHub is useful

*"Because [my colleagues] can work together online on a specific project."  
(Respondent 7)*

This statement was corroborated by another respondent:

*"I remember quite a few groups – probably at least ten groups on the Knowledge Hub – and each of them [...] allow me to collaborate with others across organisations and find out what else is going on in a particular field." (Respondent 4)*

The opportunity provided to collaborate online contributed to a collective reflection:

*"[KHub] does encourage collaboration because when the members see the type of documents that you can share and collaborate on, I think that has encouraged them to think." (Respondent 5)*

#### **5.1.1.2 Opportunities for learning**

Network membership offers opportunities for skills development, predominantly in terms of learning from others:

*'I am picking up skills through other people's knowledge and experience [...]. It is really more picking up what other people have found.' (Respondent 6)*

*"Some of the things that are done in England are different but that is not to say that you can't learn from it so I have found – I think even learning who is running different networks for which topics, sometimes you will go in and see them having a meeting – they have a regional group and they will be talking about benefits or about something*

*else and I might never connect with that network but I can go in if they post their materials and learn from that which is really good." (Respondent 10)*

*"[...] Sometimes it is as much about being assured that you have not missed something. You know that reinventing the wheel thing? Sometimes when you go on you find – take benefits for example, understanding the benefits in a project is something that I have looked into quite a lot – sometimes you will see something that someone has done, maybe a set of PowerPoint slides or a presentation and think well that is a great visual representation, that is great. Other times you read something and you think, yes we have done that, we have thought about that [...] so actually it is a good way of checking that you haven't missed something.*

*Sometimes you think [everybody] else do things better than what we do; we need to learn from other people and that is good [and] sometimes when you do that you actually [re]assure yourself." (Respondent 10)*

Such learning can cross wide geographical boundaries, as was noted by Respondent 10:

*'I think it is just building up my awareness of what is out there [...] [S]ome of the things that are done in England are different but that is not to say that you can't learn from it [...]. Sometimes you don't know you are curious about something until something crops up and you think well that is really interesting so actually it can probably take your learning in new directions.'* (Respondent 10)

The same respondent emphasised how he/she benefited from people's lessons learnt, thanks to the information available on the platform:

*"[...] there is so much reinventing the wheel and that was probably one of the first things that I really used Knowledge Hub for, was accessing lots of resources and information about what other people have learned. (Respondent 10)*

Another respondent linked the learning process with work efficiency:

*"[...] the more you can learn or understand how other people think, that can inform decisions that you are making and can inform how you perhaps organise your own work [...]. (Respondent 11)*

The same respondent illustrated how one can learn from someone else's issues:

*[...] if somebody has encountered a problem, something similar in setting up a platform you say 'should I take note of that?' It is learning from it. It is helpful." (Respondent 11)*

### **5.1.1.3 Informal discussions**

Because of their established easiness of use, social media affordances can initiate informal discussions more easily than would have been the case on traditional online platforms (such as Intranets).

For some respondents, 'informal discussions' were understood as discussing a topic that is out of the professional context, such as Respondent 19 emphasised:

*"We don't have too many social chats within Knowledge Hub so it is primarily business. However, there might be some chat in terms of, [for instance] - before Christmas - we'll have a meeting which then we tag along to having dinner and there might be some discussion around, do people want to attend a social event afterwards, what they will involve, etc. So that's probably as informal as we get in terms of having discussions." (Respondent 19)*

However, for some respondents, the use of 'chat' does not exclude discussion of professional issues:

*"I have informal use of chat function to have informal discussions, probably in the first instance but there are times where it will be formal because it will be helping build my knowledge or share knowledge, so it is a combination of both." (Respondent 15)*

When asked if he/she would have informal discussions with colleagues on KHub, Respondent 5 mentioned:

*"Yes there are some. I suppose that is part of when you build a community, people get friendly so some of the stuff on the forum - people start using emoticons and it's a bit chatty. And some people are more comfortable with that than others but all that helps with people feeling like that they have got somebody they can get in touch with if they did have a work problem and feeling like they are part of a group which is what we want." (Respondent 5)*

Respondent 17 also emphasised that the better you know the other person, the easier it is to have informal communication with them:

*"The ones that are more prolonged would be with people that work more closely with us, we've met and you know, it will generally be a discussion about something and how we're going to approach something, or an interpretation of performance information or benchmarking information, something like that." (Respondent 17)*

The technological feature that was often mentioned as being used for informal discussions is the online 'chat' (or online messenger), because it allows users to quickly interact with one another, without the conversation being necessarily archived, as Respondent 17 stated:

*"It's probably to do with the fact that email is formal and chat is informal, and it's not necessarily stored, it disappears, so people feel more comfortable with that. They feel that it's less official." (Respondent 17)*

#### **5.1.1.4 Best practices sharing**

The sharing of best practices is one of the facilities provided by online Communities of Practice to enable people to learn from one another and hence enhance collective intelligence. Among the respondents interviewed, Respondent 2 emphasised how it was part of his/her organisational culture to facilitate this practice:

*"[...] we could say [to our new colleagues] that 'you' need to put your best practice on the knowledge hub part of your job description is that you need to tell everybody what you are doing." [...] slowly over time as councils have hired their own officers, they get into the spirit of that [practice]. (Respondent 2)*

The possibilities of sharing knowledge and best practices provided by online platforms such as KHub was also underlined by Respondent 14 when he/she said that

*"[...] there is a huge scope for knowledge sharing [and] best practises [...], so I suppose that is where the social media [and] KHub [...] come into the game." (Respondent 14)*

and by Respondent 17 when saying that

*"That's the other great thing about these [social media] tools [on KHub] is that, it allows the sharing of best practices, so whenever something has developed or when something is seen as good practice, it's great to be able to share that." (Respondent 17)*

Expressed differently, learning from others' mistakes indirectly provides a more efficient way to undertake tasks. As Respondent 11 stated:

*" [KHub is] definitely helpful because the more you can learn or understand how other people think, that can inform decisions that you are making and can inform how you perhaps organise your own work. So if somebody has encountered a problem, something similar in setting up a platform you say okay, should I take note of that? It is learning from it. It is helpful." (Respondent 11)*

### **5.1.2 Research question 2: how do social media affordances bring new capabilities to the sharing of tacit knowledge**

Interviews pursued this question with a range of questions designed to address such concepts as widening networks and collaboration opportunities, problem solving and skills visibility.

#### **5.1.2.1 Widening networks and collaboration opportunities**

Easy access to a large number of contacts via online platforms such as social media makes it possible for users to enlarge their networks. This was explained by Respondent 4 when he/she said:

*'It just makes it a whole lot easier to make connections, to find people, to find out what's going on quite quickly. Clearly, that's much easier than the pre-social media age, just to see what's happening.'* (Respondent 4)

and by Respondent 10:

*'If I wanted I could make contact with people as well. I suppose that [it] has helped me make better connections in Scotland and it has given me a greater awareness of what else is happening beyond.'* (Respondent 10)

This includes the development of sub-networks for the purposes of knowledge sharing and collaboration:

*'If somebody got in touch with me via the Knowledge Hub and says, I see you are a Development Officer, they may have looked me up on LinkedIn and got an idea of what my profile is and say 'Can you tell me more?' I would be happy to go through the Knowledge Hub either as a one-to-one communication within a closed group where there are half a dozen, or a dozen people, who may be interested in what I am doing, and share my experience with them.'* (Respondent 11)

This respondent also emphasised how social media tools can facilitate the extension of personal networks. When asked about the reason why he/she would use LinkedIn or Twitter, he/she answered:

*"[...] To grow[...] my network. It is about identifying people with knowledge who are willing to connect and are willing to converse, so in essence what I have got is a yellow pages of loads of people who post their skills, the companies they work for, the things they are interested in and I am able to then utilise that, I am able to then tap into that. [...] it tends to be more of a one on one 'so I have found you, you have a certain skill, I would love to network with you' [...] if you accept the invite, normally you immediately go to some form of a conversation. The conversation doesn't often take place on LinkedIn it is just that initial networking."* (Respondent 11)

Some interviewees shared the stories of how their relationships have grown through their use of social media tools. For example:

*'It started off that we followed each other on Twitter and it's not someone that I am in contact with through Knowledge Hub but [...] because I followed him on Twitter I was aware of work that he was doing on poverty and social networks. [Since regular interactions occurred on Twitter, exchange of emails followed] to the point where I felt I could pick up the phone and speak to him, and on the back of that phone call he ended coming and doing presentations.'* (Respondent 6)

*"It has helped to expand the network because you can then see the articles they have written, to see other references and things, so you can build up a network."* (Respondent 9)

### 5.1.2.2 Problem-solving

Solutions to problems seem to arise more easily when someone asks a question of a group or community. This usually relates to Communities of Practice, when problems are addressed within a group of individuals gathering to solve issues. Communities of Practice are significantly enhanced by online networks because finding solutions is more likely, thanks to the increased number of participants. This aspect was also noted by some respondents who explained how the process usually unfolds:

*"You could ask [this colleague] a question: '[X] will share that with the group and say [Y] got this issue, is there anybody who's got an example?' or '[...] has anybody recently been through [this topic]?' I was in a position to say 'I can give you [this], I was involved in [that], I've got copies of the recommendations and the process we went through. If you want more recent things then [Z] would be able to furnish you with that". (Respondent 1)*

### 5.1.2.3 Skills visibility

Explaining how KHub helped him/her do his/her work, Respondent 14 said:

*"Obviously, there is the specific stuff about asking and answering questions and picking up other people's ideas which is great. Even when you are reading other people's requests for information there is something in there, oh yes, I never thought of that, that is interesting, and I will take it away and deal with it. The other bit is learning who is there. It is almost like stalking to some extent. Someone you know comments to somebody you don't know and you think Ah that person might be useful to me and you then make contact to them and you have got something mutual to talk about. It is so much better than cold calling someone, if you can say, I saw your contribution to knowledge hub, we are working on similar things and can I swap ideas with you." (Respondent 14)*

## 5.1.3 Research question 3: which situated factors may provide the appropriate context for using social media to enhance tacit knowledge sharing practices?

Interviews pursued this question with a range of questions designed to address such concepts as ethical issues, knowledge sharing hindrances, spatial co-location, organisational culture, technological hindrances, face-to-face versus online communication means, trust, and time and money saving.

### 5.1.3.1 Ethical issues

Organisations belonging to the public sector are known for their heavy bureaucratic characteristics and overload of policies. This can prevent employees from sharing knowledge, due to fear of not respecting ethical rules, as Respondent 10 confirmed:

*"[...] people are still quite restricted by policies of organisations particularly in the public sector, I think that holds people back." (Respondent 10)*

This relates strongly to confidential issues, as Respondent 3 explained:

*"[...] ours is an open group and I am aware that some members of our group are reluctant to comment in relation to issues because they feel that that information may escape into the wider community, so it restricts some of the discussions that take place. [...] There are sensitive topics that might be discussed which officers are unwilling to put on there." (Respondent 3)*

It is also related to the political status that some organisations depend on.

Confidentiality is often a requirement within public sector organisations, particularly when they address legally-sensitive issues. This ethical aspect, alongside security threats, can discourage employees from share knowledge on social media tools, even when these tools are limited to within the organisation.

As Respondent 3 stated:

*"There are sensitive topics that might be discussed which officers are unwilling to put on [KHub]." (Respondent 3)*

When asked about the reasons why employees do not use social media tools within his/her organisation, Respondent 10 emphasised hindrances inherent to organisational culture:

*"I think people are still quite restricted by policies of organisations particularly in the public sector, I think that holds people back." (Respondent 10)*

When asked about the preferred way of communicating with colleagues at distance, Respondent 13 emphasised that it was more secure to use corporate email, the phone or face-to-face communication, for security issues:

*"[...] it is secure. With anything I do there is always this security aspect of securing the information that we are talking about so if I communicate with another public body just by email automatically it goes through a secure network so the chances of it being hacked are small." (Respondent 13)*

In this context, one has to understand the high risks of disclosure that could affect the credibility of organisations and their management teams.

When asked about the kind of conversation a respondent would have with his/her colleagues on Twitter, Respondent 18 mentioned that he/she would use it to exchange ideas, to get clarification, but would avoid any topics related to politics for ethical reasons:

*"[...] what I try not to do because we do have an obligation as civil servants to be impartial so the one area that I completely avoid is politics. We have to be quite careful with that." (Respondent 18)*

### **5.1.3.2 Knowledge sharing hindrances**

The importance of context in regard to the sharing of tacit knowledge is essential, yet often overlooked, because of its complexity. For instance, it can relate to the organisational culture within which knowledge-sharing practices occur with difficulty.

Respondent 4 emphasised that some employees hesitate or are afraid before using a social media tool within their institution:

*" I think we still have a bit of a risk-averse culture. Maybe fear is too strong. I don't think that's as bad as maybe it once was, like a fear of speaking out, a fear of posting something up. There's still an element of that. I know there are some staff that are really anxious about posting their comment or thought on Yammer, knowing that the whole organisation can see it. So that's still a thing for some people." (Respondent 4)*

This relates to the fear of being exposed to an extended number of people and to potential criticism from colleagues, or worse, from managers.

### 5.1.3.3 Spatial co-location

Spatial co-location refers here to the way employees communicate and share knowledge with each other, whether from the office or off-site, using mobile technologies or rich media tools. It also concerns the 'wherever-whensoever' access to networks and content enabled by technologies.

When mentioning the use of Yammer within his/her organisation, Respondent 4 emphasised how this social media tool was the most efficient way for him/her to be informed about his/her colleagues or other teams' professional activities:

*"Some groups are quieter than others, but there are some groups that are really active and it's because, again, we're such a big and geographically spread organisation, it's often the only way I find out what other people are doing." (Respondent 4)*

Respondent 17 explained how KHub enables his/her team and various stakeholders to discuss and collaborate together in the same 'place' despite being located in different geographical places:

*"We've got some quite active groups roundabout local Government benchmarking families and again, it's a pivot tool for that. We've just got organised with our locality partnerships; there's six of them in [my local authority], lots of different community planning partners, and we've just agreed and signed up to use the Knowledge Hub as being again, the place for all those discussions, the collaborative tool that we'll use." (Respondent 17)*

At least six respondents mentioned the use of rich media tools such as video-conferencing software (Skype, WebEx, Jaber, etc.) when physical meetings were not possible or convenient.

*"When we're doing video conferencing with the team, who are all based remotely, nine times out of ten we set up a Jabber connection and we use that through the video conferencing suite, which is like the bridge for NHS Scotland, which is based in Aberdeen. That's good because it keeps the meeting within the designated time, because opens maybe five minutes before and it closes ten minutes after so it's a good driver for keeping order. Also anybody, wherever they are, can join once the number's published." (Respondent 1)*

The possibility for employees to communicate simultaneously in one single (online) space without the need to travel was also underlined:

*"You have people from all over the country coming here to take part in a meeting or talking to other buildings throughout the country, so if you've got them on the video conferencing you don't need to bring them to the building, so if they're in West Lothian or they're in Aberdeen we can speak to them and share information without them needing to be in the room." (Respondent 1)*

The possibility of keeping conversions going while working from home is also another advantage provided by such tools:

*"If I'm free, I go, because it's good to keep up with your colleagues. Again, a lot of them are not based here; they're out possible with customers, so ...or they're based in Glasgow, so at least once a fortnight I'm seeing my colleagues in Glasgow, if I'm not seeing them real I'm seeing them on the screen, or I'm hearing their voice if I'm working from home; we've got a lot of staff that work from home." (Respondent 1)*

Also, the possibility of seeing colleagues (instead of only listening to them by phones) seems to be a benefit when face-to-face communication is not possible:

*"I can understand it better when I can see it as opposed to listening, it allows you to absorb the information better if I can see it. The best thing is obviously face-to-face, but if he's in West Lothian and I'm here then Jabber or WebEx is the best thing." (Respondent 1)*

This aspect was also mentioned by Respondent 2, who implicitly emphasised the meaningful information communicated by people's facial expressions:

*"[...] so we use [Business Skype] for internal meetings. [...] Yes, you would rather have someone there that way rather than not at all and it is slightly better than on the phone if you can get it working. You see people's facial [expressions]. (Respondent 2)*

Respondent 8 emphasised that meetings on Skype are 'real' meetings in that they don't differ from the ones he/she would have face-to-face with his/her colleagues. This demonstrates the clear benefits of rich media tools:

*"It is a proper meeting. I don't know if they put a tablet with my face on it on a chair [...] but it is a meeting and I have sat on the other side. [...]. (Respondent 8)*

Another aspect mentioned by respondents is the benefit of time-saving and money-saving, as explained further below (see section 5.1.3.7):

*There are guys from Shetland, from Orkney, from Inverness – now I wouldn't expect anybody to come down from Orkney for one and half hours." (Respondent 8)*

Commuting from one place to another, particularly in remote places, is time-consuming. The possibility of using a video-conferencing tool instead solves many problems at once because it also saves money:

*"[...] it saves time because if I was going for a face to face meeting with the Western Isles then that would be a significant amount of time travelling (Respondent 10)*

*"There are people all over Scotland use it and the meetings are always in Glasgow or Edinburgh and anywhere north of Dundee really is your whole day. Two hours to get down, a couple of hours in the meeting, you have lunch, a couple of hours back and you're going to go back in for the last hour? Probably not." (Respondent 8)*

*"[...] Skype [...] is something that is across our organisation. Firstly, it was instant messaging that was rolled out. Because where we are situated it is a large geographical area so travelling is an issue so it is really helpful for us to have these types of [tools]. (Respondent 15)*

A respondent mentioning his/her work as a coach emphasised how much it is important to see the other person (online) because it is the only way (if not face-to-face) to get nonverbal communication.

*I think building up the face-to-face contact has been really important. I know this through coaching, you build up a rapport. So much in communication is nonverbal so having those interactions [...] is important. [...] if you want to understand the emotions I think visually seeing somebody is actually quite important as well because you might pick up a reaction that you might hear in a voice but you might see it as well." (Respondent 10)*

This kind of communication is the most tacit knowledge because it has not been articulated nor codified. It is therefore interesting to note that it is possible to access it online through such rich communication tools.

Another respondent mentioned also the possibility of sharing 'working spaces' because rich media tools enable the sharing of individual's desktops, screens and documents:

*"The video conferencing is something that is encouraged where I work because the organisation is spread across the country. It has got something like half a dozen different premises from London to Leeds and Newcastle and so they are very keen on people using WebEx as the tool to do video conferencing, just simply for conference calls. Obviously, the audio but it gives you the opportunity to share desktops so you can look at the spreadsheets and that sort of thing as well." (Respondent 14)*

*"Some of the really helpful functions of [Skype] are that we can have a phone discussion type as well as text or if there are short messages need to go back and forth but there is also the functionality of presenting and showing your desktop so on a number of occasions we have meetings and share information that way." (Respondent 15)*

#### **5.1.3.4 Organisational culture**

The adoption of new technologies that encourage sharing knowledge openly within organisations, particularly within the public sector, seems to drive managers to adopt a cautious attitude towards it. The way managers use social media tools will inevitably influence other colleagues' usage.

*"Our culture is particularly bad. [...] I think if our culture is going to change, it will probably change over the next 18 months or so as we get new councillors in. There's a bit of a command and control culture [here] at the minute, which doesn't give you the space to be innovative and do things in different ways. [...] So, if there's a whole load of new people, there is a hope that we'll get a more open culture, a more trusting culture." (Respondent 20)*

This study was undertaken among employees working in several institutions belonging to the public sector, in which the culture of knowledge sharing is variable.

A respondent working in a public health institution emphasised how the culture of his/her organisation is supportive of knowledge-sharing practices:

*"[We]’re a public service body, there’s nothing that we have that is top secret, why would we not share it with the police; we’re all working for the common good."  
(Respondent 1)*

Mentioning how the use of social media tools within an organisation influenced by politics, another respondent was more cautious regarding the case of sharing knowledge in his/her organisation:

*"I think we still have a bit of a risk-averse culture. Maybe fear is too strong. I don’t think that’s as bad as maybe it once was, like a fear of speaking out, a fear of posting something up. There’s still an element of that. I know there are some staff that are really anxious about posting their comment or thought on Yammer, knowing that the whole organisation can see it. So that’s still a thing for some people. The hierarchy thing is still very much a cultural issue here, as I’d expect." (Respondent 4)*

Other respondents were more critical of their organisations when it came to employees' initiatives to launch social media tools in order to enhance knowledge-sharing practices:

*"Our culture is particularly bad. [...]. I think if our culture is going to change [though], it will probably change over the next 18 months or so as we get new councillors in. There’s a bit of a command and control culture [here] at the minute, which doesn’t give you the space to be innovative and do things in different ways, and there are barriers to technology. So [that does not help] if you wanted to be innovative." (Respondent 20)*

The culture of silos, which often characterises public sector organisations, was addressed by the same respondent when asked about the sharing of best practices:

*"We do [share best practices], kind of. [There] is feedback loops but we’re not perfect at that, at the minute. I think [this organisation] has still got a hangover from thinking it was a huge organisation, and they forget to talk to each other. So our Planning Service only has about 150 people in it, so we should be able to share information but we still do things very much in silos." (Respondent 20)*

This respondent also spoke about the problem of knowledge retention related to power:

*"So it's always, I'll keep this as dark arts and secrets because then, I'm the only one that knows so I've got a job and I'm guaranteed. So there's all of that kind of stuff going on at the minute." (Respondent 20)*

Because this organisation is directly influenced by political decisions, employees are also aware that policies might change after elections and might hope that new managers will adopt more constructive and supportive attitudes towards knowledge sharing within the organisation. This could include the use of new social media technologies.

#### **5.1.3.5 Technological hindrances**

Knowledge hindrances can relate to the way knowledge will be practically or technically shared. One relevant example is the use (or overuse) of e-mails within organisations. Even though this communication channel has been widespread within organisations for many years, it sometimes fails to convey efficiently tacit knowledge between employees, as illustrated by the following respondent:

*"E-mail is fine for getting the actual points, but it doesn't convey, always, the passion or how you're trying to say it, it's...it can be open to misinterpretation, it's not necessarily what you say, but quite often it's how you say it. [...]. If they're having a really bad day, how do they interpret it when they're reading it at that moment in time?" (Respondent 1)*

As Respondent 8 mentioned, e-mails do not always facilitate the complexity of message that need to be conveyed:

*"I think you have a responsibility as a manager to grow a pair and sometimes you just have to do it and you lose a lot of nuance by email [...]." (Respondent 8)*

Social media technologies can facilitate knowledge sharing between professionals, but it first requires that organisations are adequately equipped to provide access to such technologies (high-speed Internet connection, high memory computers), and secondly that employees are properly trained.

When asked about the potential usage of rich media tools (such as video conferencing), Respondent 4 explained:

*"Sometimes, the technology here isn't quite up to it. [...] There were two colleagues in Inverness and they were wanting a Knowledge Hub training session [...] but didn't know [how to use it]. [When] I offered video conferencing to them, they said that [they] would [love to], except [that their] Internet [connection] in Inverness was obviously so bad that [they] just [couldn't] do video conferencing. So that was an issue."  
(Respondent 4)*

A technical issue was confirmed when the same respondent mentioned that their

*"IT [department] decided [that] their bandwidth wouldn't be able to handle [...] everybody on Skype." (Respondent 4)*

Rich media technologies are not the only tools that can cause problems. Some technological features part of the KHub platform, such as the blogs or wikis, were not necessarily used because it requires some training to use them:

*[Wikis are] not very used. Primarily, [...] because, [...] I don't understand it and [also because] we're dealing with a broad range of people, some who are not very technically aware, and Knowledge Hub in itself is a barrier to them in putting and taking part in it. So we need to overcome that barrier before we start asking them more tricky questions, or asking them to get involved in other ways." (Respondent 19)*

#### **5.1.3.6 Face-to-face vs online communication means**

The majority of respondents stated that their favourite way of communicating or sharing knowledge is through face-to-face conversations. Various reasons were given by respondents to justify their preference for using face-to-face communication: when discussing sensitive matters, for confidentiality issues, or when security needs to be ensured, were the reasons the most often reported. However, a few respondents did perceive the benefits of using other communication means such as KHub, or online rich media communication tools (Skype, WebEx). These online tools enhanced by social media affordances enable employees to share their tacit knowledge, as Respondent 1 specified it:

*"[These meetings can] cover a number of things: asking the team if there are issues needing any help with, is there anybody that could give insight or experience."  
(Respondent 1)*

These rich media communication tools also enable individuals and/or teams to discuss issues regardless of their geographical locations.

*"The best thing is obviously face-to-face, but if he's in West Lothian and I'm here then Jabber or WebEx is the best thing." [...]. When we're doing video conferencing with the team, who are all based remotely, nine times out of ten we set up a Jabber connection and we use that through the video conferencing suite. [...] Also anybody, wherever they are, can join [the meeting]." (Respondent 1)*

This also has an impact due to saving travel-time and hence costs, which will be addressed further below (see section 5.1.3.7).

When asked about the reason why opting for such communication tool, Respondent 1 emphasised an environmental factor:

*"The main driver is obviously to increase communications and reduce your carbon footprint [...]. [...] You have people from all over the country coming here to take part in a meeting. [...] so if you've got them on the video conferencing you don't need to bring them to the building." (Respondent 1)*

These rich online media communication tools therefore can help saving time and reduce costs while enabling employees to work efficiently.

On KHub, one respondent related that he/she

*"have face-to-face meetings as well at best practice group [...] and meet sort of every other month but there are people who can't make it [...] because of geograph[ical] issues, so [they] have just been growing and using [KHub to solve] that." (Respondent 2)*

#### **5.1.3.7 Time- and money-saving**

Speed of access has been mentioned as being significant, as illustrated in the following quotation:

*'[Before] everything would be through professional bodies or specific groups that you would go to. So now you have got this ability to be able to search across millions of people, pick their skills or experience or the positions they might have held, and super-fast and that is just absolutely invaluable.' (Respondent 13)*

This aspect related to speed was also mentioned by Respondent 4.

*'It just makes it a whole lot easier to make connections, to find people, to find out what's going on quite quickly. (Respondent 4)*

The benefit of time-saving is not limited to the speed of social media tools and its enhancement of working practices. It also relates to employees who do not need to spend time travelling to meetings because they can occur online. This is particularly the case with rich media tools (such as WebEx or Skype):

*"I guess it saves time because if I was going for a face to face meeting with the Western Isles then that would be a significant amount of time travelling, albeit I could work while I was travelling." (Respondent 10)*

#### **5.1.3.8 Trust**

Lack of trust was mentioned by respondents when they expressed how they feel towards other colleagues or teams. Respondent 4 noted the variability of social media usage, depending on the organisation's hierarchical positions:

*"So I think that maybe informs some peoples' use of Yammer and other social media tools in that, are they allowed to, should they seek permission further up the chain to do that, and a lot of our senior managers really don't engage at all [...]. That's maybe not sending out a helpful signal because if they're not using Yammer or other sites, it's a missed opportunity because then, staff aren't seeing that it's a norm now. All the directors for example, if they were all on Yammer posting, that would normalise it, that would hopefully trickle down, people would see it's great that the director has said that, I can even respond to that." (Respondent 4)*

#### **5.1.4 New themes**

New themes emerged from the interviews. These are listed here below:

##### **5.1.4.1 Access to resources**

Another category of benefits identified in the data as pertinent to this study is access to resources. Respondent 19 mentioned the sharing of document attachments in an online forum:

*'It's a lot easier just to post something on the forum. [It's faster], absolutely. You post that on the forum with your attachments, everyone can see it. The forum alone has got*

*a lot of the attachments. So if you go to [...] to a specific subject, you'll be able to see the discussions and any attachments.'* (Respondent 19)

People may represent such resources, as Respondent 2 explained:

*'If you are a new officer and you've not met anybody yet and you join and you are a bit shy about asking a question you can still go on and see all these conversations and maybe get an answer. [...] It's giving them an easy way to get the messages we want them to get.'* (Respondent 2.)

Sharing resources in such ways reduce duplication of effort across the network:

*'[By] following their group on Yammer, and also seeing their posts on Yammer, I could see that they were also developing digital skills materials, so that enabled me to contact them and say, "That's great you're doing that. Do you know, we have something similar? Do we want to work together? Or, do you want to incorporate what we have into your material, and we can do likewise?'* (Respondent 4.)

#### **5.1.4.2 Awareness**

The findings indicate that online platforms and social media affordances increase network awareness and – as a consequence – the skills of individuals are rendered more visible. Some interviewees made this explicit by underlining this positive outcome of sharing details of their expertise online. More than half of the interviewees underlined how social media affordances enhance and broaden their awareness of knowledge and their ambient awareness (who knows whom or who is working on what, with whom, why, when and how).

#### **5.1.4.3 Ambient awareness**

It appears that online platforms and social media indeed increase users' knowledge and ambient awareness. For example, one interviewee reported:

*'You're aware of something and I think it's just awareness rather, even if you're not active in something directly that you've read. You're aware that somebody has got an interest or, you know, it's lodged, and you can go back. It just gives a bit more... It's just your awareness of professional interests.'* (Respondent 9)

As Respondent 10 emphasised about the learning process, KHub helped him/her to raise his/her awareness of lessons learnt:

*'I think it is just building up my awareness of what is out there [...] (Respondent 10)*

Several respondents stated how helpful it is to have the awareness of other people's knowledge, and to know where/how to find them as Respondent 14 confirmed:

*"It is an ongoing thing, identifying who is who, who actually knows how to do benefits management." (Respondent 14)*

A typical example of this 'awareness' was given by Respondent 4, who emphasised the benefits of being aware of other's conversations on a social media tool. Seeing others' activities and 'thinking process' can bounce back to the observer who can then reflect on it, which will eventually trigger some new ideas or actions:

*"[...] by following their group on Yammer, and also seeing their posts on Yammer, I could see that they were also developing digital skills materials, so that enabled me to contact them and say, "That's great you're doing that. Do you know, we have something similar? Do we want to work together? Or, do you want to incorporate what we have into your material, and we can do likewise?" (Respondent 4)*

Another respondent also emphasised how the visibility of these interactions made him/her aware of professional activities in his/her organisation by mentioning how

*"That's really useful just to be able to know what's going on in the organisation. That informs my response. I might respond to a Yammer post saying, "Actually, we already do this for [our organisation]." (Respondent 4)*

This helps to overcome knowledge silos by increasing awareness of what other colleagues and departments are working on. This benefit stems from the visibility provided by these social affordances that make tacit knowledge visible.

When answering about KHub, Respondent 6 explained how seeing other member's answers and interactions helped him/her to connect with relevant people who could potentially help him/her:

*"It's been a good way to, you know, even to say has anyone else set up a business panel? Do you have examples of question you asked for businesses? [...] that was really helpful because I was able to connect with people [...] who had done similar things [...]"*  
(Respondent 6)

Social interactions being available online enables members to go back to them, either to access the content or to be reminded of someone's profile, as Respondent 1 explained:

*"Sometimes it's good as a reference point if you're trying to remember someone's name; or you heard something that was discussed, and you wanted to find a little bit more information on it."* (Respondent 1)

Respondent 1 also emphasised that it allows him/her to make his colleagues aware of what is happening (in a particular area of work, with particular professionals) so that they pay attention to it and learn from it.

*"I remember quite a few groups – probably at least ten groups on the Knowledge Hub – and each of them, they do allow me to collaborate with others across organisations and find out what else is going on in a particular field."* (Respondent 4)

People who witness online conversations without being actively part of them are known as 'lurkers'. Even though this behaviour is sometimes considered as negative, because it is expected that members of an online community actively participate by sharing their knowledge with others, the principle of lurking is neither negative or positive.

*"We do know that there are lurkers – there are people that we know go on and look at it all the time but they never say anything, and that is fine because we want them to see all of that so we know we are getting stuff out to them."* (Respondent 2)

*"And then internally, Yammer. So that's where I tend to make a lot of connections and read a lot about what other Scottish Government staff are doing. I'm a member of probably 20 plus Yammer groups, because we do a lot of group stuff on Yammer around a whole range of subjects, and there's about 20 plus that are of relevance to me in one way or another. So basically, I sign up for a group that I think is going to be*

*useful. For really just, the same reason as before, really just to make sure I'm listening in the right places. I join a group and just see what is going on there. Some groups are quieter than others, but there are some groups that are really active and it's because, again, we're such a big and geographically spread organisation, it's often the only way I find out what other people are doing." (Respondent 4)*

*"I have a Twitter account but I more watch and lurk than comment. [...] It is more for keeping an eye on things." (Respondent 9)*

#### **5.1.4.4 Knowledge awareness**

Knowledge awareness relates to sources of knowledge that are visible and accessible by being available to, for instance, an entire network.

*"[...] if you can't always get along to the events, at least you can have a wee look around the hub and see what was discussed and look at the presentations and the slides, which is always useful." (Respondent 1)*

*"Sometimes it's good as a reference point if you're trying to remember someone's name; or you heard something that was discussed and you wanted to find a little bit more information on it. At the events you cannot go to everything, so you can choose the main topics that interest you and then you can read up on some of the others, which is quite useful." (Respondent 1)*

*"So if I find a really good article, it's my duty to put that on a sort of Knowledge Hub library but it's an in-house one. So we put that into a library and that library is there, so you would know, okay, I've got a question on data protection, you go to data protection, you go to library and you have all the things that other people before you have written." (Respondent 19)*

Another strong message on awareness relates to the scale of access, as Respondent 13 emphasised when he/she said:

*'[The] awareness of the huge amounts of individuals that are out there [when] previously that wouldn't exist. [Before] everything would be through professional bodies or specific groups that you would go to. So now you have got this ability to be able to search across millions of people, pick their skills or experience or the positions they might have held, and super-fast and that is just absolutely invaluable.'*  
*(Respondent 13)*

#### 5.1.4.5 The relevance of rich media tools

Rich media communication tools are increasingly used in organisations to facilitate synchronous online knowledge sharing between individuals and/or teams. These tools are categorised as 'rich' because of their technological features such as online video-conferencing, screen-sharing and other social media features (instant discussion, file sharing, etc). Considering that the most efficient way to share tacit knowledge happens between individuals having face-to-face social interactions, one of the main positive outcomes of rich media communication tools is to provide a technology which replaces/resembles face-to-face meetings.

They also enable employees to meet online without having the need to spend time and money to commuting.

*"[...] since last June, every member of [our organisation]'s staff now has Skype on their desktop and communicating, if you're in the central belt of Glasgow and Edinburgh, that tends to work quite well. Just at your desk, doing a Skype call. It tends to break down the barrier if you're trying to call someone in Inverness, for example."*  
(Respondent 4)

*"I like the fact that it saves a lot of time. It saves travel time for me and for the other person"* (Respondent 4)

This gain of time is also emphasised by Respondent 10:

*"I guess it saves time because if I was going for a face to face meeting with the Western Isles then that would be a significant amount of time travelling."*  
(Respondent 10)

The emphasis on time-saving for geographically dispersed teams was mentioned:

*"We use it in that way and we have used it externally. There is a couple of forums in Glasgow and Edinburgh and they are only an hour, an hour and half and for me coming down from Dundee it takes up the whole day, by the time you get back, so I use Skype to do to the meeting."* (Respondent 8)

This aspect was also noted by Respondent 10:

*"I am using the video conferencing in work now as well because I am connecting with different parts of Scotland so I have had two meetings with people in the Western Isles with Jabber, which is the [...] equivalent of Skype."* (Respondent 10)

Respondent 8 underlined the added value of video conferencing, emphasising that the visual feature enables him/her to get more subtleties with this mode of communication than when using the telephone:

*"I get to the meeting and its time. It's purely time. I have done telephone conferencing before but you don't get the nuance." [...] "It was a five hour journey from one hospital to another, so there I saw the real benefit of video conferencing. [Now] we are just talking about maybe an hour's journey but even then in just time wise it is invaluable and that is what we use." (R8)*

The importance and relevance of visual communication was also underlined by Respondent 10 when addressing nonverbal communication:

*"So much in communication is nonverbal so having those interactions, and its two or three people I have been talking with and I think that actually it is quite important." [...] if you want to understand the emotions I think visually seeing somebody is actually quite important as well because you might pick up a reaction that you might hear in a voice but you might see it as well." (Respondent 10)*

Respondent 8 also emphasised how these meetings through video conferencing happen in a group, and not necessarily one a one-to-one conversation mode:

*"It is a proper meeting. I don't know if they put a tablet with my face on it on a chair or something but it is a meeting and I have sat on the other side. I have actually been to one of the meetings where other people have skyped in. The same meeting and I happened to be in Glasgow that day so I went to that meeting. There are guys from Shetland, from Orkney, from Inverness – now I wouldn't expect anybody to come down from Orkney for one and half hours." (Respondent 8)*

If an organisation has professional ties with other institutions that are based abroad, rich media communication appears to facilitate the sharing of knowledge between the stakeholders, such as Respondent 9 explains:

*"We use Skype occasionally. Again, we have a difficulty in that we don't actually have Skype in this building. I have Skype on the laptop and I have used it. I think we have done one interview via Skype once with somebody from the Middle East. And I have used it when doing project designing with a University in South Wales. Skype was the most effective way of communicating." (Respondent 9)*

This international aspect of professional projects undertaken using with rich media communication tools which would otherwise involve travel, expense and loss of time is summed up by Respondent 12:

*"Well I would use Skype for when I have group chats with all the conveners or the advocates around Scotland. We use it at the university for things like PhD vivas because it is cheaper now to do that than bringing them in across the sea, with sponsors, with other academics – we use it for a whole load of things to be international rather than trying to arrange meetings or have these emails that are lengthy or what have you, we always have a Skype meet." (Respondent 12)*

## **5.2 Chapter conclusion**

In this chapter, it has been shown that KHub is supportive of tacit knowledge sharing practices in a variety of ways. Respondents have for instance explained how social media affordances contribute to opportunities for learning, or to the widening of networks and collaboration activities. The characteristics of organisational culture were also addressed. The findings have also shown the emergence of new themes, such as the access to resources, ambient and knowledge awareness, and the relevance of rich media tools.

In the next chapter, the findings from survey and interviews are discussed in relation to the three research questions of this study and the findings from the literature review, before presenting the contributions from the empirical work.

## 6 Discussion

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### 6.1 Introduction

This chapter presents a discussion of the findings presented in chapters 4 and 5, in the context of the literature review. It addresses how the findings from the empirical study answer the three research questions presented in the Introduction, namely:

1. How do social media facilitate the sharing of tacit knowledge between employees?
2. To what extent do social media bring new capabilities to the sharing of tacit knowledge?
3. Which situated factors may provide the appropriate context for using social media to enhance tacit knowledge sharing practices?

This chapter also evaluates the main contributions of this research to the field of Knowledge Management: (1) social media affordances increase tacit knowledge visibility; (2) confirmation that the Ba concept deserves to be updated with regards to social technologies.

In the literature, it was established that knowledge is socially constructed. This is a dynamic process that occurs through social interactions between individuals (Jakubik, 2007, p.14), by which knowledge is shared and created. Unlike the positivist approach that considers knowledge as being static and independent from individuals and their contexts, the social-constructivist approach considers knowledge as subjective. This is particularly apposite regarding tacit knowledge, which is the knowledge that is embedded in people's minds and actions, made of their experiences, ideas and expertise, among other characteristics (section 2.2.3.2). This is inherently valuable to organisations because if properly shared, such knowledge can contribute to the enhancement of working processes and organisational strategies. However, because of its intangible nature, tacit knowledge – unlike explicit knowledge – can be difficult to articulate and even more difficult to share. To facilitate this process, several techniques have been identified and used in Knowledge Management approaches. Among those,

Communities of Practice have proven to be significantly helpful in overcoming the challenges involved in the sharing of such specific knowledge.

The emergence of social media tools throughout the first decade of the 21<sup>st</sup> century has provided technological features that have not only enabled but also increased and facilitated social interactions among an increasing number of users. These social media affordances have been gradually incorporated into Enterprise Social Networks, to enhance the capacity of online social interactions between employees. Because social media enable online social interactions, it has been recently argued in the literature that these affordances can facilitate the sharing of tacit knowledge, which occurs, as mentioned above, through social interaction. This chapter, therefore, presents how this study's research questions have been addressed, by evaluating the outcomes of the research against the literature review findings, in order to assess how the empirical findings support or challenge the extant literature.

## **6.2 How do social media affordances facilitate the sharing of tacit knowledge between employees? (RQ1)**

The first research question was aimed at investigating how social media facilitate the sharing of tacit knowledge between employees. For this purpose, and as explained in the Methodology chapter (see sections 2.7 and 3.3.2), pertinent concepts were identified in the literature to ensure that the empirical investigation would be accurate. These concepts are Collective intelligence, Communities of Practice, Learning Processes, Online social interactions (professional and informal discussions), Story-telling and Expertise-sharing.

### **6.2.1 Collective intelligence**

It has been argued that social media have positive influences on collective intelligence (O'Reilly, 2012; Razmerita et al., 2014) and that social media can facilitate the sharing of tacit knowledge by fostering collective intelligence. (See also sections 2.4.1 and 2.4.2.) The affordances provided by social media for users to collectively find solutions and create new knowledge form the essence of collective intelligence itself.

The findings in this study indicate that online social platforms have a role to play in the fostering of collective intelligence. Collective intelligence emerges when individuals work collectively to find solutions. The ability given to KHub members to work collectively through the vCoPs (groups and forums), for instance, to solve problems is shown in the findings (sections 4.2.8 and 5.1.1.1).

## **6.2.2 Virtual Communities of Practice**

In the literature review (section 2.4.4.1), it was established that social media enable the sharing of tacit knowledge through online Communities of Practice (Paul M. Leonardi, Huysman, & Steinfield, 2013). Such communities exist on Enterprise Social Networks, on blogs, and on other tools that enable the gathering of online communities to discuss specific issues (Krishnaveni & Sujatha, 2012). One of the benefits of virtual Communities of Practice (vCoPs) is their unlimited geographical reach, because they enable members to share common issues without being co-located. This is a significant characteristic of KHub: it enables its geographically-dispersed members to form communities and hence collaborate on various professional issues, without belonging to the same organisation, and/or without sharing the same professional profiles or positions. The evidence for this is found in responses to the survey (for instance, section 4.2.9.1) and interviews (for instance, sections 5.1.3.3 and 5.1.3.7).

The benefits of, and advantages stemming from vCoPs, were mentioned several times by the respondents, regardless of whether those communities are supported and enabled by KHub or by other social media tools. Taken together, these findings on the building of knowledge through social interactions in the context of commonly shared problems have links with other similar work concerned with communities of practice (for example, Hall & Graham, 2004; Annabi & McGann, 2013).

### 6.2.3 Learning Processes

Learning processes can only occur if knowledge is being shared (Nonaka, 1994). Taking into account prior research (for example, Boh, Ren, Kiesler, & Bussjaeger, 2007) it is likely that individual learning occurs when workers generate new ideas, drawing on prior experience, and that team learning occurs when individuals participate in group interactions around shared problems or issues, or when individuals from a group decide to discuss and solve shared issues together. It has been argued that social interactions and knowledge-sharing enable individuals and teams to learn (new skills, new knowledge) from one another (Wenger & Snyder, 2000). By fostering learning process, vCoPs also help to overcome knowledge sharing barriers. Therefore, social media affordances progressively contribute to enhance learning processes and Knowledge Management (Thomas & Akdere, 2013). Social interactions represent a form of infrastructure for processes such as learning, as previously noted in the extant literature (for example, Haghshenas & Barzegar, 2014; Ryan & O'Connor, 2013).

The analysis of the data from the survey reveals that the online social platform supports learning: more than half of the respondents (58%) confirmed that it is easy to develop their learning on KHub. As mentioned in the findings (sections 4.2.3.1 and 5.1.1.2), learning also occurs in an asynchronous way, because members can access online interactions available afterwards the event, whenever they might need it. This correlates with the learning process that occurs during the Internalisation stage part of the SECI model, which is part of the Exercising Ba (a Ba space that, according to Nonaka, is supposed to enable learning processes face-to-face only). The role of KHub in enhancing learning processes was confirmed in both the survey and interviews, during which some respondents emphasised that they learn from others by either witnessing online conversations, or by understanding people's other ways of dealing with specific issues. These ultimately help them to be more informed and to make better decisions (sections 4.2.3.1 and 5.1.1.2).

#### **6.2.4 Online social interactions: professional and informal discussions**

In the literature review, it was established that social media affordances enable the sharing of tacit knowledge through social interactions (Sirous Panahi & Watson, 2012; Martin-Niemi & Greatbanks, 2010) and can contribute to the enhancement of working practices (Mäntymäki & Riemer, 2016). It is also argued that social media can help employees become involved in informal discussions within their organisations (Jalonen, 2014) and that informal online discussions among employees, such as on Enterprise Social Networks, can strengthen social interactions (Mäntymäki & Riemer, 2016). See also section 2.4.4.1.

The results from the analysis of the survey data correlate with the main arguments made by Panahi et al (2013) and others (for example, Nilmanat, 2009; Murphy & Salomone, 2013): that online social platforms are facilitators of tacit knowledge-sharing, particularly in respect of initiating informal and professional discussions. A majority of respondents confirmed that the KHub platform has enabled them to discuss professional issues, while half of them confirmed the same with regard to informal discussions. The findings concerning informal discussions provide less support to some claims made in the literature, or at least nuance those claims. The distinction between 'informal' and 'professional' might not always be understood in the same way by everyone, as shown in the interviews. For some, the term 'informal' relates to the content of the discussion itself, meaning discussion of matters unrelated to work (social gatherings after work, hobbies, private issues). For others, 'informal' relates more to the tools or media used, which might be informal instant messaging (or 'chat'). 'Informal' in this sense might be analogous to having a work conversation in a setting such as a café. Further, 'informal' can also relate to the form of communication, specifically, the tones used by individuals to discuss issues. Such discussions may be overtly friendly, even using emojis to emphasise the non-formal basis upon which the discussion is occurring.

#### **6.2.5 Storytelling**

Storytelling is one of the techniques used in Knowledge Management to facilitate the sharing of tacit knowledge. It was argued in the literature review (section 2.3.3.2) that this narrative approach enables individuals to contextualise the

content communicated to others, such as would happen through informal discussions. This technique can potentially contribute to enhance the sharing of tacit knowledge because it helps to communicate cultural values and get a deeper understanding of specific contexts. This informal way of communication can be related to informal social interactions that can occur on online social platforms, and this is the reason why the concept was identified as relevant in the Conceptual Framework.

Similarly to Communities of Practice, storytelling can occur online as 'Digital storytelling', i.e. telling stories on digital media (Detlor et al., 2016). However, the study did not generate results specifically related to the concept of 'storytelling'. The KHub members did mention the role of informal discussions supported by the platform (see sections 4.2.4 and 5.1.1.3), but these cannot be *de facto* linked to the technique of storytelling.

There is a lack of evidence from the empirical work on digital storytelling using social media tools in respect of sharing of tacit knowledge within the public sector. This deserves further exploration in future work.

### **6.2.6 Expertise sharing**

Among the various typologies of tacit knowledge initially defined by Nonaka (1994) and further explained by Panahi et al. (2013) (see section 2.2.3.2), expertise belongs to the technical dimension of tacit knowledge, i.e. the dimension that refers to technical or professional know-how. Expertise represents a high level of skills that experts have accumulated through long professional experience and knowledge-integration.

The findings from the survey lend further support to the argument that social media affordances facilitate the sharing of knowledge and expertise, as advocated, for example, by Panahi et al. (2012). The coming together of experts online to share their knowledge and expertise by externalising it on KHub also has a marked alignment with Dialoguing Ba. Instead of using the term 'expertise' the term 'skills' was chosen. That was to ensure that the participants could easily understand the

concept. The possibility of sharing expertise online was understood in the context of problem-solving or when it related to skills visibility. Both of these themes are addressed in sections 6.3.3 and 6.3.5.1.

It is evident that KHub plays a role in enabling users to share knowledge and expertise. The findings lend further support to the argument that social media affordances facilitate the sharing of knowledge and expertise, as stated by Panahi (2012). These results corroborate with arguments in the literature that social media affordances can facilitate the sharing of expertise<sup>9</sup>. Employees who are experts in their fields have opportunities to share their knowledge with those who might need it.

### **6.3 To what extent do social media bring new capabilities to the sharing of tacit knowledge? (RQ2)**

The second research question was aimed at investigating to what extent social media affordances bring new capabilities to the sharing of tacit knowledge.

#### **6.3.1 Idea-generation**

In the literature review, it was established that social media affordances enable interactivity, and by enabling their users to work collectively, they contribute to enhancing the sharing of ideas (Murphy & Salomone, 2013). Virtual Communities of Practice enable people to share their knowledge, experience and expertise, and to get new ideas (see section 2.4.4.1). The affordance of '*generative technologies*' enables the generation of ideas that can be shared with other people who can then use them for further development (Murphy & Salomone, 2013).

The findings from the empirical work confirm that social platforms can facilitate the discovery of new ideas, because over half of the respondents agreed (52%) that it is easy to discover new ideas on KHub, against a small percentage that disagreed (14%). The Forums (39%) and the Groups (36%) are features of KHub that were

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<sup>9</sup> As mentioned in the Conceptual framework, the term 'Expertise' includes the concept 'Skills'.

most used by respondents to discover new ideas. These are also the main features enabling online social interactions on KHub. The findings also show that if face-to-face communication (favoured by 55% of the respondents) is not possible, the preferred alternative ways to discover new ideas are social media tools (51%) and KHub (48%).

One respondent (Respondent 13) nuanced the findings by emphasising that he/she has rather found new ideas through '*broadcasted messages*' whenever they were sent to the entire community. Whenever the topic was related to his/her professional practice, he/she mentioned that it enabled him/her to "*pick up on and develop new ideas or a new approach*". This emphasises how messages (or conversations) distributed through a wide network can potentially expose people to new ideas. These findings therefore correlate with statements in the literature that emphasise that online social platforms do facilitate the generation of new ideas.

### **6.3.2 Networking**

While networking is considered to be an enabler of tacit knowledge-sharing (Haldin-Herrgard, 2000; Smith, 2001), it is also argued that social media can increase the possibilities of networking between users (Razmerita et al., 2014). Indeed, networking possibilities have been extended with the emergence of social technologies and social media affordances, such as extending the scope of social networks by extending the access to weak ties (Hemsley & Mason, 2013). It has also accelerated the sharing of knowledge and enhanced possibilities of innovation (Hemsley & Mason, 2013; Jarrahi & Sawyer, 2013). The enhancement of networking possibilities has also influenced virtual Communities of Practice (vCoPs) through social technologies which enhance considerably individual's networks.

The findings of the empirical work reported in this thesis show that nearly two thirds (61%) of the respondents confirmed that KHub allowed them to expand their networks. As mentioned in the Findings (section 4.2.7.1), online social platforms can widen networks, leading to the potential for opening up

opportunities for collaboration and access to new resources, and therefore making tacit knowledge more visible. The finding on this KHub affordance adds to prior work on 'knowledge awareness' as related to the visibility of individuals' competencies, for example in profile listings (Cooke & Hall, 2013) and observations of their interactions online (Leonardi & Meyer, 2015). This means that social media affordances facilitate the identification of new contacts that can lead to new collaborations. Respondents also explained that access to a large number of contacts makes it possible for members to easily enlarge their networks (section 5.1.2.1).

### **6.3.3 Problem-solving**

Collaborative media tools can potentially help with problem-solving and sharing knowledge (Thomas & Akdere, 2013). As Hansen et al., (1999) stated some time ago, the sharing of tacit knowledge on a collective level will help experts to better understand issues. This can eventually lead to problem-solving. When this process occurs online on a social platform where an increased number of individuals are connected, for instance, through a virtual Community of Practice, the probability for problems to be solved is significantly extended (section 2.4.4.1).

When professionals collaborate to help one another to provide solutions to problems raised by individuals, collaborative media tools also contribute to the enhancement of collective intelligence, thanks to the affordances that facilitate connections with employee's expertise (Razmerita et al., 2014).

As the findings in section 4.2.8 demonstrate, KHub facilitates problem-solving among its members, via members giving and receiving help from each other. Almost two thirds (63%) of the respondents confirmed that it is easy to request help from others and over half (53%) stated that it is easy to help others to solve their problems. Both of the main features that enable KHub members to interact with one another, the Forums (36%) and the Groups (30%), were selected as being the most used for 'problem-solving', despite the fact that KHub members indicated that they would still prefer to solve problems face-to-face.

These results confirm that online social platforms facilitate 'problem-solving' as mentioned in the literature (section 2.4.4.1). Moreover, these social interactions around deliberately offering and giving help correspond to Dialoguing Ba. Here, dialogue is fundamental to the processes of externalisation and sharing of mental models and skills.

#### **6.3.4 Tacit-Explicit conversion**

It is acknowledged in the literature that explicit knowledge is easier to share than tacit knowledge (section 2.2.3.1). It seemed therefore relevant to also investigate to what extent social media affordances facilitate the process of conversion between tacit and explicit knowledge. This conversion process is thoroughly investigated in the literature for three reasons: (1) the definition and related characteristics of tacit and explicit knowledge differ between scholars, and sometimes between schools of thoughts; (2) some scholars argue that there are no such distinctions between tacit and explicit knowledge – and therefore no conversion is needed; (3) the conversion process suggested by Nonaka is criticised as being too simplistic. This variety of positions emphasises the complexity of knowledge itself and suggests that caution and nuances are needed in addressing this topic.

Nonaka has significantly contributed to the understanding of knowledge-conversion via his SECI model, emphasising the extent to which such conversions are dynamic processes. It has also been argued that social media affordances can facilitate the sharing of tacit knowledge and enable the conversion from tacit to explicit knowledge (Panahi et al., 2012) by providing access to documented knowledge and experiences, and by providing retrievability (Panahi et al., 2015). This has also been confirmed by Annabi & McGann, (2013) who argue that online interactions can be used as documented material for further contributions.

The conversion from tacit knowledge to explicit knowledge was not explicitly addressed in the survey and did not emerge *per se* in the interview findings either. However, the process of '*explicitation*' of tacit knowledge is inherently apparent in some specific findings that are explained in the next section. According to survey

respondents, the KHub library is used by 24% them. This virtual space enables people to deposit and share documents in support of their discussions.

### **6.3.5 Tacit knowledge visibility**

In the literature review, it was established that social media increase the visibility and accessibility of tacit and personal knowledge. When social interactions are facilitated publicly on an online platform, awareness of these enhances opportunities for knowledge-transfer (P. M. Leonardi & Meyer, 2015). There are two types of awareness relevant here: the first one is 'knowledge awareness', (mentioned in section 6.3.2), the second is 'ambient awareness' (Levordashka & Utz, 2016) or 'peripheral awareness' (Lampe, Ellison, & Steinfield, 2006). Awareness of others' online activities enables people to regularly witness others' status updates and communications on social network sites (such as microblog platforms), including updates to their online personal profiles (Leonardi & Meyer, 2015). Exposure to such practices provides opportunities to follow (often unconsciously or passively) the activities of colleagues: who is working on what, with whom, why, when and how, and hence to gain access to associated resources (Ellison et al., 2014). It also builds trust (Razmerita et al., 2014). When these interactions are facilitated publicly on online platforms (in general), this enhances opportunities for knowledge-transfer (Leonardi & Meyer, 2015), learning – in cases of employees sharing social interactions around common issues (Haghshenas, Sadeghzadeh, & Nassiriyar, 2014; Ryan & O'Connor, 2013), network growth through the forging of new connections (K. Kane, Robinson-Combre, & Berge, 2010), and collaboration (Zavattaro & Sementelli, 2014). Equally, it has been argued that this can apply to other social media tools (Treem & Leonardi, 2012). For example, wikis help employees discover sources of expertise within the network (Mansour & Abusalah, 2011).

#### **6.3.5.1 Skills visibility**

The findings from the analysis of the interview data gathered in this study suggest that online platform and social media affordances increase network awareness and – as a consequence – the skills of individuals are rendered more visible. Some interviewees made this explicit by underlining this positive outcome of sharing

details of their expertise online. Skills belong to the technical dimension of tacit knowledge (Nonaka, 1994; Panahi et al., 2013). Thus, it can be argued that when online platforms and social media offer the affordance of enhancing skills visibility (for example through making it possible for network members to see social interactions within a network, and understand network shape) they bring new capabilities to the facilitation of tacit knowledge sharing.

## **6.4 Which situated factors may provide the appropriate context for using social media to enhance tacit knowledge sharing practices? (RQ3)**

The socio-constructivist approach to knowledge emphasises how knowledge is strongly influenced by the context within which it is shared, and this is particularly the case in regard to the tacit nature of knowledge. The third research question was therefore aimed at investigating situated factors that might provide an appropriate context for using social media to enhance tacit knowledge-sharing practices. Among those are issues such as knowledge-sharing influences, which are strongly related to organisational culture, ethical and technological aspects, and trust. The other following situated factors are also addressed: the difference between online and face-to-face social interactions, spatial co-location and time-saving benefits provided by social technologies.

### **6.4.1 Knowledge sharing influences**

It is argued in the literature review that there are several barriers to knowledge-sharing that influence the ways individuals do not share knowledge within their own organisations. These can be related to ethical issues (e.g. politics, confidentiality), technical issues (e.g. digital illiteracy) or to organisational structures that lead to lack of trust, and to organisational silos. However, even within the context of public sector organisations where a uniform type of culture could be expected, organisational culture still varies from one public body to another with regards to knowledge-sharing practices. This variety of culture can stem from various reasons, such as structural changes (e.g. the merging of two organisations into one) or different forms of leadership that can encourage positive (or negative) behaviours towards knowledge sharing (section 2.3.5).

#### **6.4.1.1 Organisational culture**

One of the issues identified in the literature review (section 2.5.2) as a barrier to knowledge-sharing within the public sector is organisational culture (Hazlett et al., 2008) or rather, the ways that organisational cultures are supportive or unsupportive of knowledge-sharing practices within organisations. The environment within which this study has been undertaken is the public sector. It is argued in the literature review (section 2.5.1) that cultures of collaboration may be more difficult to establish in the public sector than in the private sector (Sveiby & Simons, 2002), and that there can be a tendency to withhold knowledge. Organisational silos are also a common issue. These occur when employees do not share knowledge, not purposely, but because the organisational culture does not support a knowledge-sharing culture that would raise the awareness of 'who' is doing 'what' and 'how', for instance.

The findings from the empirical study tend to reflect what is argued in the literature: several respondents emphasised the flaws related to the culture of their organisations when it comes to supporting knowledge sharing practices. For instance, one of the respondents mentioned the issue of organisational silos (see section 5.1.3.4 R20) after the merging of two organisations into one. This was supposed to facilitate knowledge sharing among employees.

This was also mentioned by another respondent who emphasised the openness of the organisation he/she worked in, and how the environment was supportive of knowledge-sharing practices, explaining that his/her organisation didn't support a culture of 'secrecy' because there was a clear awareness that all employees work for the "*common good*" (section 5.1.3.4 R1).

#### **6.4.1.2 Ethical aspects**

Ethical issues are a type of knowledge-sharing hindrance that can occur in organisations, particularly within the public sector. It is indeed argued in the literature (section 2.5) that public sector organisations are usually owned by the state and that their finances depend on the funds allocated by the government. They are therefore influenced by the decisions made by the government. This

makes such organisations more or less political. This state of affairs can influence the ways managerial strategies are applied within organisations themselves.

The findings show that there are ethical issues when it comes to sharing knowledge online, depending on the content shared, the tools used to share them, and with whom this knowledge is potentially shared. Respondents mentioned the word 'security' which has to be understood in the context of public services as 'confidentiality'. The majority of respondents work in public services organisations that are accountable to the government. Another respondent mentioned that people often feel restricted because of the number of policies that hinder their intention to share knowledge. Because of the confidentiality of certain issues, some respondents specified that the use of email or the phone was obviously preferable over the use of an online community.

#### **6.4.1.3 Technological aspects**

Technology can positively and negatively influence knowledge-sharing practices in various ways. The implementation of technological tools within working processes stems from managerial strategies, but its adoption depends on the tools' users. The findings section (section 5.1.3.5) confirm that technological aspects influence knowledge-sharing practices in various ways. Some respondents mentioned the difficulty of using some tools, either due to lack of digital literacy (which is related to a lack of training) or due to technical aspects that prevented employees from using some specific tools (i.e. video-conferencing needs a large bandwidth).

Others, on the contrary, emphasised the simplicity of social media tools and how they facilitate the sharing of knowledge among expanded networks of professionals. Social technologies have significantly contributed to content generation, connections and sharing (section 2.4). This 'ease' of use alleviates the struggle to learn how to use these tools. In organisational contexts, this can reduce training costs. This, however, does not mean that no support should be provided to users.

#### **6.4.1.4 Trust**

As argued in the literature (see sections 2.3.4 and 2.5.2), trust is one of the main factors that influence the way people share (or do not share) knowledge. One of the knowledge-sharing barriers widely studied in the Knowledge Management literature is how lack of trust can hinder employees from sharing knowledge within organisations (Ardichvili, 2008; Pee & Kankanhalli, 2016; Seba & Rowley, 2010).

The findings reflect both situations: some respondents mentioned reluctance to express themselves and share their knowledge, due to fear of being judged, while others underlined the culture of openness that triggered their willingness to share and contribute to the community. This is particularly the case for social media tools that significantly extend networks, and hence affect members' online presences and therefore public exposure. This problem is partly solved by the vCoPs on KHub, because many of them are 'closed' groups. That is, people wishing to join these groups need to ask groups' moderators to be part of these communities, and hence need to justify their demand (interest, professional position, etc.).

#### **6.4.2 Online versus face-to-face**

As established in the literature review, prior to the emergence of social media technologies, the most appropriate way of sharing tacit knowledge has consistently been face-to-face interactions (Nonaka & Takeuchi, 1995; Teece & Al-Aali, 2013; Koskinen et al., 2003). Face-to-face interaction is considered to be the richest medium for transferring knowledge because it allows for immediate feedback and the embodiment of tacit knowledge cues (Ryan & O'Connor, 2013). However, with the development of information technology and the emergence of online social platforms, more interactions occur online rather than face-to-face (Yi, 2006). Indeed, some social media provide a virtual space within which users can share their experiences, feelings or emotions as if they were communicating face-to-face (Panahi et al., 2012; Juárez-ramírez et al., 2013).

As noted in the Findings (section 4.2.3.1.1), almost two-thirds of respondents indicated that their preferred way to develop their learning was 'face-to-face' (60%). Face-to-face interactions are always favoured over any other types of communication. However, because of today's professional and infrastructural constraints related to geo-localisation (geographically dispersed teams), and time and money limitations, social technologies enable to overcome these limitations.

### **6.4.3 Spatial co-location**

As mentioned in the literature review (see section 2.4), social technologies have enabled the possibility of accessing contacts, information and knowledge 'wherever-whensoever'. This continuous access has been enhanced by mobile technologies that give professionals the opportunity to not only share knowledge off-site, but also while commuting. Interestingly enough, this technological 'wherever-whensoever' access is similar to the way employees may access and share tacit knowledge. This seems to suggest that social media technologies harmoniously fit tacit knowledge content and ways to convey it.

The findings from the survey show that office computers are still widely used by a majority (60%) of employees to access KHub, but that KHub is also accessed through mobile technologies, particularly mobile computers (though these are also used on-site). However, one-quarter of employees' access KHub from home. Mobile technologies such as mobile phones are not used significantly at home or when commuting. However, a comparison throughout the years would inform on usage evolution. The findings from the interviews, on the other hand, substantiate what is supported in the literature. Several respondents mentioned the usage of rich media communication tools, such as video-conferencing (e.g. Skype, WebEx, Jabber), to emphasise the benefits they bring when collaborating with geographically dispersed teams. The possibility of holding meetings, either as a one-to-one dialogue, or with a team at a specific time, without the need for commuting, has been acknowledged as a precious saving of time. Some respondents also specified that some meetings might not happen, and that some team members would not be present, if these rich media tools weren't available. Another respondent clearly emphasised that these gatherings that occur on rich

media tools do not alter the quality of the meetings: discussions happen, problems are discussed and eventually solved, and ideas are shared. Other respondents also mentioned the possibility of sharing working spaces or screens with other members while having ongoing conversations. The majority of respondents who mentioned using rich media tools use video-conferencing software. This indicates that visual aspects, i.e. the sight of the conversation partner(s), matter. When mentioning his/her coaching activities, one respondent explained the richness of non-verbal communication *"if you want to understand the emotions I think visually seeing somebody is actually quite important as well because you might pick up a reaction that you might hear in a voice but you might see it as well."* Ideas, feelings, emotions, all belong to the cognitive dimension of tacit knowledge articulated by Nonaka (1994) and later Panahi et al. (2013).

The online social platform studied within the frame of this study does not support rich media communication. However, during the interviews, several respondents revealed the obvious advantage such tools can have in terms of tacit knowledge-sharing within organisations, particularly when teams are geographically dispersed, whether temporarily or as an organisational structure.

#### **6.4.4 Time-saving**

Social media tools can help in saving time and effort (Badawy & Zakarian, 2014). This argument that was first stated by Panahi et al. (2013) when he mentioned that social media can facilitate the sharing of tacit knowledge by decreasing the time and the effort needed for sharing knowledge. Moreover, and as mentioned earlier, on the technological level, social media are more user-friendly than Web 1.0 technologies were. This potentially decreases the effort and time needed to share knowledge online (Panahi et al., 2013). Also, because social media tools and social platforms are user-friendly and easier to use than previous Intranets from the Web 1.0 era, less time is needed for training people how to use them.

Almost a third of the respondents in the survey agreed that KHub allowed them to save time at work.

These findings on the perceived value of the online social platform in saving time and effort for knowledge sharing are significant, especially because they contradict the findings of prior work (for example, Ciabuschi, 2005; Haas & Hansen, 2007).

## **6.5 Contributions**

From the above discussions, there is firm evidence to demonstrate two main contributions from this study: (1) the confirmation that social media affordances increase tacit knowledge visibility; (2) the confirmation that the Ba concept needs to be updated in regard to social technologies.

Social media affordances increase tacit knowledge visibility by: (1) displaying online social interactions through increased network growth; (2) providing access to these online interactions to geographically dispersed individuals; (3) by storing these online social interactions and making them exploitable for further use. This tacit knowledge that has been made visible helps to increase 'meta-knowledge' ('knowledge awareness' and 'ambient awareness') and skills visibility. This has a direct and positive influence on collective intelligence, learning processes, and new collaborations.

Online social interactions where ideas are shared and problems are discussed belong to the SECI model's Externalisation stage that is embedded in the contextual Dialoguing Ba. The learning processes which occur thanks to these social interactions, and their potential application in the working processes, belong to the SECI model's Internalisation stage that is embedded in the contextual Exercising Ba. These two Ba were initially meant to occur when individuals communicate face-to-face. With the emergence of social media affordances, these two stages can be now considered to be happening online.

### **6.5.1 Contribution 1: Social media affordances increase tacit knowledge visibility**

As mentioned in the literature, knowledge is socially constructed through interactions between individuals. This is particularly the case with tacit knowledge, which is most efficiently shared through social interactions.

Usually optimally shared face-to-face, tacit knowledge, however, benefits from greater visibility when it occurs on online social platforms, thanks to specific social media affordances.

#### **6.5.1.1 Visibility of online social interactions**

The possibility of visual social interactions is not new: it arose when the first vCoPs became available online. To some extent, it was already possible for professionals to exchange knowledge on corporate intranets. The difference with social media affordances is that this visibility has significantly increased. This has considerably augmented the number of advantages employees and organisations can benefit from. These are explained below.

#### **6.5.1.2 Access to online interactions to geographically dispersed individuals**

Given the possibility of accessing online social interactions continuously, individuals can potentially connect, access and share knowledge whenever and wherever they are located. This access to knowledge 'anywhere anytime' is a technological feature that is enhanced by mobile technologies, and influences content generation and online social interactions. As already mentioned in section 6.2.2, the strength of vCoPs is their unlimited geographical reach. Moreover, the affordance provided by KHub enables its geographically-dispersed members to work on common issues without belonging to the same organisation nor even sharing the same professional background. This demonstrates how relevant it was to opt for KHub as a case study, as explained in section 3.3.3.

#### **6.5.1.3 Storage of online social interactions, making them exploitable for further use**

Social media affordances enable storage of online interactions so they are retrievable when needed. Discussions that occur online are automatically stored online and can be accessed long after they occurred. This affordance also facilitates the retrieval of older knowledge-sharing interactions, making them exploitable for further use. This could, for instance, be helpful in solving specific problems in the future. This is particularly beneficial to the sharing of best practices and lessons learned. It can even make them available to new members of communities.

For instance, one respondent (see section 5.1.4.4) emphasised how the possibility to access previous online discussions about a specific topic contributes to the learning process.

Making such knowledge explicit is still required if it is to be used: the Library on KHub is available to such purpose.

#### **6.5.1.4 Tacit knowledge visibility benefits**

Social media affordances increase the visibility of tacit knowledge, and the visibility of tacit knowledge facilitates awareness, knowledge sharing, skills visibility and network growth.

##### *6.5.1.4.1 Meta knowledge*

The access to online interactions by geographically dispersed individuals, the storing of online social interactions, making them exploitable for further use, and the increasing network growth, contribute to enhance 'meta-knowledge', and skills visibility. Two aspects contribute to build the meta knowledge: 'knowledge awareness' and 'ambient awareness', as explained below.

##### *6.5.1.4.2 Knowledge awareness and ambient awareness*

As mentioned in section 5.1.4.4, awareness of knowledge depends on the visibility of sources of knowledge, whether these sources are people's knowledge or documents. The visibility of tacit knowledge increases 'meta-knowledge', which consists of two types of awareness: 'knowledge awareness' and 'ambient awareness'. Knowing that social interactions and exchange of knowledge are continuously ongoing and available online provides an 'ambient awareness'. This is the awareness of others' online activities from regularly witnessing status updates and communications on social network sites such as microblog platforms. Levels of knowledge awareness depend on the visibility of resources created – and communicated – by individuals. Such resources may be found, for example, on organisational intranets. Exposure to such practices provides opportunities to follow (often unconsciously or passively) the activities of colleagues: who is working on what, with whom, why, when and how, and gain access to associated resources. It also builds trust (Razmerita, Kirchner & Nabeth, 2014). When these

interactions are facilitated publicly on online platforms (in general), this enhances opportunities for knowledge transfer (Leonardi & Meyer, 2015), learning (in cases of employees sharing social interactions around common issues (Haghshenas, Sadeghzadeh & Nassiriyar, 2014; Ryan & O'Connor, 2013), network growth through the forging of new connections (Kane, Robinson-Combre & Berge, 2010), and collaboration (Zavattaro & Sementelli, 2014). Equally, it has been argued that this can apply to social media (Treem & Leonardi, 2012). For example, wikis help employees discover sources of expertise within the network (Mansour, Abusalah & Askenäs, 2011).

"Context awareness" is another type of awareness mentioned by Ellison, Gibbs & Weber (2014). It relates to individuals' online status updates that provide other members of a community with contextual knowledge about experts' profiles. This helps to raise awareness about who is expert in what, as mentioned earlier.

#### **6.5.1.5 Knowledge sharing**

Online interactions make knowledge-sharing more visible and potentially increase its development. When interactions are facilitated publicly on online platforms, this enhances opportunities for knowledge transfer (Leonardi & Meyer, 2015), but also helps to identify experts (Brzozowski, 2009) and to potentially create or strengthen social ties (Gibbs, Eisenberg, Rozaidi, & Gryaznova, 2015).

As mentioned in section 6.2.6, social media affordances contribute to the sharing of expertise. As mentioned in section 4.2.5, a fair number of KHub members indicated that the platform facilitates the sharing of expertise (and/or knowledge). This was also confirmed by interview respondents (see section 5.1.1.4) who emphasised how the sharing of best practices was facilitated by vCoPs, social media affordances or the KHub platform itself.

#### **6.5.1.6 Skills visibility**

Skills belong to the technical dimension of tacit knowledge (Nonaka, 1994; Panahi, Watson & Partridge 2013). Thus, it can be argued that when online platforms and social media offer the affordance of enhancing skills visibility (for example through making it possible for network members to see social interactions within a

network, and to understand network shape) they bring new capabilities to the facilitation of tacit knowledge sharing. The visibility of skills was emphasised for instance by a respondent (see section 5.1.2.3) who mentioned that witnessing members' exchanges about a specific issue allowed him/her to discover the competencies of people involved in the discussion. Such online conversations are made visible thanks to the affordances provided by KHub in this case. To a certain extent, there is also evidence of such claims in statements by KHub members (section 4.2.8.1) confirming how easy it is for them to help one another through the groups or forums. By witnessing the type of help provided, one can identify who are the experts in specific areas.

#### **6.5.1.7 Increase of network growth**

Because social media affordances enable individuals to rapidly and easily extend their networks, target audiences become significantly wider. The analysis of the data suggests that online social platforms can widen networks by opening up opportunities for collaboration and access to new resources. Social media affordances enable network expansion and facilitate access to a large number of contacts. This makes it possible for users to enlarge their own networks. This is strongly related to collective intelligence. As Kane (et al., 2010) state, collective intelligence occurs when a group of people collectively acquire the ability to solve complex problems together in a way that an individual could not.

The widening of networks and its impact on collaboration opportunities is an aspect that was underlined by several respondents (see section 5.1.2.1) who, for instance, emphasised how social media affordances facilitate the possibility of making new connections with people by discovering their existence when witnessing online discussions. This claim is also supported by KHub members who asserted in the survey (see section 4.2.7) that the KHub platform allowed them to expand their network.

#### **6.5.1.8 Tacit knowledge visibility assets**

The visibility of tacit knowledge increases knowledge and ambient awareness, knowledge sharing, skills visibility and network growth. This can have a direct and positive influence on collective intelligence, learning processes, and new collaborations.

#### **6.5.1.9 Collective intelligence**

Collective intelligence is intangible. Yet it outlines the assumption that the whole is greater than the sum of any individual parts, as addressed by Surowiecki (2004). The sharing of tacit knowledge on online social platforms contributes to building collective understandings of particular issues to enhance collective intelligence. As already mentioned in section 6.2.1, social media affordances help individuals to find solutions collectively, generating opportunities to create and learn new knowledge. The collaborative aspect that is enabled on an online platform such as KHub was mentioned by several respondents who emphasised how useful it is for them. The collective processes of helping one another (see section 4.2.8 and 5.1.2.2) to work together or to learn from one another such as on vCoPs (see Chapter 2 section 2.4.4.1, chapter 4 section 4.2.3.1, chapter 5 section 5.1.1.2) contributes to the enhancement of collective intelligence.

#### **6.5.1.10 Learning process**

The sharing of tacit knowledge (e.g. mental models, point of views, ideas) among individuals in a team and/or an organisation helps people learn from each other. Online social platforms enable the visibility of people's interactions. If people watch these interactions occurring, without interacting or taking part in discussions (commonly known as 'lurking'), it is still possible for them to learn from these interactions. Moreover, these interactions will be available afterwards to be retrieved and reused (Leonardi & Meyer, 2015).

As already mentioned in section 6.2.3, there is evidence (see sections 4.2.3.1 and 5.1.1.2) that learning processes occur while individuals observe online social interactions and discussions about particular topics. This also relates to activities happening through vCoPs (see sections 4.2.3.1 and 5.1.1.2), or when individuals help one another (see section 4.2.8 and 5.1.2.2).

As Wenger & Snyder (2000) underline it, knowledge-sharing helps individuals and teams learn new skills and new knowledge from one another.

There is therefore a continual possibility for people to learn from others, without even needing to take part, although ultimately everyone is supposed to share knowledge for vCoPs to continue to exist.

#### **6.5.1.11 New collaborations**

When interactions are facilitated publicly on online platforms, this enhances opportunities for collaboration (Zavattaro & Sementelli, 2014). Equally, it has been argued that this can apply to social media (Treem & Leonardi, 2012).

The visibility of interactions that raise awareness of people and organisation's activities can also increase 'serendipity' ('accidental discovery'), and contribute to finding either relevant knowledge or experts in a specific field with whom potential collaborations could occur, without the need to search for them (Schneckenberg, 2009; Ott & Koch, 2012). That was well illustrated by some respondents (see section 5.1.2.1) when they emphasised how social media affordances facilitate opportunities to make new connections or how an apparent random meeting with another professional on Twitter ended up with them giving presentations together. It is therefore possible to assume that ambient awareness of online social interactions contributes to some extent to new collaborations through serendipitous encounters.

## **6.6 Contribution 2: Extension of the Ba concept**

This study also contributes to the understanding of the Ba concept in relation to the sharing of tacit knowledge via social media affordances. It confirms and adds to a recent body of research that attempted to update this concept in a similar way.

In 1998, Nonaka and Konno claimed that virtual spaces (e.g. online networks and databases) could be classed as only one type of Ba, namely Cyber Ba. Cyber Ba refers to activities such as networking, collaboration, and reaching consensus online.

However, the findings from this study of an online social platform conducted almost two decades later indicate that two other types of Ba may also occur within a virtual space. These are Dialoguing Ba and Exercising Ba. The existence of these two other types of Ba may be accounted for by the affordances of new technologies that have been developed since the 1990s, notably those that offer the same features as mainstream social media. The evidence presented here to support this explanation builds on the work of Martin-Niemi and Greatbanks (2010) on blogging and Ba. The findings also align with the work of other researchers who imply that some online platforms may be considered Ba per se. This is on the basis that they constitute a space (Razmerita et al., 2014) and that this space enables social interactions.

As it has been noted above, others have gone as far as arguing that, because all SECI phases can occur in online spaces (no matter whether totally or partially), then all types of Ba can be virtual (Bartolacci et al., 2016). However, the findings from the study reported here do not support the suggestion that Originating Ba can occur online. The earlier study that highlighted the occurrence of Originating Ba was focussed on a virtual environment in which face-to-face interactions were enabled by rich media communication tools (Bartolacci, et al, 2016). Absence of such advanced tools from KHub may be the reason for the failure to identify Originating Ba in the context of this study. Whatever the explanation, more empirical evidence is needed to explore claims for Originating Ba in virtual environments, taking into account both the ontological nature of the Ba itself, and the context of the virtual environment under scrutiny.

The analysis of these data reveals that the online social platform supports learning (sections 4.2.3.1 and 5.1.1.2). It is likely in this case that that individual learning occurs when workers create new ideas or innovate, drawing on prior experience, and team learning occurs when individuals participate in group interactions around shared problems or issues, or when individuals decide to discuss and solve commonly shared issues together. In respect of Ba, the agreement with this statement on learning is redolent of Exercising Ba because individuals use KHub as a source of practitioner insight that may lead to action. An important caveat, however, is that Exercising Ba has a focus on knowledge-by-doing. It is debatable

whether an online system such as KHub could support full implementation of 'doing'. Also, there is evidence that the sharing of knowledge on an online social platform can facilitate the acquisition of new ideas (see section 4.2.6.1), and hence potentially foster innovation. This is analogous to Dialoguing Ba where the sharing of know-how enables innovation in thinking and may subsequently result in action. The coming together of experts online to share their knowledge and expertise by externalising it on KHub has a marked alignment with Dialoguing Ba.

Critics of the Ba concept stated that this concept could not be adapted to the Western world, because of its specific Japanese characteristics. The evidence provided by this study demonstrates such statements do not stand in the face of empirical evidence.

## **6.7 Chapter conclusion**

To conclude, social media affordances do enhance tacit knowledge visibility by increasing visible online social interactions. This visibility of tacit knowledge facilitates 'ambient' and 'knowledge' awareness, knowledge-sharing processes, skills visibility and network growth. This can potentially have a direct and positive influence on collective intelligence, learning processes, and initiation of new collaborations. In addition to that, the visibility of the Internalisation and Externalisation stages of the SECI model make Ba itself, to some extent, visible, as shown in Figure 41.

## CONTRIBUTIONS

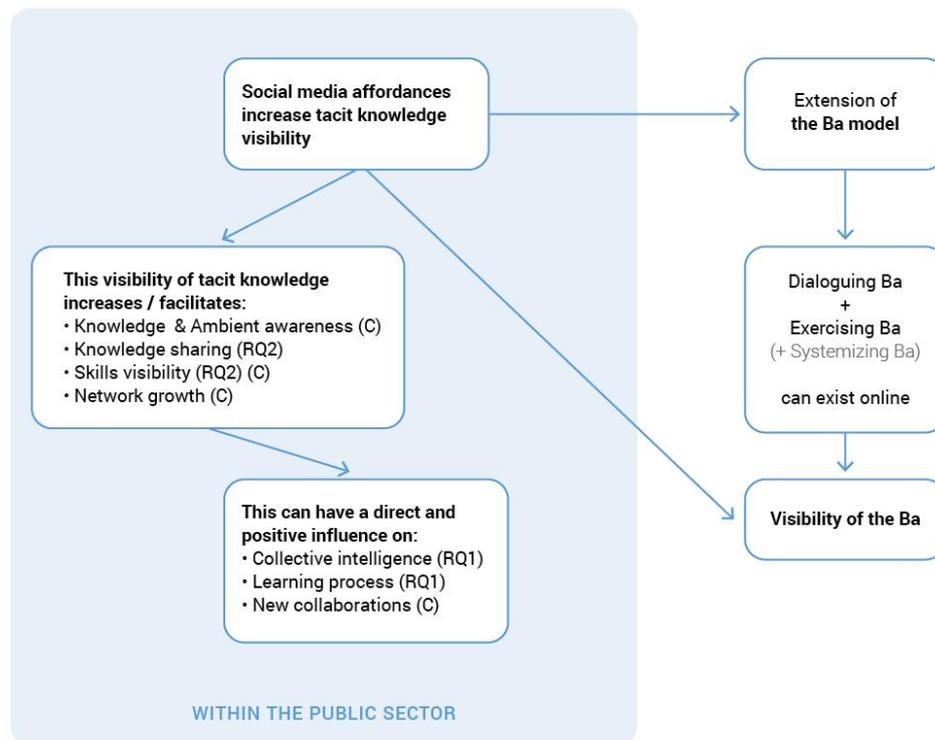


Figure 41 - Contributions

This visibility matters, because it helps individuals (employees, managers) to become aware of tacit knowledge, an asset that is intangible but one of the most valuable assets knowledge organisations can have.

## **7 Conclusion**

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### **7.1 Introduction**

The initial question raised at the start of this research was 'How do social media facilitate tacit knowledge-sharing practices between employees within organisations belonging to the public sector?' An exploration of the literature showed that there was a gap in studies that investigated this issue, particularly within the field of Knowledge Management, within which this research is grounded. The three research questions (section 2.7) on which the conceptual framework was built helped to define the scope of the research and with design of a methodological approach that would be most appropriate for empirical work. The analysis of the empirical data furnished evidence to support the contributions of this thesis as elaborated below.

### **7.2 Contributions to knowledge and theory**

The research findings make three primary contributions to existing knowledge and theory in the field of Knowledge Management. These contributions are related to the facilitation of tacit knowledge sharing through social technologies within the public sector. They are detailed below.

#### **7.2.1 Confirmation that social technologies increase tacit knowledge visibility**

This study demonstrates that social media technologies contribute to enhancement of collective intelligence (section 6.5.1.9), to support of learning processes (section 6.5.1.10) and to initiation of new collaborations (section 6.5.1.11). These positive outcomes stem from increased network growth (section 6.5.1.7), increased visibility of skills- and knowledge-sharing processes (section 6.5.1.6), and increased meta-knowledge (section 6.5.1.4.1), i.e. increased ambient awareness and knowledge awareness. These occur when tacit knowledge is made visible. Tacit knowledge-visibility is increased when online social interactions are displayed through online social technologies and affordances via two factors: (1) when access to these online interactions is provided to a wide network of professionals geographically dispersed; (2) when these online interactions are

stored online, making them accessible for further use. Opportunities to reuse this visible tacit knowledge are valuable because, to some extent, they facilitate the conversion of tacit knowledge to explicit knowledge.

### **7.2.2 Confirmation that the Ba concept deserves to be updated in regard to social technologies**

Online social interactions facilitate the sharing of tacit knowledge during the Externalisation and Internalisation stages of the SECI model. These stages belong to Dialoguing Ba and Exercising Ba respectively. This has been demonstrated by respondents mentioning how they can help one another online, or learn from each other (sections 6.2.3 & 6.3.3). The empirical data may support the argument that Originating Ba can also exist online (section 5.1.4.5), but as argued in the literature review (see section 2.3.2.1), there is an ontological contradiction that prevents such a statement.

### **7.2.3 Strength of the case study**

The strength of this research lies as well in the choice of the single case study, as discussed in section 3.4.4. The Knowledge Hub is a unique online social platform whose purpose is supporting knowledge-sharing among public services in the UK. The opportunity of undertaking an online survey in agreement with the KHub management team and reach more than a thousand respondents working in various public bodies in Scotland provided access to a huge and diverse population. This in turn contributed to investigating the problem at the heart of this research. Qualitative interviews with twenty selected members enriched the quantitative data collected in the survey and hence contributed to answering this study's research questions.

## **7.3 Limitations of the research**

Because this research was based on a single case study, the generalisability of these results is subject to certain limitations. The population that was investigated consisted of employees working in various public services in Scotland only. Because public sector organisations are dependent on their government's policies,

such organisations may differ in different countries. Most of the questions that were asked in the survey and in the interviews were related to the KHub platform and its specific technological features. The same empirical work undertaken with professionals using another online social platform might provide different results. The choice of this study was pragmatic, taking into account the limited time and means available during the data collection. A digital ethnographic study of similar users could provide more insights in regard to their behaviours around sharing of tacit knowledge. The single case study also prevents comparison of two or more different contexts. Such a comparison could well contribute to deepening the understanding of the phenomena studied.

#### **7.4 Future work**

In the findings, it can be seen that one specific social technology significantly contributes to facilitating the sharing of tacit knowledge is rich media tools. Rich media tools relate to online social platforms within include features such as video-conferencing, online messaging and screen sharing. These are increasingly used within public sector institutions, which, depending on their size (numbers of employees) may well need such tools because employees may be geographically distributed across several parts of Scotland, if not the UK.

One of the main positive outcomes of rich media communication tools is provision of technologies that almost replace face-to-face meetings. One of the respondents (Respondent 10, as seen in section 5.1.4.5) emphasised that clearly when explaining how visual sight of the interlocutor is essential to understanding the nuances of the messages communicated, and/or emotions or intuition. These are the deepest tacit-knowledge part of the cognitive dimension of Nonaka's SECI model. Respondents also emphasised how such tools helped them to save time (and therefore money) because there was no need to spend time commuting from one place to another in order to have a meeting. The opportunity provided by rich media tools to have online meetings with several members of a team seems, therefore, a precious gain of time that can only be of interest to organisations.

There is however a lack of empirical work that investigates to what extent rich media communication tools facilitate the sharing of tacit knowledge within the public sector. Further research is therefore needed to better understand the issues related to this knowledge practice, particularly because there is increasing use of such tools with public sector organisations, and because there seems to be an increasing number of individuals or teams working in geographically dispersed locations.

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## Appendix A: Conceptual framework

*RQ1: How do social media affordances facilitate the sharing of tacit knowledge between employees?*

CONCEPTS	LITERATURE REVIEW	GENERIC QUESTIONS RAISED	KHUB SURVEY QUESTIONS	INTER VIEWS
<i>Collective intelligence</i>	Social media have a positive influence on collective intelligence. Razmerita, Kirchner, Nabeth, (2014), Juárez-Ramírez, Pimienta-Romo, Ocegueda-Miramontes, (2013), Yates, Paquette (2011)	What role do social media play in regard to the collective intelligence process?	/	•
<i>Communities of practice</i>	Social media enable the sharing of tacit knowledge through online communities of practice. (Krishnaveni & Sujatha, 2012; Leonardi, Huysman, Steinfield, 2013)	Do social media facilitate the sharing of tacit knowledge through online communities of practice?	/	•
<i>Learning process</i>	Increasingly important is the role of social media tools as a way to enhance and advance workplace learning and knowledge management. (Thomas & Akdere, 2013)	Does a learning process occur when employees share their knowledge through social media?	On KHub I find it easy to develop my learning.	/
<b>Social interactions:</b> <i>Professional discussions</i>	Social media enable the sharing of tacit knowledge through social interactions. (Panahi & Watson, 2012, Martin-Niemi & Greatbanks, 2010)	Do social media enable social interactions between employees?	To what extent do you agree with the following statements? KHub has allowed me to discuss professional issues.	/
<b>Social interactions:</b> <i>Informal discussions</i>	"It is plausible to assume that the informal discussions with colleagues on ESN lubricate social interactions and hence have a positive effect on the more work- and utility-oriented uses of ESN." (Mäntymäki & Riemer, 2016)	Do social media enable informal communication?	To what extent do you agree with the following statements? KHub has allowed me to have informal discussions.	/
<i>Storytelling</i>	Social media enable the sharing of tacit knowledge through storytelling. (Martin-Niemi & Greatbanks, 2010)	Do social media facilitate the sharing of tacit knowledge through storytelling?	/	•
<i>Tacit knowledge sharing</i> <i>(Expertise, skills)</i>	[...] social media may also facilitate tacit knowledge sharing (the knowledge that resides in human minds that cannot be easily verbalized, e.g., ideas, rule of thumbs, technical skills, and intuition). (Panahi, 2015)	What are the social media affordances that enable the sharing of expertise?	To what extent do you agree with the following statements? On KHub I find it easy to share my knowledge and expertise.	•

*RQ2: To what extent do social media affordances bring new capabilities to the sharing of tacit knowledge?*

CONCEPTS	LITERATURE REVIEW	GENERIC QUESTIONS RAISED	KHUB SURVEY Q.	INTER VIEWS
<i>Idea generation</i>	Some social media affordances can facilitate the sharing of new ideas. (Majchrzak, Faraj, Kane, et al., 2013)	How do social media facilitate the access to new ideas?	Which of these KHub tools or services have you used to discover new ideas? Blogs, E-mail, (Notifications, newsletters), Groups, Forums, Wikis, Chat, Library	/
<i>Knowledge creation</i>	Contributions and interactions enable a high degree of collaborative knowledge creation and sharing. (Mergel, 2011, 2013)  Social media provide a virtual, participatory space to create new knowledge. (Panahi, 2013)	To what extent do social media enable new forms of interactions?  How do social media enable the creation of new knowledge?	/	●
<i>Networking</i>	Networking and informal relationships are both considered to be enablers of tacit knowledge-sharing (Haldin-Herrgard, 2000; Smith, 2001)	How do social media facilitate the networking process?	To what extent do you agree with the following statements? KHub has allowed me to expand my network	/
<i>Problem solving</i>	Collaborative media tools can potentially help with problem solving and sharing knowledge. (Thomas & Akdere, 2013)	Do social media help problem solving?  Do social media facilitate problem solving?	To what extent do you agree with the following statements? On KHub I find it easy to request help from others. / help others to solve their problems.	/
<i>Skills visibility &amp; access</i>	On a Web 2.0 platform, socialization takes place when people or groups attempt to share their ideas, knowledge, experiences, and skills through practice, imitation, observation, and contribution. (Nezakati, et al. 2015)	How do social media facilitate the promotion of users' skills and knowledge?	/	●
<i>Tacit-explicit conversion</i>	Social media can enable the conversion from tacit to explicit knowledge. (Panahi, Watson, Partridge, 2012)	Do social media facilitate the explication of tacit knowledge in a way that it can be easily codified or stored?	/	●
<i>Tacit knowledge visibility</i>	Social media help make visible and accessible the individual and collective tacit knowledge. (Panahi, 2013)	How do social media enhance the sharing of personal knowledge?	/	●

*RQ3: Which situated factors may provide the appropriate context for using social media to enhance tacit knowledge sharing practices?*

CONCEPTS	LITERATURE REVIEW	GENERIC QUESTIONS RAISED	KHUB SURVEY Q.	INTER VIEWS
<i>Ethical issues</i>	If tacit knowledge needs to be made explicit so that it can be shared, it could be at the expense of contravening confidentiality requirements. (Lin, 2007). Ethical issues have to be considered when using social media tools in unanticipated contexts. (Mergel, 2011)	Do ethical issues affect the way users share knowledge?  How are ethical issues being addressed when employees use social media?	/	●
<i>Knowledge sharing hindrances</i>	Three type of knowledge sharing barriers have been defined by Riege (2005): individual organisational and technological ones.	What are the hindrances that could prevent employees to share tacit knowledge on social media?	/	●
<i>Organisational culture</i>	An organisational culture which encourage social interactions will support the sharing of tacit knowledge. (Taylor & Wright, 2009)	Do employees feel encouraged to share their tacit knowledge when using social media?	/	●
<i>Spatial co-location of the organisation</i>	The incursion of digital immersion (internet and digital technology) coupled with the impact of mobile devices and video is having a positive impact on knowledge management (Duffield & Whitty, 2015)	What are the devices that employees use to undertake various tasks?	Which of these devices do you use to access these tools? Computer, Mobile computer (laptop, tablet), Mobile phone (Professional/Private)	●
<i>Online vs. face-to-face</i>	With the development of information technology and the emergence of intranet, more interactions are online rather than face-to-face. (Yi, 2006)	Do employees prefer face-to-face interactions?	Which is your preferred way of doing the following? On KHub, On other platforms/social media, Face-to-face, By e-mail, By phone, By sms, All of them.	/
--	Some social media provide a virtual space within which users can potentially share their experiences, feelings or emotions, as if they were communicating face-to-face. (Panahi, Watson, 2012; Juarez-Ramirez, Pimienta-Romo, Ocegueda-Miramontes, 2013)	What are the reasons that motivate employees to share tacit knowledge through social media instead of face-to-face?	/	●
--	Face-to-face interaction is considered to be the richest medium for transferring knowledge because it allows for immediate feedback and the embodiment of tacit knowledge cues. (Ryan & O'Connor, 2013)	Which other forms of off-line communication are being used to share tacit knowledge at work and why?	/	●
<i>Time saving</i>	Some social media tools can help saving time and effort. (Badawy & Zakarian, 2014)	Which social media tools help saving time? It is faster to share knowledge through KHub than face-to-face?	To what extent do you agree with the following statements? KHub has allowed me to save time at work.	/
<i>Trust</i>	Mutual trust creates the necessary conditions to facilitate tacit knowledge sharing. (Panahi, 2013)	Which are the potential hindrances that can prevent users to share their knowledge with other colleagues?	/	●

## Appendix B: Online survey questionnaire sample

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Dear registered Knowledge Hub user, The Scottish Knowledge Hub Network & Edinburgh Napier University have created this seeking member's views on their knowledge sharing practices. We would appreciate it if you could complete the survey which will inform future developments of the collaboration platform.

### **Mike McLean**

Programme Manager, Knowledge & Collaboration, Improvement Service

### **Gaining Your Consent**

#### **Why this survey?**

This survey is part of a doctoral study on knowledge sharing practices between employees. The results will contribute to the research in this area as well as inform the development of Knowledge Hub. The questionnaire should take no more than 10 minutes to complete.

#### **What will be done with my data?**

Your anonymity is guaranteed. Your data will be anonymised and combined with the data provided by all other survey respondents.

#### **Does this study have ethical approval?**

Yes. Ethical approval for this study has been considered and granted by Edinburgh Napier University's Research Integrity Committee.

#### **How do I give my informed consent for participation in the study?**

You can withdraw from this survey at anytime, but please be aware that your data will then be lost.

If you have any questions about this study, please contact Iris Buunk at:

████████████████████

Q1. Do you wish to proceed with this survey? (By clicking No, you will exit this survey.)
<input type="radio"/> Yes <input type="radio"/> No

## Page 2: Interactions with other members and knowledge sharing practices

Q2. To what extent do you agree with the following statements? Knowledge Hub has allowed me to:

	Strongly agree	Agree	Neither disagree nor agree	Disagree	Strongly disagree	Don't know
Do my work more efficiently	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Discuss professional issues	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Expand my network	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have informal discussions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Save time at work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q3. To what extent do you agree with the following statements? On Knowledge Hub I find it easy to:

	Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly agree	Don't know
Discover new ideas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Share my knowledge and expertise	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Develop my learning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Request help from others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Help others to solve their problems	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Complete my tasks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q4. Which of these KHub tools or services have you used and for what purpose? (Please note: you can select more than one tool for each action).

	Blogs	E-mail (notifications, newsletters)	Groups	Forums (Groups)	Wikis (Groups)	Chat	Library
Discover new ideas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Share my knowledge and expertise	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q4. Which of these KHub tools or services have you used and for what purpose? (Please note: you can select more than one tool for each action).

<b>Develop my learning</b>	<input type="checkbox"/>						
<b>Request help from others</b>	<input type="checkbox"/>						
<b>Help others to solve their problems</b>	<input type="checkbox"/>						
<b>Discuss with others</b>	<input type="checkbox"/>						

Q5. Which is your preferred way of doing the following? Please select all that apply

	Online (on Knowledge Hub)	Online (on other platforms, social media)	Face-to-face	By e-mail	By phone (conversation)	By sms	All of them
<b>Discovering new ideas</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Sharing my knowledge and expertise</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Developing my learning</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Requesting help from others</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Helping others to solve their problems</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### Page 3: Digital tools use

Q6. How often do you use Knowledge Hub?

- Every day
- 2-3 times a week
- 2-3 times a month
- About once a month
- I am a new member

Q7. Apart from Knowledge Hub, which social media sites do you use for professional purposes and with whom? Please select all that apply

	With my colleagues (within my organisation)	With partners (external to my organisation)	N/A
Blogs (Wordpress, Blogger)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Facebook	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
LinkedIn	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Skype/FaceTime (video conferencing)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Twitter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wiki (platform)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Yammer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
YouTube	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q8. When do you use these tools (for professional purpose)? Please select all that apply

	At your office	In a workplace (meeting, conference)	While commuting	In a public space (eg. cafe)	Working from home	All
Blogs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Facebook	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Knowledge Hub	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
LinkedIn	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Skype/FaceTime	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Twitter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wikis	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Yammer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
YouTube	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q9. Which of these devices do you use to access these tools? Please select all that apply

Q9. Which of these devices do you use to access these tools? Please select all that apply

	Computer	Mobile computer (laptop, tablet)	Mobile phone (professional)	Mobile phone (private)	N/A
Knowledge Hub	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Blogs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Facebook	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
LinkedIn	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Skype/FaceTime	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Twitter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wikis	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Yammer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
YouTube	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q10. Do you have any suggestions as to how the Knowledge Hub could be improved? If so, please explain in the comment box below.

.....

.....

#### Page 4: Demographic questions

Q11. What is your gender?

- Female
- Male
- Other
- Prefer not to say

Q12. What is your age?

- Under 18
- 18-24 years old
- 25-34 years old
- 35-44 years old
- 45-54 years old
- 55-64 years old
- 65-74 years old
- 75 years old or older

Q13. Which of the following best describes your position?

- Elected member
- Chief Officer
- Middle Manager
- Front-line Manager / Supervisor
- Officer / Front-line service delivery or similar
- Graduate / Apprentice
- Volunteer
- Other (please specify):

Q14. Which sector do you work in?

- Local Government
- Scottish Government
- NHS
- Police Scotland
- Scottish Fire and Rescue Service
- Third Sector / Voluntary
- Private Sector
- Other (please specify):

Q15. Where is your primary work place?

- Scotland
- Rest of UK
- Outside of UK
- N/A

**Page 5: Thank you!**

Q16. If you are willing to be interviewed, please add your email address in the box below and click 'Yes' so that I can contact you directly. If you do not wish to be contacted for an interview, please click 'No' and proceed to the end of the survey.

No  Yes  E-mail: .....

## Appendix C: Interview guide (sample)

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### Interview questions

[Recording starts here]

#### Introduction & general questions (5 min.)

	Questions	Notes
		Submit the consent form. Explain the aim of this study and how the interview is structured.
Q1	Could you introduce yourself and explain me what is your job position and what does it consist of?	
Q2	<p><i>Generally speaking, how do you prefer to:</i></p> <ul style="list-style-type: none"> <li>▪ <i>learn new information?</i></li> <li>▪ <i>request help from others?</i></li> <li>▪ <i>provide help to others?</i></li> <li>▪ <i>share your expertise</i></li> <li>▪ <i>discover new ideas?</i></li> </ul>	<p><i>Topics to cover:</i></p> <ul style="list-style-type: none"> <li>▪ <i>Online (Khub),</i></li> <li>▪ <i>Online (social media)</i></li> <li>▪ <i>Face-to-face</i></li> <li>▪ <i>By e-mail</i></li> <li>▪ <i>By phone</i></li> </ul>

#### KHub and tacit knowledge sharing practices (15 min.)

	Questions	Notes
Q3	What motivated you to join Knowledge Hub and why?	
Q4	What are the main reasons why you're using KHub now?	<p><i>Topics to cover:</i></p> <ul style="list-style-type: none"> <li>▪ discussions on professional issues</li> <li>▪ informal conversations</li> <li>▪ making new contacts</li> <li>▪ learning new knowledge / discovery of new ideas</li> <li>▪ help received by/provided to others</li> <li>▪ sharing your expertise</li> </ul>
Q5	How does KHub help you doing your work?	<ul style="list-style-type: none"> <li>▪ Is it positive or negative?</li> <li>▪ Does it have any benefits?</li> <li>▪ Does it help you achieve things?</li> </ul>
Q6	When do you access KHub? On which device?	Refer to their personal answers to the survey

## Social media usage (20 min.)

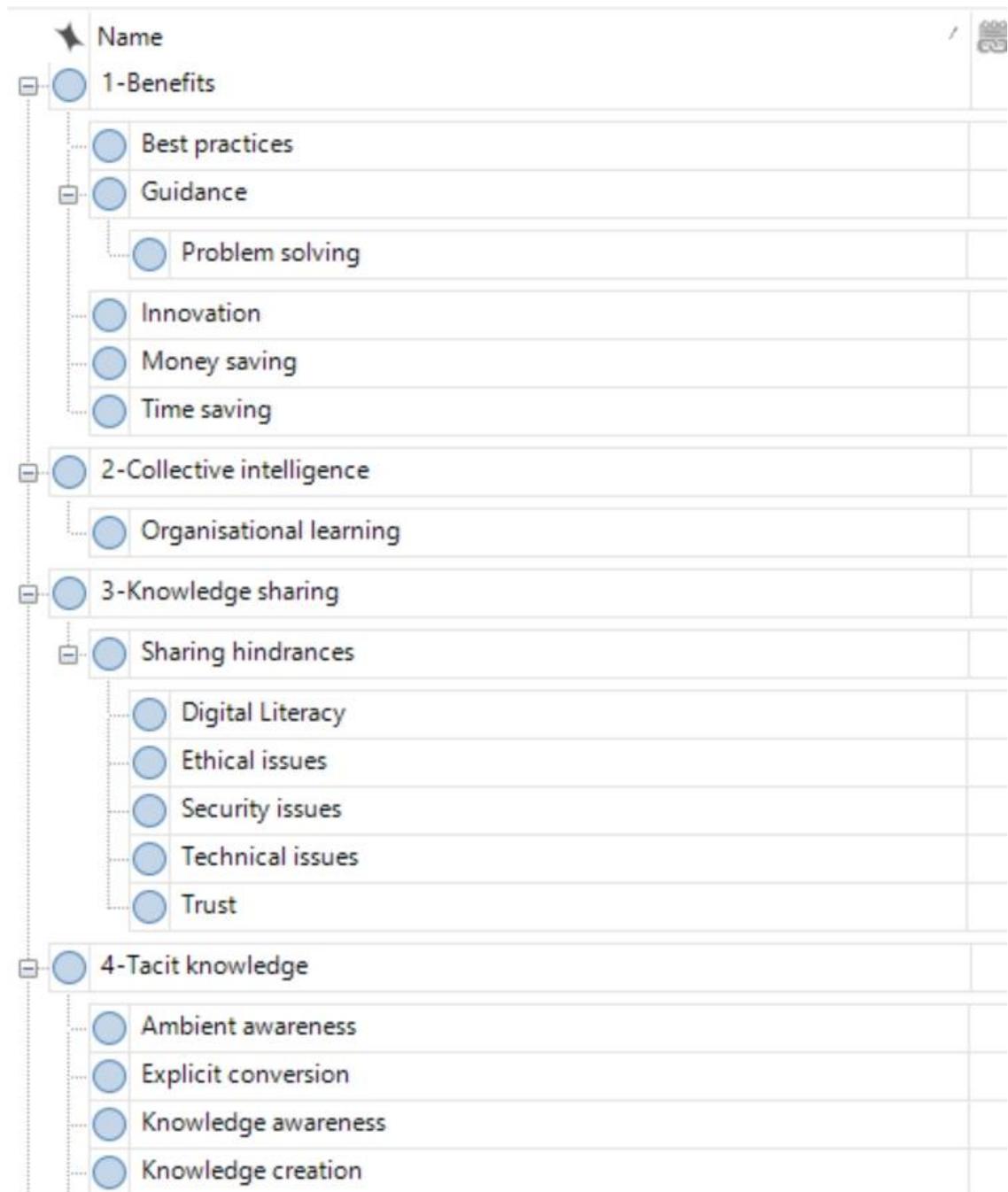
Now that we have covered the way you use KHub, I would like to invite you to reflect on the way you use other social media tools in order to share your tacit knowledge with your colleagues.

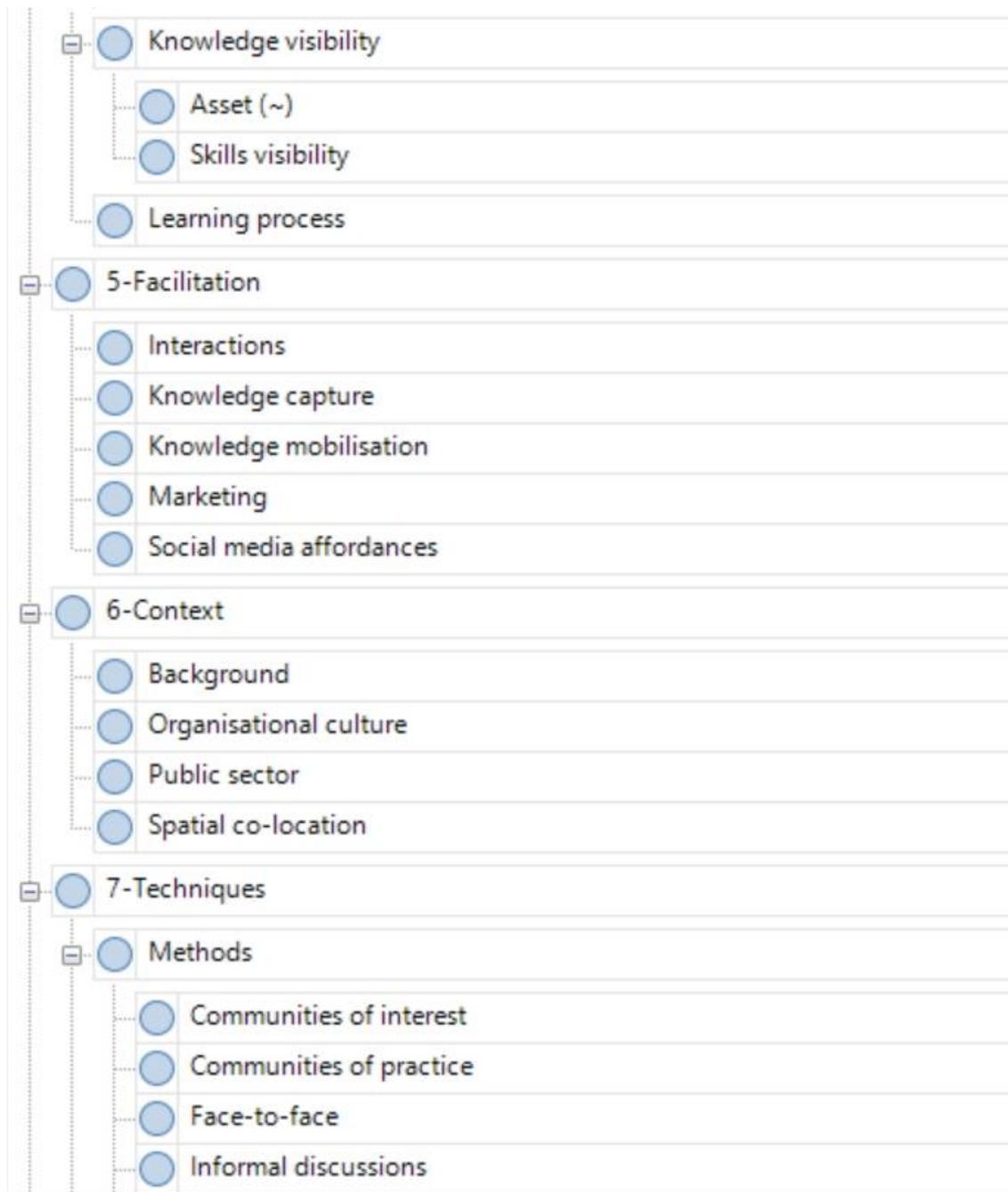
	<b>Questions</b>	<b>Notes</b>
<b>Q7</b>	Tell me about your social media usage. Which social media do you use?	Blog, Facebook, LinkedIn, Skype/FaceTime, Twitter, Wiki, Yammer, YouTube Any other?
<b>Q8</b>	For what purpose?	<i>Topics to cover:</i> <ul style="list-style-type: none"> <li>▪ discuss work problems</li> <li>▪ have informal discussions</li> <li>▪ learn new information</li> <li>▪ share your knowledge &amp; expertise</li> <li>▪ discover new ideas</li> <li>▪ make new contacts</li> <li>▪ receive/provide help from/to others</li> </ul>
<b>Q9</b>	How does social media help you do your work?	<ul style="list-style-type: none"> <li>▪ What are the benefits?</li> <li>▪ How does it help you achieve things?</li> </ul>
<b>Q10</b>	<i>On which device are you using them? Mobile phone, laptop, work station, home computer</i>	Refer to their personal answers to the survey
<b>Q11</b>	<i>Where (or when) are you using them? At the office, in any professional environment, while commuting, at home.</i>	Refer to their personal answers to the survey

**Open-end questions on tacit knowledge sharing (5 min.)**

	<b>Questions</b>	<b>Notes</b>
<b>Q12</b>	What do you have to say regarding the advantages and/or disadvantages of using social media to share tacit knowledge?	
<b>Q13</b>	Are there any reasons why you would not share your tacit knowledge through social media?	Whether it relates to confidentiality, security, ethical issues, trust. "tacit knowledge" = expertise, "what you know", experience, tips
<b>Q14</b>	Generally speaking, do you prefer to share tacit knowledge online or face-to-face? How so? Do you see a difference between sharing your knowledge online vs face-to-face?	Do you enjoy (using social media)? Could you explain a bit further? Do you find it awkward?
<b>Q15</b>	Is there anything else you would like to add?	Thank you. Invitation to complete answers by e-mail.

## Appendix D: Thematic coding framework (NVivo)







## Appendix E: Interview coding sample

Summary
Reference
Text

Interview R10\_cut

Interview R15\_cut

Interview R19\_cut

Interview R04\_cut

Network

KHub

Social media affordances

Social media tools

Coding Density

Knowledge visibility

1-Benefits

1-Benefits

Knowledge awareness

X

So basically, I sign up for a group that I think is going to be useful. For really just, the same reason as before, really just to make sure I'm listening in the right places. I join a group and just see what is going on there.

Some groups are quieter than others, but there are some groups that are really active and it's because, again, we're such a big and geographically spread organisation, it's often the only way I find out what other people are doing.

**Reference 3 - 0.83% Coverage**

So sometimes, you'll hear that and you'll think, yes, I saw something about that work on Yammer earlier this week. So Yammer can often be the first place I'll see what's going on and sometimes, the only place. Sometimes I never hear that news anywhere else.

**Reference 4 - 1.23% Coverage**

But by following their group on Yammer, and also seeing their posts on Yammer, I could see that they were also developing digital skills materials, so that enabled me to contact them and say, "That's great you're doing that. Do you know, we have something similar? Do we want to work together? Or, do you want to incorporate what we have into your material, and we can do likewise?"

## Appendix F: Interview transcript sample

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**File Name** Interview R19\_cut

### **File Details**

*Audio Length:* 00:43:31

*Number of speakers:* 2

*I – Interviewer*

*R – Respondent*

### **Notes:**

*Where there is an unclear word or phrase a timestamp is included e.g.: [Inaudible 01:02:03].*

*Ellipses (...) are used where a speaker's sentence trails off, where they are interrupted, or to indicate a change in direction in the conversation.*

*\*This is an intelligent verbatim transcript.*

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### **START OF TRANSCRIPT**

R: My role is one with [REDACTED] - which is the [REDACTED] [REDACTED] - and I am an Executive Committee Member for [REDACTED] and I am the Communications Officer for [REDACTED].

Now, the [REDACTED] - [REDACTED] - they basically are a society that gets similar local authority lawyers - like myself - together and we discuss certain things that are happening and we try and address them in some way. We look at best practice and other ways to do things.

So normally, these things have taken place via email communication and then thereafter, we have regular meetings. So usually, every three months or so, a group on a specific topic would meet up.

So that's what my role is. But now as I said, my main role is one of Communications Officer for the whole of the society.

I: Okay, excellent. Do you work in a team? You were talking about [REDACTED]. Can you define how many people you work with?

R: Not really. In the Executive Committee, it's mainly heads of legal departments across - so actually higher up than myself - across the 32 local authorities, and they attend - some attend the meetings, some don't - it varies. That's for the Executive.

But then thereafter, we've got at least 10 other groups of areas, depending on the legal practice. For example, one that I tended to go along to was social work and that one again, you would have big numbers in that because you're looking at 32 local authorities and you're inviting 32 local authority lawyers minimum to attend this meeting.

But sometimes, you might have in a team - for example, my team - all of my lawyers do that work, so they may all be invited to that. So it's actually not just 32, there might actually be three times that, that are invited to come along.

I: I understand.

R: So I guess it's difficult to pinpoint exactly how many people are involved in that [REDACTED] team, but I would say it's quite wide because a lot of people have access to the Knowledge Hub facility, which they might not come along to the meetings but they still have access to it.

I can't remember the last time I looked but I'm sure there was over 100 in one of the social work groups.

I: So you collaborate with people who are not located here?

R: Yes, all over Scotland. The 32 councils have lawyers who work in different areas, and those different areas are reflected in the Knowledge Hub groups that we have, because we have different Knowledge Hub groups. So there might be one on social work, there might be one on property law, there might be one on employment law - well, there are ones on employment law - and various other areas that we cover.

So that's the specialisms and they share that information within their particular group.

I: About Knowledge Hub now. Do you remember how you started using it and for what reason?

R: Yes, I started using it because... Just by chance I came across somebody who put me in touch with the improvement service, and through contacting the improvement service, I'd said what I was looking for, they said, we have a facility called the Knowledge Hub that might be in-line with what you're looking for.

We had previously tried to do that via our own [REDACTED] website, by setting up passwords and so on, but it was not a working, functional website for that purpose. We would have had to invest a significant amount of money to actually bring it up to the standard that we need, which is basically the Knowledge Hub.

I: Excellent, so you seem to Knowledge Hub very frequently.

R: Yes. As I said, there's a minimum of 10 working groups for [REDACTED] within Knowledge Hub. One of them is hidden, which is the social work one, so people wouldn't be able to find it. All of the other ones are visible but not in terms of the content.

I: Okay. How does it help you to do your work?

R: For all of the groups, the main aim is to share our working practices and to share learning, but also as a sounding board for anything that we might be doing.

So to give you an example, if I'm involved in a policy, one of the first questions I will ask to Knowledge Hub is, "Has anyone else done this policy?" There's no point in reinventing the wheel if someone else has already done it.

So we use it for all those purposes. I certainly have found it very useful in terms of being able to post something that we need a quick answer to and people then giving me their views on it.

- I: Do you get a lot of responses?
- R: It depends on the query that you put up.
- I: Of course.
- R: But yes. I would say generally, you get responses to what you put up. Particularly in more active groups. There's some less active ones in Knowledge Hub because it's all being phased in, so not all groups have been using Knowledge Hub for the same amount of time. Most of them have only been using Knowledge Hub really, in the last six months, so it's not quite fully functioning.
- The [REDACTED] group has been ongoing for over a year now and they're doing very well, and the data protection one was ongoing before I got involved - I wasn't aware of that - and [inaudible 00:06:51] I think has been going for a good couple of years and been successful.
- I: Excellent. It sounds really good. I saw you did strongly agree with the fact that Knowledge Hub allows you to do your work more efficiently?
- R: Absolutely, yes.
- I: To discuss professional issues.
- R: Yes. The key thing for me from Knowledge Hub is that normally... Before Knowledge Hub came about - I think that's an important contrast - we did most things via email and emails not a good resource for trying to retrieve things.
- So for example, I may have a query today that I have a vague recollection of someone asking that, maybe six months ago, but the only way of me finding out is to try and find it in my emails. I probably deleted it because I don't have enough space in my email and therefore, I couldn't find it.
- So what I've got to do now is, send an email to everybody again and then people will go, I think someone answered that six months ago but I can't remember what the answer was, and then...

I guess it's a very inefficient way of holding onto information. Knowledge Hub in contrast to that has obviously got a great facility to be able to go back in time and see, has this question been asked previously, yes, okay, here it is... And because we are trying to - in all our Knowledge Hubs - to have a very good structure for it, it means that we've got subject lines, which means I can straight into the subject and see if that question has been asked.

If it hasn't then I put my own query, if it has then I've got in theory an answer, which I might want to put, "Is there any updates on this?"

I: Exactly.

R: But yes, that's where I think it's been invaluable in terms of retrieving information rather than the email.

I: And you always get an answer? Usually?

R: I think generally we tend to get answers from somebody because there's enough people involved. The problem is, as usual, we're over busy in our jobs and sometimes we don't have the time to respond to all the queries that pop up and I guess, everybody probably picks and chooses which queries they want to answer.

I: Yes, of course. Have you been using the library online? And did you know there is a chat feature to discuss with people on Knowledge Hub? There are Wikis, there is a blog even.

R: We haven't used the Wikis.

I: It's not very used.

R: Primarily, probably because, one, I don't understand it and number two is that, we're dealing with a broad range of people, some who are not very technically aware and Knowledge Hub in itself is a barrier to them in putting and taking part in it.

So we need to overcome that barrier before we start asking them more tricky questions, or asking them to get involved in other ways.

Our primary functions that we were looking to use within the Knowledge Hub facility is mainly the forums. That's primarily the key function. If everything goes away, the forums is good enough.

And the next one is the library. We started - I'm trying to get people to use more of the facility for the conferences and seminars in terms of events coming up as well. But that is at the moment, that's the key functions. Everything else, we'd be struggling to get anyone to use it.

I: But it works.

R: Yes, and it's working well.

I: Would you say it has helped you to expand your network, as well?

R: Absolutely, yes. It's a lot easier, again because previously you had emails which may or may not be up to date. Also, you didn't know who they were so you could see the email, you could see what council they came from because the stem of the email would tell you that, but what you didn't have is the actual title role, for example, and even a photograph of who they are so that when you go for a meeting, you know who they are.

Whereas Knowledge Hub encourages you to, one, show a photograph if possible and two, to have a description of what you do. So that again, allows us to network in terms of being able to pick up the phone to somebody which I've done various times, in terms of just going in and then you know which particular local authority lawyer, and look to see who practiced within that council, and there was a number of them and then I contacted them on it.

I: Thanks to the network on the Knowledge Hub?

R: Yes, absolutely. If not, I would have to go through emails and then, not necessarily know what position they had. So yes, it's a much easier way to communicate.

I: What about social media? Do you use any, how do you use it and why?

R: Yes, I use social media for [REDACTED] and that is mainly Twitter and LinkedIn.

I: Yes, that's what you mentioned here.

R: Those are the two main social media sites I use. We don't use Facebook. That's primarily my decision because we already have two platforms and I think a third would be even more work for me. Also Facebook to me, I would say it's more of a private system rather than a business one and I think LinkedIn is more of a business one.

I don't necessarily want people I work with to be on my Facebook but I have no problem with them being on my LinkedIn.

I: Yes, I understand.

R: So that's the reason why we don't use Facebook. LinkedIn, we've not been too successful in it because again, I'm having to encourage people to actually create their profiles. Local authority lawyers are not generally looking for jobs in the private sector and we're not great at selling ourselves, so local authority lawyers don't tend to have LinkedIn and you'll find that commercial lawyers will have LinkedIn because they're trying to promote their business, they're trying to sell a business.

I: It makes sense.

R: And eventually, maybe move to a different job. Whereas, local authority lawyers, we don't have that. So it's not been as successful as I would have liked.

Twitter - we use Twitter and that has been more successful. At the moment, we're using it really a sort of notification tool to let people know when meetings are going to occur and anything big that's happening. If any of the [REDACTED] Executive Committee attend any major meetings, so for example, tomorrow there's one that I will probably be tweeting to say, "I'm in the Scottish Parliament to give evidence on..."

I: This is what's going on.

- R: Absolutely. To let people know to watch out for it.
- I: Are you aware of how many of your colleagues are on Twitter? Does everybody use it?
- R: Not everybody uses it. I didn't use it before I took on this role, so I've had to learn to do it. For some of my colleagues in the committee, I would say that the majority are on Twitter now but again, you probably have to help them to use it.
- But we're trying to gradually push more and more of the social media. The other important thing is networking through the social media - both LinkedIn and Twitter - it's important for sponsors of ██████, it's important for other stakeholders, so for example, the Scottish Government, departments within the Scottish Government as well, there's other bodies such as Social Work Scotland who we have links to and we share information with, and they may want to know what we're up to and vice versa.
- I: So it is a way to show what you're doing.
- R: Absolutely and I think also, to showcase what we do which again, as I said, local authority lawyers, we're not very good at promoting ourselves but actually, we're experts in what we do, it's just that we don't promote it and both Twitter and LinkedIn are good vehicles for showcasing what we do and for letting people know what we're up to.
- I: In LinkedIn there are groups as well, do you use any?
- R: I've got LinkedIn which is my own profile and I've created a group which is a ██████ group but that's not the one that has been that successful. Whenever I've got anything to promote for ██████ I tend to promote it not via the group, but via my own profile which is a strange set up but also, it's easier to do on the phone because you can't do the groups via your phone, you need to log into a computer.
- I: I see.
- R: And I can't log in at work into LinkedIn or Twitter for that matter, so I need to do everything on my phone.

- I: Do you think it duplicates Knowledge Hub or completes it in some way?
- R: It completes a different part of it because I think Knowledge Hub is about information sharing and best practice and efficient working between local authorities and shared working between local authorities in a safe forum. That means that other people don't see what we are discussing and that's different from the social media element of it which, if we do want to promote what we're actually doing.
- I: There's a difference.
- R: It's a complete difference, yes. Absolutely. So we wouldn't discuss any of the things that we previously had by email, or any of the things that we put on the forums in the Knowledge Hub. We wouldn't be discussing them on Twitter or online.
- I: Of course, for confidential issues.
- R: Absolutely, and these are a lot of the time highly political, as I'll find out tomorrow.
- I: Have you heard about Yammer? They use it a lot in Scottish Government.
- R: No.
- I: It's a social media tool that is used within the organisation.
- R: Right, okay.
- I: So it's a bit like a Twitter but for an organisation. It has closed groups. I just wondered if you were using it.
- R: I'm not.
- I: It's not something you use here. But Twitter is good anyway. When you have to discuss things with colleagues who are not here, would you sometimes use video conferencing?
- R: Sometimes we would discuss things on the phone, sometimes it's easier to discuss things on the phone. To give you an example, only a couple of weeks ago - I'm also in a committee for the Law Society -

and there's something that was coming up in the Law Society and I agreed to have a telephone conference with one of my colleagues in another local authority. So I then arranged to have a telephone conference, so that's how I would do that.

Video conferencing we don't do here in Midlothian Council so that would be difficult for us to do because the encryptions and whatnot don't allow video conferencing, even though I've requested this many, many times.

In terms of [REDACTED] as a whole - so that's in terms of here - in terms of [REDACTED], some of our meetings, primarily the [REDACTED] Executive Committee meetings, are usually webcasted to other people who can log in at the same time. So we can have a video conference and that's because we hold that in a firm that allows us to do that. We have one of our sponsors for [REDACTED] who provides us with free accommodation that has a video facility, so we use it for some of our colleagues who for example, are up north. So yes, we do use it for those purposes and that's been very useful.

The problem is with any of these things is that, maybe our broadband facilities aren't as good as they should be in the U.K. and some of the... A lot of the time there are issues in terms of sometimes the connection will be lost and then they're connecting back up again, so it's a bit cumbersome but it's better than nothing.

I: Yes, of course. If you have something a bit more delicate or sensitive to discuss with someone, which mode of communication would you prefer to use?

R: It very much depends. I think if it was a highly confidential matter that I didn't want to have it in Knowledge Hub, I wouldn't put it up in Knowledge Hub, I would probably find out who I wanted to speak to first and then contact them direct.

I: By phone?

R: I would probably send them an email first to give them a heads up of what I wanted to discuss, and then I would try to follow it up by phone, yes.

What we do understand is that whatever we discuss in Knowledge Hub is... It doesn't have rules of what was on in there, stays in there, so it is confidential. But certain things that we do discuss are maybe beyond that. I would just pick up the phone.

I: Yes, or face to face if it's possible.

R: Or face to face if we've got those meetings, yes.

I: Do you prefer one over the other?

R: I would probably say it depends on what we're discussing and how long the discussion is going to be, etcetera. If it's going to be a long, drawn out discussion then we're probably looking at having more of a meeting like this, so that you can actually discuss it and thrash it out.

Otherwise, if it's a one on one, you could probably do it via the phone. There's no reason as to why you couldn't do that.

I: Do you remember having informal discussions with people online? Either on Knowledge Hub or elsewhere.

R: Informal discussions?

I: Yes, more... It can still be about work but more informal.

R: So for example, we don't have too many social chats within Knowledge Hub so it is primarily business. However, there might be some chat in terms of, we will have - before Christmas - we'll have a meeting which then we tag along to having dinner and there might be some discussion around, do people want to attend a social event afterwards, what they will involve, etcetera.

So that's probably as informal as we get in terms of having discussions.

I: There is a metaphor of the coffee machine - this is where colleagues actually stand up from their desk, grab a coffee, meet a colleague and

this is where discussions start to happen about work. They start to discuss issues or new ideas or projects. Does it happen here, and have you noticed if it happens online?

R: It is because I would say that... I go back to the earlier example I gave of, if I've got a policy that's in very early stages, I might not have anything in writing but one of my first points of call would be Knowledge Hub to ask, has anyone ever done anything like this before, and then if I get responses, great, I'll tap into their policies. If I don't get any responses, then obviously, everyone will know that I'm drafting one and eventually they might be looking at one and they'll come to me.

So there has been for example, this thing that I'm about to go to tomorrow, I raised this maybe about a year ago and said, does anyone know that this happening? It's a consultation from the Scottish Government, is anyone responding, has anyone been asked by their council to respond or to take a view? And not many people responded to that.

Subsequent to that, people have come to that post and said, I've now been asked to take a view on this, what is [REDACTED] view on it? What has been done? So that's where we're at. I think it's a very good thing to start that informal conversation - if you can call it that - but yes, it depends what you mean by informal.

I: Yes, I know, it's not always clear but for people, it's just work discussions. But I meant more like this. I like hearing about what you're doing on Knowledge Hub, it's a very rich experience.

I'm just going through the questions.

What would be your general point of view about social media and sharing knowledge online?

R: I'm keen that the knowledge that we have within local authorities is shared but I'm also keen on that it's shared within the right vehicle. So again, I go to some of the confidentiality element of it and there's various reasons for that. One is that some of the discussions that we

may have are internal policy driven, and these are political and we can't let the general public know until something is more finalised and that's advertised by the council, not by ourselves.

The other side of that as well - not the other side but just following on from that - is that, some of the work that we do is adversarial in nature, so if we put a position of where we think we are in terms of councils, if the other side were to see that, then they would have a very great advantage on us if they want to sue us, for example.

So that's one side of it.

The other thing that flows from that is, a lot of the things that we share in Knowledge Hub are things such as templates, so we might have a core... I might ask, "Has anyone done this type of case?" Some will say yes, here's a template for it and then I use that template.

But this is between public services, what we don't want is private sector which charge money for doing the same thing getting our really good templates for nothing and then charging money for them. So that's not why we're here, so that's why I think I'm keen on sharing within social media but when I mean social media, to me, Knowledge Hub is not social media. Knowledge Hub is a sharing for professionals. That's the way I would describe it.

It's for a particular mind, so whatever the group is, they've got a set remit and that remit is what they share there, which they wouldn't share on Twitter or LinkedIn or anything else. But yes, I do support general sharing and there might be some sharing that we should be doing more of.

So to give you an example, one of my other tasks is to prove this other website which we are hopefully triggering very, very soon. Once we've got the website, we're going to be encouraging people to do blogs so that we can promote the organisation as well as our particular expertise, so if you've got a particular area of interest that you're doing a great piece of work in, why not tell the world that you're doing this great piece of work?

I: And you think blogging is most appropriate for that?

R: Yes, I think blogging probably is that halfway house between writing a formal journal article and the very simple Twitter, which only gives you so many characters, you can't really put across what you want or what you're doing in that space of characters.

So from my end, I've just done it, I've done a blog for the Law Society - not for ██████ - I've done a blog for the Law Society which is now live, it's literally only become live last week, and I thought it was a very useful tool for me telling people what we've done. The great thing that we've done here in Midlothian Council and hopefully, colleagues from - in this instance - they wouldn't be just from ██████ members, it would be from in-house lawyers.

So any in-house lawyers, that includes for example, banks will have in-house lawyers and other companies will have their own lawyers in-house, and hopefully they will take some of my blog and either learn from it or it might not be any use to them, but it might be useful in terms of just a simple read through, and if they're trying to do something similar to the project that we had, it might give them some tips as to how to go about it.

I: Would you invite comments?

R: No, generally I think the way the Law Society works, they just post a blog and then I don't think it invites comments - not that I'm aware of - if people want to comment, I've got no problem and I'll be again, promoting that via Twitter and LinkedIn when I get a chance after tomorrow.

So I'll be promoting that across the board and so will the Law Society, but that type of thing I think is very useful. For ██████ in itself, you would have the blog posted on the ██████ website and thereafter, we would circulate that via Twitter, LinkedIn and push for that in any other way that we can promote the reading of that blog.

I: Twitter can invite people to read the blog or go to the website. They all work with each other.

R: Absolutely.

I: Do you use Knowledge Hub on mobile?

R: I don't tend to use Knowledge Hub on mobile and that's based on primarily, the fact that it's a work based system so to me, that's for work. I've got a personal mobile and I've got a work mobile, but my work mobile is Midlothian Councils, it's not [REDACTED], so any work that I do for [REDACTED], I use my personal mobile.

And to me, I tend to do that type of work generally when I'm here because for example, if I'm posting a query, it's a query relating to something I'm doing here. So I would do that. We have access to Knowledge Hub here, if I'm doing anything out with that, I would use Twitter and LinkedIn and I would need to do that on my personal mobile.

I wouldn't be using my personal mobile for work purposes, really.

I: They're about to come up with a new version of Knowledge Hub. By the end of the month, in March probably, which will be much more social media like and more user friendly as far as I understand, because I know it's been a hindrance for some people to use it, so the point is to make it more easy.

R: To be fair, I think from my perspective, Knowledge Hub is quite intuitive for most things and the things that aren't intuitive, I think if you played around with it, you would get the answer and there's enough help, guidance that would lead you to an answer.

I would suggest that the people who are having issues with Knowledge Hub are people who probably do not use social media full stop. So if you use Facebook, the chances are you'll be able to use Knowledge Hub.

I: Exactly, because people start to become more literate with these kinds of tools.

R: Absolutely. I do think the people who are having issues with it are people who are probably not on Facebook and I think that's where the balance is.

I: Exactly, some kind of digital divide. Usually the people who didn't have the chance to become literate with this new tool.

R: Yes, and moving more and more towards that scenario, to be fair. Children nowadays are at the age of one upwards sitting there with a tablet.

I: Yes, exactly.

R: I think the next generation will certainly be using much more digital tools than we have and it makes sense, complete sense, and it's also more effective in terms of again, sharing information. Knowledge Hub is much more effective than what we had previously. There's no doubt about it.

Even what we would call the old school people who don't have social media and haven't fully taken on board the Knowledge Hub, they have admitted to me, this is a great facility, it's just that I don't know how to use it but I fully recognise that this is very efficient for people moving forward, but I'm at the tail end of my career. I've had that particular discussion with someone saying, I'm only here for another year, I'm not interested in learning about this.

I: That's interesting because one of the issues with knowledge sharing is that exactly, when someone has had a lot of experience for many years in an organisation and is about to retire, they go away with all their knowledge and experience.

R: I agree.

I: Do you do anything about this to capture the knowledge from these people?

R: In [REDACTED] it's very hard to do because we're not employers, so we can't. In-house certainly, we've created a legal team from nothing basically, so we now have a functioning legal team and that's what the blogs about. We've made sure that we have the knowledge that

we build, is kept in-house by having a poor man's case management system so that any resources that we can tap into are put in there.

So if I find a really good article, it's my duty to put that on a sort of Knowledge Hub library but it's an in-house one. So we put that into a library and that library is there, so you would know, okay, I've got a question on data protection, you go to data protection, you go to library and you have all the things that other people before you have written.

I: Okay, and how do you use the library on Knowledge Hub then?

R: The library on Knowledge Hub is actually very similar in that, we post any consultations for example for Scottish Parliament or Scottish Government, we've also got any ongoing meeting agendas and any attachments to that are all in there, as well as... The idea at the moment - it's not fully functioning - but the idea is that we also put legislation in there and that particular local authorities, where they've done a good piece of work, should post their policies and procedures in there.

I: That's very important.

R: So we've done that as a skeleton in some ways, but not everybody is using it to the full effect and the problem is that, it takes time to do that. So I could put a lot of the best practice stuff that we're doing in here, which I do, I tend to post it, but you'd probably find that not a lot of other people are doing the same.

So they will use my stuff but then, they might not be taking the time to do that themselves. But I guess, that's where the forum comes in, because in the forum I can ask, "I really need help, can someone send me some templates?" And the chances are, people will send you templates which can then go into the library.

I: So basically, would you say you rely more on the community?

R: On the forum, yes. I would say that the forum is...

I: Do you know why?

- R: I think it's just an easier tool to discuss things.
- I: And to maybe get more updates and information from experts? Is it more reliable?
- R: I wouldn't say it's more reliable. I would just say it's easier for people to post something on the forum. If you post it on the library, people don't necessarily go and look at it and you can link the two together, so you can post something in the forum and link it to the library document, but the problem with that is that, you've got two steps rather than one.
- So bear in mind, again going back to the stresses that we're going through in all local authorities at the moment, it's a lot easier just to post something on the forum.
- I: It's faster?
- R: Absolutely. You post that on the forum with your attachments, everyone can see it. The right way to go about is to post the attachments in the library under a policy or procedure or whatever category you wish to put it in, post in the forum and have the link between the two. That would be the ideal scenario, however that's difficult to do and even myself, because you're under stress, it's a lot easier just to post in the forum.
- But the forum has ultimately - I know that the libraries is meant for specific documents - but actually, you could probably just function with the forum alone, because the forum alone has got a lot of the attachments. So if you go to - the way that we've organised things - if you go to a specific subject, you'll be able to see the discussions and any attachments.
- I: Okay, which gives you a lot of information.
- R: Yes, absolutely.
- I: I have one more question before we finish. If you need a thorough explanation on a topic because one answer is not enough, would you keep the discussion online on the forum and wait to see what people

say, or would you rather get in touch with someone that you identified with and pick up the phone? How would you do that?

R: There's no one hard and fast is what I would say. I would put the question up first, if I didn't get enough answers, I may pick and choose who I go to so I might say, okay, I can see that they do that type of work so I'll give them a call or I'll give them an email, because you can see from their description what they do, etcetera.

So that might be another route. But actually, the one I think is most used is... I mentioned earlier that we've got meetings every three months or so for each group, each area of work meets every three months or so, sometimes less.

So if I've got a query that hasn't been fully answered, I'd be wanting for that meeting, which usually is a whole day you meet for, you'd want that in the agenda for that meeting.

I: What if it's something urgent?

R: If it's something urgent then yes, you wouldn't probably be looking at phoning around to see if someone can help. But generally, yes, I think where you put in your query, "Urgent, please help." People do tend to help because we've all been in the same position when we need help.

If it's not urgent, that's where I think people don't.

I: They don't have time to come back to it and discuss.

R: Yes, absolutely.

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**END OF TRANSCRIPT**