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Abstract

**Purpose**

This study aims to explore approaches to stimulate innovation at the case company via current knowledge processes analysis to provide best-fit recommendations.

**Design/Methodology/Approach**

The study develops a theoretical overview based on the growing stream on knowledge processes in relation to innovation. The research features a case study of knowledge processes and innovation in a fast changing large-scale financial institution. Through analysing current knowledge processes in a large-scale financial corporation, the research illustrates how organizations can detect misalignments and improve their current knowledge practices to boost innovation.

**Findings**

Findings suggest knowledge acquisition (KA), knowledge sharing/transfer (KS/KT), knowledge integration (KI), and knowledge creation (KA) stimulate innovation. To maximise the benefits, coordination is needed among knowledge management initiatives and involved knowledge processes.

Results suggest that observed problems at the case company are related to the size and complexity of the company rather than the type of industry.

**Research Limitation/Implications**

The study is limited by the small size of the interviewees’ sample, so the results might not represent the conclusions.

**Practical Implications**

Numerous organizations and managers aim to increase their innovative capacity through the employment of specific knowledge processes. The study provides managers with a complete overview of knowledge processes in relation to innovation. Therefore, facilitate the detection of misalignment and potential improvements to their current practices to stimulate innovation.

Findings suggest that financial institutions share common problems with other large-scale organizations from a broader spectrum of industries.

**Originality/value**

The study develops an integrated model on knowledge processes in relation to innovation outcomes undefined yet in current literature.

The research contributes with an empirical case study to an area where the number of empirical studies is yet limited. It is a pioneering study on the use of knowledge processes to stimulate innovation, especially in financial institutions contexts.
The present research is about how ideas become something tangible by exploring and exploiting knowledge. In this context, the research represents a final step of a five-year journey exploring knowledge beyond my comfort zone and initiated by a dream. A dream I am proud to see becoming true and which result exceed any optimistic expectation I imagined. During this period, the experiences lived, the situations suffered, and the people met have shaped my personality, my knowledge and my interpretation of the world.

Thanks to my parents and brother, who supported my decisions although not understanding them. Thanks for educating me to fight and work hard to achieve my dreams. Thanks to Carlos Terreros, Asier Fernandez and Francisco J. Lopez for believing, and encouraging me from the beginning without doubting in my capacity. Your faith in me increased mine and kept me motivated. Thanks to the Bryant family, my adoptive family in UK, and especially to Neil Bryant who provided me with the help I needed. I will not forget the time working together that enjoyed although it was physically demanding.

Thanks to friends I met in UK and the Netherlands. Thanks for crying with me and taking my hand when I needed. Thanks for transforming loneliness and darkness into companionship and illumination. Thanks for your love and advice. Although you are far away from me, all over the world, you will be always part of my experiences and me. Special thanks to Diego and Melissa, you both know better than anyone all the things we went through. I could not have done it without you.

Thanks to the professors who contributed to my knowledge, and make the differences in my performances. Special mention to those who inspire me: Lai Xu (Bournemouth University), Erik den Hartigh, Roland Ortt and Victor Scholten (TU Delft). Thanks to TU Delft to open my mind to new knowledge that will influence in my professional career. Thanks to people who contributed to this research in any way. Thanks to the committee members: Dr. R.M. Verburg (for his advice and long discussions), Dr. M.A. Oey (for his priceless help to shape and improve the thesis), Prof. Dr.ir. A. Verbraeck (for his sharp comments and dedication), and Dr. J.L. Bonebakker and his team (for his unlimited trust in my capabilities and the opportunity to do my thesis with real practical implications).

Thanks to all jobs I worked during this journey because they provide me with money to live, and more importantly, to make me stronger in every sense. All these weekends worked or in the library, all those days awake at 4:00 am to clean toilets and vomits, or drinking water or eating rice solo to not feel hunger, all those drinks and tables served, or glasses collected, all these drunken racist clients, or managers and business owners that believe they are better for their position taking advantages because you need the money, all nights expended thinking about problems, or solutions. Thanks to the one who should not be named, you made me realise that people can change if they are willing to do so, and that there is not always a rational explanation for human behaviour. Finally, thanks to those who did not have the intention to contribute to my life with anything good. They gave me lessons that otherwise I could not learn and make me even stronger.

For those who are living or will live similar circumstances, keep dreaming and being determined, believe in yourselves, and do not build barriers to yourselves. The society will build them for you. Only the barriers created by yourselves are impossible to overcome. In dark periods, remember your dreams and objectives, be willing to stand against unimaginable problems, and do not waste energy pitying yourselves. Analyse the problems and share them with others to find different perspectives and solutions. Trace a plan and take actions, and, above all, learn. Learn from your experiences, from others experiences, and from everything that surround you. Everything around you is a learning opportunity.
CHAPTER 1

Introduction

The business setting has become a fast-changing, complex, and knowledge-based environment. The ability of companies to face rapid technological changes or shifts on customers' needs highly depends on their capacity to innovate (Gilbert & Cordey-Hayes, 1996). “Innovate or die” (Drucker, 1999) has become the mantra for many companies. Therefore, innovation has been established as a primary objective on companies’ agenda. Innovation can be defined as (Du Plessis, 2007):

“The creation of new knowledge and ideas to facilitate new business outcomes, aimed at improving internal business processes and structures and to create market driven products and services”. (Du Plessis, 2007, p. 21)

This definition emphasises the critical role of knowledge in innovation. Knowledge is a source of sustained competitive advantage, especially in conditions difficult to replicate (e.g. Armbrecht et al., 2001; Barney, 1991; Liao et al., 2013). This definition also entails companies’ ability to apply knowledge in the creation or improvement of products and services to remain competitive (e.g. Nonaka & Takeuchi, 1995; Revilla et al., 2010). Similarly, companies’ knowledge base would be either created or reinforced during the execution of innovation activities (e.g. Cohen & Levinthal, 1990; March, 1991). This, in turn, will determine future ability to innovate. For this reason, resultant knowledge from innovation activities is generally considered as more important than the innovation output itself (Schilling, 1998). Hence, the management of knowledge is crucial to accomplish innovation activities. First, companies deal with a significant amount of internal and external knowledge that could trigger the innovation process. Similarly, knowledge is an important building block required for any production task (Grant, 1996). That is, knowledge has to be applied and combined to create new products and services, or improve existing ones. However, knowledge is often within the mind of individuals.

Therefore, the direct management of knowledge is problematic. Psychological barriers or its tacit character might hamper its management (Andriessen, 2006; Armbrecht et al., 2001). In contrast, the processes involved in knowledge development, diffusion and application can be managed (Andriessen, 2006; Armbrecht et al., 2001). The method to handle these processes is generally known as ‘Knowledge Management’ (Nonaka & Takeuchi, 1995).

Knowledge Management (KM) might be defined as “the planning, organizing and managing of the knowledge processes and its individual, structural, cultural and technological conditions in such a way that realization of the organization’s objectives and strategy is advanced” (Andriessen, 2006, p. 277). This definition entails the knowledge management role as a mean to achieve innovation objectives (Forcadell & Guadamillas, 2002; Grimaldi & Rippa, 2011).

The literature on knowledge processes in relation to innovation is growing. Nevertheless, the overall picture on how to deal with knowledge processes in practice remains unclear. Organizations prefer best-fit practices in order to boost innovation yet the existing literature does not provide a clear list of recommendations. The present study aims to provide an overview of actual knowledge processes that impact innovation activities within the context of a financial firm, in the case of XYZ Bank. The present
situation at XYZ Bank will feature as a case study to explore its current knowledge management practices in relation to what is reported in the current literature on knowledge processes for innovation. Possible misalignments will be analysed and recommendations - based on best fit between KM practices and XYZ-to improve current practices will be the result of this study.
Research Elements

2.1 Academic View

The relation between knowledge and innovation has been discussed largely (e.g., Barney, 1991; Cohen & Levinthal, 1990; Forcadell & Guadamillas, 2002). Nevertheless, only a few studies have empirically demonstrated this relationship (Darroch & McNaughton, 2002; Darroch, 2005). Additionally, scholars have extensively investigated individual knowledge processes, their specific contribution to innovation and potential barriers (e.g., Cohen & Levinthal, 1990; Riege, 2005).

Consequently, research has focused on drawing the small pieces of a complex puzzle to date. Therefore, although the puzzle is incomplete, there is a need to shift from specific pieces and make sense of the big picture. That is, an approach to organize companies’ current knowledge processes to boost their innovation capabilities remains undefined. Similarly, the research contributes to managers with the means to identify knowledge processes, and misalignments related to the theory. Their identification would provide the base to refine companies’ knowledge processes and improve innovation capability. Hence:

“The literature lacks to bring the overall picture on how to coordinate the knowledge processes for innovation purposes.”

2.2 Societal View

As described, companies’ ability to face rapid technological changes relies on the ability to innovate. Innovation enables firms to create value by delivering benefits to their customers and create competitive advantages (Porter, 1985). Organizations explore new approaches to deliver value to their clients throughout innovation. Knowledge processes could contribute to deliver value for organization’s innovation activities. However, there is not a clear overview of applicable best knowledge practices for innovation presented in the current literature.

Innovation has gained momentum within XYZ Bank. Since 2000, XYZ Bank - one of the largest financial organization in the world – has commenced to stimulate innovation within the company by the introduction of several initiatives (Das, 2013). Driven by success, XYZ Bank launched the XYZ’s Innovation Hub (IH) in 2010, and in 2011, it was structured as a separate business unit (Das, 2013).

Das (2013) presents a case study on XYZ Bank (IH) in the area of innovation models at complex large-scale financial organizations. In his case study at XYZ, a shortage of knowledge management practices was detected. The implementation and institutionalisation of a number of knowledge management practices are recommended in his study. These recommendations motivated IH to request the present study. The research aims to assist improving XYZ’s innovation capability by organizing its knowledge practices. Therefore:

“XYZ Bank aims to improve its innovation capability by implementing KM practices best fitting its current challenges”
2.3 Research Objective

“The ultimate objective of the research is to provide an approach for the management of knowledge processes with the aim to stimulate innovation in practice.”

2.4 Research Questions

Principal Research Question

“How should XYZ Bank organize their knowledge processes to stimulate innovation in practice?”

Research Sub Questions

- “Which knowledge processes add value to innovation according to current literature?”
- “Which preconditions could be extracted from the literature review?”
- “What are the XYZ’s requirements for a successful management of knowledge processes for innovation purpose?”
- “Which current knowledge processes can be identified in the case study?”
- “Which gaps and improvements can be identified between the literature and the actual knowledge processes at the case company?”
- “What could be recommended to improve XYZ’s knowledge management practices in order to stimulate innovation?”

2.5 Research Methodology and Phases Description

2.5.1 The Research Methodology

The Case Study Research method suggested by Yin (2009) is the method selected for the design of the present research. According to Yin (2009), a case study is suitable to investigate a contemporary complex phenomenon. A case study provides the present researcher with the instruments to frame the research to a particular case while maintaining the perception of the real world. A case study is also appropriate to deal with a variety of qualitative data collection methods such as interviews, documents, and observations so that triangulation can be obtained. The research is divided in the following phases:
2.5.2 Phase Description:

Phase A: Theory Development

Two research questions are explored and answered in the theory development phase. Each research question features in a different chapter. This phase is both explorative and descriptive – the research explores the current state of affairs in the literature. The first research question (chapter 3) deals with the exploration of existing theories that provide the knowledge base. Main relevant theories are explored in the area of knowledge management and organizational learning. The outcome of this chapter is the ideal picture of what knowledge processes organizations should incorporate in order to stimulate innovation. Additionally, how these processes boost innovation are described in this chapter. Results are employed to explore and analyse the case company.

The second research question deals with the extraction of preconditions from the literature. According to Yin (2009) and Baxter and Jack (2008), preconditions must be extracted from the literature review for the following reasons. First, preconditions provide the research with a defined scope or boundary. Second, preconditions will steer the data collection phase and the analysis of the company. The results of this phase will guide the development of interviews in following phases and the research at the case company. As a result, relevant evidences will be collected and the boundaries of the organization’s research will be established. This allows the researcher to obtain feasible research goals.

Phases B: Case Study

This phase is divided in two chapters. Each chapter deals with a specific research question. This phase is descriptive – describes the phenomenon and the real situation at the case company. The attainment of XYZ’s requirements about the expected performance of knowledge processes for innovation is dealt in chapter 5. These requirements assist to define the research boundaries in the final solution.

Three rounds of semi-structured interviews were set up for data collection, one set for data validation, and one final set to validate the suggested recommendations. Interviews are classified as confidential. Semi-structured interview is selected for three reasons (Bernard, 2006). First, the method is recommended for circumstances where a second interview is unlikely. Some of the interviewees are high levels in the XYZ’s
hierarchy. Second, it provides freedom to explore unexpected topics in the prepared areas and questions. Finally, interviewees are more likely to express their perspectives by employing this method (Flick, 2014).

Overall, fourteen interviews were conducted from the twenty-one that were planned. Nine interviews had the purpose to acquire data, two to validate the collected data, and three to validate the suggested recommendations. Four candidates could not be contacted due to busy agendas or other reasons. Related initiatives to those candidates are not included in the present research due to the insufficient evidence to be analysed. Additionally, stakeholders from less critical initiatives (e.g. internal magazine, training programmes) were contacted by e-mail. See Appendix A for detailed description of the candidates selection, the topic discussed during the interviews and the approach used.

The second research question describes the case and the identified initiatives related to knowledge management and innovation.

**Phase C: Analysis and Recommendations**

Last phase deals with the analysis of the findings and the recommendations. Each one is featured in a different chapter. Chapter 7 identifies gaps between the literature and the actual reality of XYZ Bank. Recommendations will be provided in order to overcome the gaps and improve XYZ’s current knowledge management practices in Chapter 8.
Phase A

Theory Development
Knowledge management theory and organizational learning theory are explored in this phase. Both theories provide the knowledge foundations to be investigated at the case company. Furthermore, they define the research boundaries. It is divided into two chapters. Each of the chapter features one of the research sub-questions. Chapter 3 presents the current state of issues in the literature. This chapter builds the theoretical framework in which this research is supported. It is the cornerstone of the theoretical phase. Preconditions would be extracted from the developed theoretical framework. Preconditions would assist the researcher to investigate knowledge management activities within the studied firm.
Theoretical Framework

Core related theories in the area of organizational learning and knowledge management are highlighted in the present chapter. This will result in the development of the research theoretical framework. The research will be guided by the following question:

“Which knowledge processes add value to innovation according to current literature?”

Knowledge processes in relation to innovation are explored first. A conceptual map will be constructed while exploring the current literature. In the present research, company’s innovation outcomes are a result of the company’s effort itself. In other words, companies would create their innovation outcomes without the collaboration of other parties.

An exhaustive and systematic literature review was conducted for these affairs. The approach followed is described next. First, a first overview was required in the principal research’s areas (Innovation-Knowledge Management) to gather a first insight in the described areas. Scientific databases such as Scopus, Web of Science, and Google Scholar were explored for this purpose. Several important authors (e.g. Cohen & Levinthal, 1990; Grant, 1996; Nonaka, 1994; Zahra & George, 2002) resulted and were selected for further examination. The number of citations and their relation to innovation and knowledge management were the principal criteria to be selected.

Secondly, a list of the top knowledge management scientific journals was extracted from the work by Serenko and Bontis (2009). The list provides some degree of reliability in the quality of the explored literature. First six scientific journals were selected for further review. The number of selected journals provides sufficient material for the research purpose without overwhelming the researcher. Publications from the last five years were overviewed. Titles and abstracts containing innovation and knowledge processes were employed as selection criteria. Above hundred articles fulfilled these criteria. From this scanning phase, about half was rejected from a further exploration of introductions and conclusions. Introductions and conclusions provide detailed information to decide whether the content match the research scope. For example, certain studies focused their discussion on innovation networks rather than single companies, on too detailed elements (organization commitment), or too general on knowledge management. The remainder were carefully read. Relevant authors referred in these articles were targeted and their work was further explored.

The chapter is organized in three main sections. Section 3.1 introduces the complexity in knowledge definition and the two types of knowledge identified by the literature. Section 3.2 dives into the current literature on knowledge processes in relation to innovation. A conceptual map is constructed from the literature. Finally, conclusions and prescriptions for future studies are presented in Section 3.3.
3.1 The complexity of knowledge & types of knowledge

“Knowledge” is a fundamental element in the present research. However, the definition of knowledge is a central debate for philosophers, scholars, and intellectuals for centuries. This millenarian debate indicates the complexity of framing knowledge. For example, Andriessen (2006) discusses:

“Data are discrete, objective facts (numbers, symbols, figures) without context and interpretation… Information is based on analysing and interpreting data, and adds value by understanding the organization of data… Knowledge…as information in personalised context; it is information that is experienced, interpreted and processed by a person in a particular situation and in that way developed into insights and skills.” (Andriessen, 2006, p. 268)

Knowledge was also defined by ancient philosophers like Plato (Ichikawa & Steup, 2012): “justified true belief”. Contemporary authors (e.g. Garud, 1997) have focused on knowledge components. For example, by distinguishing attributes like know-how, know-why or know-what. Therefore, knowledge definition remains unclear.

Adjacent to this, two types of knowledge were identified by Nonaka and Takeuchi (Nonaka & Takeuchi, 1995). Explicit knowledge is codified in many forms such as manuals, databases, or even products. Explicit knowledge can be easily transferred among people via databases or intranet (Andriessen, 2006). On the other hand, implicit or tacit knowledge has a personalised character. Tacit knowledge is usually originated from people’s experiences and related to a specific context (Popadiuk & Choo, 2006). This feature complicates its articulation and transfer to other individuals. The organization of knowledge processes must consider both types of knowledge.

This is illustrated by Amar and Juneja (2008, p. 299) through the following analogy: “the seed is the tacit knowledge, the fertilizer is the explicit knowledge, and the soil is human creativity.” However, the influence of tacit knowledge on innovation is frequently considered as critical (e.g. Amar & Juneja, 2008; Braganza, Edwards, & Lambert, 1999; Nonaka & Takeuchi, 1995). Moreover, tacit knowledge imitation is complex and costly. Competitive advantage could be enhanced if products/services and tacit knowledge applied are a result of social complex interactions among individuals —also referred as social complex knowledge (Barney, 1991; Bierly & Chakrabarti, 1996; Schilling, 2005).

3.2 Knowledge processes in relation to innovation

3.2.1 Knowledge acquisition (KA)

Knowledge Acquisition (KA) —also referred as capture (e.g. Swan, Newell, Scarbrough, & Hislop, 1999) or gathering (Awazu, 2004) - is generally defined as the search, identification, selection, and obtainment of essential knowledge for the correct functioning in firms’ operations. This includes the acquisition of relevant knowledge and ideas for innovation activities.
According to Burt (2002), knowledge and ideas can come over a variety of paths from a variety of sources. Most commonly identified sources in the literature are customers, suppliers, universities, competitors or strategic alliances (e.g. Cohen & Levinthal, 1990; Zahra & George, 2002) – see Figure 3.

Motivations for Knowledge Acquisition

Three main motivations for knowledge acquisition were found in the literature. First, rapid technological change and continuous shifts on customer’s behaviour cause company’s internal knowledge to be insufficient. Second, technological knowledge and novel ideas are generated by a broader spectrum of companies nowadays (Almeida, Phene, & Grant, 2003; Chesbrough, 2003). Finally yet importantly, the complexity of knowledge embedded on present-day technologies has increased. This reduces companies’ ability to develop new products/services all alone (Chesbrough & Crowther, 2006; Dhanaraj & Parkhe, 2006; Ortt & Smits, 2006).

Boosting innovation through knowledge acquisition

Knowledge acquisition implies broadening the access to knowledge. Some benefits might be reaped by having access to a broad pool of knowledge. First, acquisition of knowledge/ideas might result in a proliferation in the possibilities to innovate. Company’s current innovation needs might be satisfied by the acquired element. It might also result in the detection of new needs or ideas that could ultimately lead to new innovation projects. Second, an increase in the companies’ flexibility to face volatile environments might be obtained. Thirdly, complex knowledge combinations -internal and external- in innovation activities might lead to competitive advantage (e.g. Benner & Tushman, 2003; Grant, 1996; March, 1991).

Last but not least, employees might be able to internally integrate external knowledge to their prior knowledge (Figure 4). In this process, accidental ideas might occur while acquiring knowledge. These ideas could result in the initiation of new product/services development projects. Both KA and accidental ideas occur at the individual level (Grant, 1996; Okhuysen & Eisenhardt, 2002) – not considering companies acquisitions. Consequently, it would remain in the employees’ head unless companies provide the means to evade it (Almeida et al., 2003, p.p 353; Segarra-Cipres, Roga-Puig, & Bou-Llusar, 2013).

![Knowledge Acquisition Diagram](image)

Figure 4: Individual’s knowledge integration while acquiring knowledge - Accidental ideas
Model Development (Step 1)

Knowledge and ideas would be acquired from a variety of sources. During this process, accidental ideas might occur. This process arises at the individual level and it would remain there unless companies provide the means to prevent it.

Figure 5: Step 1: Knowledge and Ideas acquisition

3.2.2 Knowledge Transfer (KT)/Knowledge Sharing (KS)

Varied terminology is employed in the current literature to refer to knowledge transfer and knowledge sharing processes. Employed terms include “knowledge distribution” (Bhatt, 2001), “dissemination” (Allameh, Zare, & Davoodi, 2011), and “transmission” (Forcadell & Guadamillas, 2002). The two most frequently used terms are “Knowledge Transfer (KT)” and “Knowledge Sharing (KS)” (e.g. Kumar & Ganesh, 2009; Nonaka, 1994). Some authors (e.g. Pinho, Rego, & Pina, 2012) observe sufficient evidences to differentiate KS from KT. The author’s opinion is aligned to this view. However, the present research is not intended to focus on this discussion (see Appendix B for further explanation about this topic).

Motivation to share/transfer knowledge

As discussed, both acquired and prior knowledge is likely to remain in the employees’ mind if companies do not provide the means to liberate it. Therefore, the companies’ role is the facilitation of means to enable its availability to the rest of the organization (e.g. Almeida et al., 2003; Segarra-Cipres et al., 2013). Otherwise, its exploitation will be bound to the innovation projects where employees work in (Segarra-Ciprés et al., 2014). Therefore, internal transfer/sharing of both employees’ knowledge and acquired elements is a key process in innovation activities. In this process, the company’s personnel and information technologies play an important role. There are two main strategies to share/transfer both internal and external knowledge, namely “Codification strategy” and “personalization strategy” (Andriessen, 2006) - see Appendix B for further explanation about this issue.

As described, external knowledge has to be transferred/shared (e.g. Almeida et al., 2003, p. 356). This implies the transfer/sharing of the complete set of acquired knowledge. Nevertheless, this action is virtually impossible. First, this process requires time that employees lack. Second, sharing/transferring the overall acquired knowledge is inefficient and counterproductive. Employees’ cognitive capacity would be saturated by the amount of knowledge shared. A clarification about this was not found in the explored literature.
Boosting innovation by sharing/transferring knowledge

First, the company’s knowledge base – and ideas base – would be extended. The more knowledge/ideas are available in the company, the more the possibilities to be employed in innovation activities by other employees. Similarly, an increase on the possibilities to create new associations and combinations between different specialised knowledge could be obtained (Amar & Juneja, 2008; Grant, 1996; Segarra-Ciprés et al., 2014). Additionally, pinpoint knowledge could improve the detection of customer’ demands, shifts in their behaviour, and its time-to-respond. This positively influences customers’ satisfaction (Wu, 2008).

Model Development (step 2)

Knowledge and ideas would be acquired from a variety of sources. During this process, accidental ideas might occur. Acquired elements and accidental ideas become internal by their transfer/sharing. This facilitates its availability for the rest of the organization. Similarly, internal knowledge has to be transferred/shared in order to be included in other innovation projects or contexts—see Figure 6.

![Figure 6: Step 2 - KS/KT of Acquired and Internal Knowledge](image)

3.2.3 Knowledge Integration (KI)

Knowledge Integration (KI) is a combination of sub-processes that is obtained when KA, KS/KT and its application are involved in problem solving activities (Haddad & Bozdogan, 2009) –see Figure 7. Integration of different specialised knowledge is required for the development of novel products/services (Grant, 1996). An example is the design process of an aircraft.

During the aircraft design process, several disciplines are combined and integrated to meet specific requirements. Knowledge from different disciplines such as aerodynamics, structures, controls, and propulsion has to converge into a point in which all the mechanisms fit. The weight distribution is appropriate, the structural parts are light and simple, and the external layout offers a correct aerodynamic performance. The people involved in this process can consist of just a skilful team of designers or a whole panel of experts in each field (Raymer, 1998, p. 1).
As exposed, innovation entails the integration of different specialised knowledge. Both acquired and internal knowledge are essential during the integration. Three aspects are required for a successful integration. First, KI is generally accomplished at the individual level. Therefore, individuals with the ability to integrate and establish links among different specific knowledge are required (Björk, 2012; Grant, 1996). Second, KI requires an active organizational role to manage the diverse knowledge of the company’s employees so that employees’ bounded rationality could be avoided (Grant, 1996; Okhuysen & Eisenhardt, 2002). Finally yet importantly, a social process in individuals’ interaction is needed for effective knowledge integration (Haddad & Bozdogan, 2009).

A way to obtain KI is through cross-functional teams. Furthermore, accessibility to external knowledge to the team is essential (Koch, 2011). Different means could be employed to increase accessibility. For instance, it could be obtained by incorporating new members in the team (e.g. external or internal knowledge mobility), translating the problem where the knowledge is, or by a synchronised interaction between different teams (Haddad & Bozdogan, 2009).

Motivations for knowledge integration

The temporal nature of company’s competitive advantage is the principal motivation for KI. Imitation, obsolescence, or knowledge mobility - hiring scientist, engineers, and inventors previously employed by other firms- are some of the factors causing this (Levin et al., 1987). Renovation of competitive advantage requires companies being involved in a continuous process of knowledge combination and integration during innovation activities (Grant, 1996).

Boosting innovation by knowledge integration

While the integration of internal knowledge is likely to produce incremental innovations, the integration of external-internal knowledge is likely to generate new business models or radical innovations (Björk, 2012). Beside, new knowledge and ideas might be resultant from the KI process accomplished during the innovation activities (e.g. Nonaka & Takeuchi, 1995; Quintane, Mirch, Reiche, & Nylund, 2011).
Model development (Step 3)

External knowledge and ideas are acquired. During the process, accidental ideas might occur. Acquired elements and accidental ideas become internal by their transfer/sharing. This facilitates its availability for the rest of the organization. Similarly, internal knowledge has to be transferred/shared to be included in other innovation projects or contexts. Finally, innovation activities require the integration and combination of both internal and external knowledge. That is, internal and external knowledge are inputs for the integration process.

Figure 8: Step 3 - Integration of external and internal knowledge

3.2.4 Knowledge Creation (KC)

Innovation was defined as the “creation of new knowledge and ideas to facilitate new business outcomes…” (Du Plessis, 2007, p. 21) either for the development of new products and services, or the processes involved during the development thereof (Du Plessis, 2007). Therefore, innovation process involves the generation of other outcomes additional to the product/service itself. Knowledge and ideas are also outcomes of the process or innovation in itself (Quintane, Mirch, Reiche, & Nylund, 2011).

Knowledge cannot be created from scratch (Nonaka, 1991). Instead, knowledge and ideas are created during innovation activities. These outcomes are obtained by combining, recombining and integrating knowledge to respond a particular context (e.g. Dev Amar & Juneja, 2008; Grant, 1996; Nonaka & Takeuchi, 1995). Knowledge creation is accomplished within single innovation projects that respond to companies’ strategic needs (Nonaka, 1994; Richtnér & Åhlström, 2010). Hence, the role of the company is the formulation of problems that will subsequently be disentangled by the resultant knowledge by employees’ social and collaborative interactions (Nonaka, 1994).

These interactions enhance employees’ ability to formulate problems and apply previous experiences in current issues (Sáenz, Aramburu, & Blanco, 2012). Likewise, during the described process, knowledge is exchanged and converted in four ways –see Appendix C for further explanation of the process:

<table>
<thead>
<tr>
<th>Table 1: Type of knowledge conversions (Nonaka &amp; Takeuchi, 1995)</th>
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<tbody>
<tr>
<td><strong>Socialization</strong></td>
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<tr>
<td>Tacit</td>
</tr>
<tr>
<td><strong>Externalization</strong></td>
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<tr>
<td><strong>Internalization</strong></td>
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<tr>
<td><strong>Combination</strong></td>
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</table>
Motivation for sharing the knowledge creation outcomes

The sharing of the outcomes will amplify the benefits (Nonaka, 1994). First, efficiency is increased exploiting the outcomes in other areas of the business. Companies will not develop new products/services in similar problems, but instead adapting the existing products. Simultaneously, by placing the created products/services into other contexts, new improvements might appear. Consequently, additional experiences and knowledge are created, and so on. Second, efficiency might be achieved by the exchange of experiences between the “innovation team” and the “adoption team”. Experiences and skills in relation to the new product will increase efficiency in its adaption. This is because the ability of applying knowledge to new contexts is related to prior knowledge (Cohen & Levinthal, 1990). Third, rejected ideas could be incorporated to the company’s repository for a future exploitation or be sold to other companies to produce some extra profit (R. Cooper, 1990).

Boosting innovation by knowledge creation

Three outputs might result from KC. First, new knowledge is created, containing the recipe to reproduce the product/service without going through the same process again (Quintane et al., 2011). Similarly, new knowledge could contain several lessons and experiences –Lesson Learned. This knowledge could be exploited in similar situations or improve the process (e.g. Rhodes & Dawson, 2013).

Second, multiple ideas are frequently generated during the innovation process (Nonaka, 1994). Gates in the process eliminate unrelated ideas before the development phase. Generally, a single idea will be transformed into a product/service (R. Cooper, 1990). However, rejected ideas –similarly to knowledge- could be exploited by other departments or even by other organizations whose activities are closer to them (R. Cooper, 1990). Finally yet importantly, products/services are created to solve specific problems for which the process is triggered.

Model development (Step 4)

External knowledge and ideas would be acquired. During the acquisition, accidental ideas might occur. Acquired elements and accidental ideas become internal by their transfer/sharing. This facilitates its availability for the rest of the organization. Similarly, internal knowledge has to be transferred/shared to be included in other innovation projects or contexts. Finally, innovation activities require the integration and combination of both internal and external knowledge. That is, internal and external knowledge are inputs for the integration process. New knowledge, ideas and the product/service might be generated from this process. Concluding, reaping the outputs benefits require the transfer/sharing thereof. This results in an iterative process commencing in step 2.

Figure 9: Step 4 – Final conceptual map
3.3 Discussion & Conclusions

This chapter explored knowledge processes in relation to innovation. This has been obtained by exploring the current literature in the areas of knowledge management and organizational learning. This chapter answered the following research question:

"Which knowledge processes add value to innovation according to current literature?"

Five knowledge processes were identified in relation to innovation: Knowledge Acquisition (KA), Knowledge Sharing (KS)/Transfer (KT), Knowledge Integration (KI) and Knowledge Creation (KC). First, KA provides companies the access to a broad pool of knowledge/ideas to be employed in their current innovation activities or to initiate new activities. Accidental ideas, occurred during the acquisition, might also initiate innovation activities. Nevertheless, KA is at the individual level. Therefore, the transfer/sharing of acquired elements is required in order to be exploited. By transferring/sharing acquired elements and internal knowledge, the company’s knowledge base is extended. The more accessible knowledge is, the more the possibilities to create new associations.

Third, innovation requires the integration of different specialised knowledge –internal and external. Incremental innovations are likely to be achieved by the integration and combination of a company’s knowledge. In contrast, more radically innovations are likely to be obtained from the integration of external and internal knowledge.

Finally, KC is accomplished within the innovation process. Three outputs might result from this process. First, new knowledge is created. This knowledge contains experiences and lessons in relation to the new product, including the recipe to recreate it without repeating process. This knowledge can be exploited in other areas or used to improve the process in itself. Similarly, ideas can be exploited by generating some extra profit – sell to other companies-, by initiating future innovation activities, or by their use in current problems in other areas.

Benefits for innovation activities were found in each knowledge process. Nevertheless, a synchronized coordination of overall knowledge processes is essential to reap the potential benefits in relation to innovation. That is, if acquired knowledge/ideas were not shared/transferred to the rest organization, the possibilities to encounter their value would be confined to employees who acquired. Likewise, the company’s existing knowledge would become outdated, risking the company in case to a more disruptive competition.

Similarly, if the acquired knowledge were not shared/transferred for its integration with existing knowledge, imitation is likely due to the reduced complexity in the integrated knowledge. Moreover, if created knowledge/ideas/products were not shared/transferred, the company would spent time/money/resources “reinventing the wheel”. Finally but yet importantly, if created outputs were not shared/transferred to other contexts, efficiency on their exploitation is unlikely. This would reduce the company’s opportunities to improve its products/services and to learn from other environments.

The synchronized coordination of investigated knowledge processes is featured in the resultant conceptual map – see Figure 10. The conceptual map is aligned to the exploitation-exploration discussion ongoing in the literature (e.g. Abernathy & Clark, 1985; Benner & Tushman, 2003; Cohen & Levinthal, 1990; Dosi, 1982; Henderson & Clark, 1990; March, 1991). That is, external knowledge inflows (exploration) renew company’s knowledge (step 1), while exploiting its internal knowledge/ideas/innovation outputs in an iterative process (step 2 – step 3 – step 4 – step 2 and so on).
The conceptual map might be represented in a formula. This formula is purely indicative. Future studies could investigate the operationalization of the elements included in the formula. This operationalization could provide the means to measure the performance of specific knowledge processes for innovation activities:

\[ KA + X + KI + KC = Y \]

**X** = can be KS, KT, or **both** at the same time

**Y** = can be **new knowledge** (including lesson learned and the recipe to replicate the product), **ideas**, **innovation outcomes**, a combination of **two of them**, or **altogether**.

### Future Research

Various elements were found in current literature yet some elements remain unclear. Future studies might increase the understanding of the following issues:

<table>
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<th>Table 2: Future Research recommendations</th>
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**Clarification on whether ideas and knowledge are related**

Little is known about whether knowledge is related to ideas. Clarification on this issue could assist managers to better configure the knowledge included in the team during the ideation phase.

**Clarification on acquired elements to be shared across the company**

The current literature in relation to the transfer/sharing of acquired elements is inconclusive. The present research pointed that transferring/sharing the complete set of acquired knowledge would be counterproductive. Employees’ cognitive capacity would be saturated by the amount of knowledge shared. Future research could explore this further.

**To address KT/KS from an inside-out perspective**

Commercialization is a critical innovation process phase (e.g. Abernathy & Clark, 1985; Kline & Rosenberg, 1986). The direction of knowledge shifts from outside-in to inside-out during this phase. No evidence was found in the explored literature. This is an interesting issue for further study as the rate of market success for new products --remained steady in one-third in the last decades (Ortt & Smits, 2006). This is critical for disruptive innovations-- particularly in new technological trajectories-, where related knowledge has to be created and transferred (Hekkert, Suurs, Negro, Kuhlmann, & Smits, 2007). Future research could investigate an approach to increase company’s ability to manage KC and KT/KS in relation to innovation success.
Preconditions

The previous chapter featured knowledge processes adding value to innovation. This resulted in the creation of a conceptual map. The conceptual map emphasises the ideal knowledge flows for innovation purposes. The conceptual map also stresses the importance of the coordination between processes to maximize the benefits. This chapter deals with the extraction of preconditions from the previous chapter to establish the research boundaries, and guide the data collection and the analysis (Yin, 2009). For that reason, the following research sub-question is explored in the present chapter:

“Which preconditions could be extracted from the literature review?”

Although the literature is not completely conclusive, some preconditions can be extracted from the literature review. Preconditions will be used to explore and analyse the case company. The chapter is structured as follows: section 4.1 extracts preconditions discussed in the literature review and section 4.2 provides the discussion and conclusion.
4.1 Literature Preconditions (PL)

4.1.1 Knowledge Acquisition

Current literature describes a number of external sources for knowledge acquisition. This is especially important considering the dispersion of knowledge/ideas among an extensive spectrum of companies. Hence:

- **PL1:** “Companies must acquire knowledge/ideas from the described sources” (e.g. Burt, 2002)

4.1.2 Knowledge Transfer/Sharing

Acquired elements have to be internally shared/transferred in the organization so that others can exploit in innovation activities. Additionally, individual's internal integration might result in the generation of new ideas. To maximize the benefits of acquired elements and accidental ideas, the company must provide employees with the means to transfer/share them. Consequently:

- **PL2:** “Companies must provide the means to exchange acquired elements so that enabling their availability to the rest of the organization.” (e.g. Almeida et al., 2003; Segarra-Cipres et al., 2013)

4.1.3 Knowledge Integration

KI is directed by a specific innovation need. Different specialised knowledge is required to respond to innovation needs. Team members' knowledge might be insufficient for the purpose, but might be in other areas of the company or even outside. Beside, KI is accomplished internally within individuals, which are rationally bounded. Therefore, the role of the organization is to facilitate the access to a greater pool of knowledge – internal and external. Accordingly:

- **PL3:** “Companies must facilitate access to a greater pool of knowledge – internal and external, which could be integrated to address a specific innovation need.” (e.g. Almeida et al., 2003; Grant, 1996)

4.1.4 Knowledge creation

Three outputs result from the knowledge creation process. The innovation outputs would directly benefit the innovation project by providing a solution to the problem for which they were created. However, exploiting their benefits for the entire organization would require capturing and transferring/sharing them.

First, a new product or service is generated. The product must be shared/transferred internally in the organization so that other areas could exploit them. Additionally, newly generated knowledge is embedded in the new product/service. It is therefore important to transfer/share this knowledge so others could take advantages of it. However, although part of the knowledge might be embedded, some skills and experiences are not likely to be transferred. Therefore:

- **PL4:** “Companies must provide the means to transfer/share innovation and its related knowledge for successful adaption to other areas or contexts of the company.” (e.g. Nonaka, 1994)

Ideas are likewise generated during innovation activities. Generally, a single idea will be selected for the development phase. However, generated ideas could be useful in other context, locations, or even for other companies. By capturing all the generated ideas, the company might become more efficient in reaping the benefits from the creativity generated. Therefore:

- **PL5a:** “Companies must capture generated ideas from the knowledge integration.” (e.g. Cooper, 1990)
- **PL5b:** “Companies must share generated ideas from the knowledge integration.” (e.g. Cooper, 1990; Nonaka, 1994)
During the innovation process, specific conditions might appear. The team involved in the innovation process would face and ultimately solve them. Experiences created from facing specific conditions are important lessons that other employees in the company could benefit. Similarly, skills and experiences in the innovation process could be developed. For instances, team members might learn how to better collaborate with others. These experiences could be useful for other employees that face similar conditions. Therefore:

- $P_{L6a}$: “Companies must provide the means to capture lessons learned.” (e.g. Rhodes & Dawson, 2013)
- $P_{L6b}$: “Companies must provide the means to share these lessons to the rest of the company.” (e.g. Rhodes & Dawson, 2013)

4.1.5 General

The central conclusion from the literature was that the presence of the different knowledge processes is insufficient to guarantee the full benefits obtainment. Benefits can be maximized by the synchronized coordination of the investigated knowledge processes. Therefore:

- $P_{L7}$: “Companies must synchronously coordinate their knowledge processes to maximise the benefits for innovation purposes.”

4.2 Discussion and Conclusion

On the basis of current literature a total of nine preconditions ($P_L$) were formulated in this chapter. Preconditions have been featured into the investigated knowledge processes. Some preconditions are interconnected, which complicates their separation. For example, accidental ideas might happen while employees acquire knowledge. This is due to the employees’ ability to establish a relation between acquired knowledge and their internal knowledge (internal problems of the company, previous experiences, etc.). Companies cannot push employees to share their ideas, but they might be encouraged and provided with the means and procedures to do it.

It is expected to find the use of similar procedures and tools in different preconditions. This would depend on the organization followed by a company. Nevertheless, the company should clarify and specify what knowledge employees should acquire, share and transfer, when they should do it, and how they can do it. In other words, the company must provide a common language and a structured procedure to do it. If this is not clear, employees might not be able to accomplish it successfully.

To conclude, the research question was “Which preconditions could be extracted from the literature review?” The following table compiles preconditions obtained from the literature review:

<table>
<thead>
<tr>
<th>Knowledge Acquisition (KA)</th>
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<tbody>
<tr>
<td>- $P_{L1}$: “Companies must acquire knowledge/ideas from the described sources.” (e.g. Burt, 2002)</td>
</tr>
</tbody>
</table>

<table>
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<tr>
<th>Knowledge Transfer (KT)/ Knowledge Sharing (KS)</th>
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<tbody>
<tr>
<td>- $P_{L2}$: “Companies must provide the means to exchange acquired elements so that enabling their availability to the rest of the organization.” (e.g. Almeida et al., 2003; Segarra-Cipres et al., 2013)</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Knowledge Integration (KI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>- $P_{L3}$: “Companies must facilitate access to a greater pool of knowledge –internal and external-, which could be integrated to address a specific innovation need.” (e.g. Almeida et al., 2003; Grant, 1996)</td>
</tr>
</tbody>
</table>
**Knowledge Creation (KC)**

- **P.L.4:** “Companies must provide the means to transfer/share innovation and its related knowledge for successful adaption to other areas or contexts of the company.” (e.g. Nonaka, 1994)
- **P.L.5a:** “Companies must capture generated ideas from the knowledge integration.” (e.g. Cooper, 1990)
- **P.L.5b:** “Companies must share generated ideas from the knowledge integration.” (e.g. Cooper, 1990; Nonaka, 1994)
- **P.L.6a:** “Companies must provide the means to capture lessons learned” (e.g. Rhodes & Dawson, 2013)
- **P.L.6b:** “Companies must provide the means to share these lessons to the rest of the company.” (e.g. Rhodes & Dawson, 2013)

**General**

- **P.L.7:** “Companies must synchronously coordinate their knowledge processes to maximise the benefits for innovation purposes.”
Case Study
This phase aims to provide requirements at the XYZ viewpoint in relation to the expected contribution of knowledge processes (chapter 5). On the other hand, chapter 6 describes the phenomenon and the real-world situation. That is, it describes the knowledge management activities at the company studied.
XYZ’s Requirements

XYZ has identified the lack of knowledge management practices and recognised the need to improve current practices in the context of innovation. Moreover, as an important stakeholder of the research, XYZ has a judgment about the performance level that knowledge processes should fulfil. However, XYZ’s current knowledge processes conditions in relation to innovation hamper the attainment of clear requirements or key performance indicators. Hence, requirements in this chapter refer to XYZ’s viewpoint about the general characteristics that knowledge management practices should provide in relation to innovation. Consequently, this chapter aims to answer the following research question:

“What are the XYZ’s requirements for a successful management of knowledge processes for innovation purpose?”

The case description will be featured in chapter 6. XYZ’s requirements have oriented the company investigation. This is the principal reason to first expose the requirements of the company instead of the case description.

A total of nine interviews were conducted for the investigation of the company. A detailed overview of interviews candidates selection and rejection criteria can be found in Appendix A. The first set of interviews – three interviews - was structured in two main themes, namely innovation and knowledge management within the company. This included an overview of XYZ’s innovation goals. The result was contrasted with the company’s internal documents. The second interviews’ section – three interviews- was related to knowledge management practices at XYZ. A question was addressed in relation to the expected contribution of knowledge management to the company’s innovation goals. The interviews nature (semi-structured) provided interviewees with freedom to address some requirements. Interviewees were also asked about their experiences and understanding on knowledge management practices. This provided an insight about their level of comprehension on knowledge management.
5.1 Innovation Goals

Interviewees were questioned about the company’s innovation goals. The outcomes of the interviews were contrasted with internal documents regarding to the company’s strategy. Two principal innovation goals were found. The two innovation goals are used to categorise requirements.

On the one hand, efficiency is aimed at two principal pillars. First, time-to-market efficiency is targeted. Second, resources efficiency is expected. Consequently, the company aspires to reduce the time and expenses at bringing new products to the market. Additionally, best practices and previous solutions sharing are aimed in order to prevent “reinventing the wheel” at XYZ. Simultaneously, the company assumes that similar departments in different countries might face similar needs. Hence, it is intended to stimulate co-creation among countries.

On the other hand, the company is committed to boost innovation. Employees’ involvement in innovation activities is fostered. For that reason, XYZ’s new initiatives are oriented to stimulate innovation among them, as it will be explained in the description of the company.

5.2 Requirements

5.2.1 Efficiency

The question “how knowledge management should contribute to the company innovation goals?” was enquired. Interviewees emphasised efficiency in reusing previous solutions and ideas generated in prior projects. Other departments, divisions, etc. could benefit from it and the company would increase its efficiency. For example, one of the interviews claimed: “I would like to see an increase in efficiency with which teams can find previous ideas, previous solutions and previous attempts to learn from them and take them into consideration when they try to solve another problem” (Interviewee5, 2013). Therefore:

- **Rc1:** “The Company must provide employees with the mechanisms, tools and procedures to find previous solutions.”

In this line, interviewees see knowledge management as a mean to reduce time-to-market. Accessing important information when required and lessons from others was also aimed. For example, one of the claims regarding this is “I see KM as a key driver over effectiveness or efficiency of innovation… Efficiency in the sense of time to market” (Interviewee5, 2013). Another claim in relation to this is “it should bring critical knowledge together and share that knowledge across people that need that knowledge” (Interviewee6, 2013). Beside, interviewees pinpoint that they “do not need everybody’s knowledge on everything” (Interviewee6, 2013). Therefore, the previous requirement could be modified to integrate the mentioned factors. This requirement could fall in both efficiency and the boost of innovation:

- **Rc1:** “The Company must provide employees with the mechanisms, tools and procedures to access to important knowledge when they need it, learn from other’s mistakes, and find previous ideas and solutions.”

Another important statement was: “We do not have the discipline or the time to share knowledge or to put it into database…We always say that we should dedicate half day to do it, but we never do it” (Interviewee6, 2013). Simultaneously, another interviewee emphasised the importance of incorporating knowledge processes within the employee’s routines. In this way, knowledge processes will not interfere with employees’ tasks. As it was claimed, “Knowledge processes should be attached to the way of working of the people…” (Interviewee5, 2013). It is therefore important to find a way that provide employees with the time, or institutionalise within the routines of the employee. Hence:

- **Rc2:** “The Company must provide employees with the mechanism or routines that allow employees to share their knowledge and improve their willingness to do it.”
Additionally, the interviewees would like to see improved collaboration between different teams, departments, or locations so that being able to co-create new solutions. For instance: “it would be good if we have initiatives, ideas and challenges across the board, across multiple countries, see what we have in common and then co-create the solution” (Interviewee6, 2013). Therefore:

➢ **Rc3:** “The Company must provide employees with the means to co-create in different locations”

Additionally, reward systems were also mentioned. For example, Interviewee6 (2013) claimed: “I see people with knowledge inside their heads… I think this start with the person. You need to award him for his knowledge, for sharing his knowledge” (Interviewee6, 2013). It is not clear whether this is a personal view for some interviewees or it is also desired by the top management team. However, the requirement will be included for its exploration.

➢ **Rc4:** “The Company must provide employees with some kind of compensation for their knowledge contribution, either intrinsic or extrinsic.”

Beside, some pointed the need to clarify what outputs should be captured from the innovation process. They believe that lesson learned is a powerful mean to learn and improve. For instance: “for each innovation and step, we need to record what we started with, what we have done and what the outcome were…Lesson Learned is very important… it is a learning opportunity” (Interviewee6, 2013). Another outcome they emphasised to be captured was ideas: “we should capture all the ideas coming from our innovation process” (Interviewee5, 2013). Consequently:

➢ **Rc5:** “The Company must provide employees with the tools and procedures to capture ideas and lesson learned during the innovation process.”

5.2.2 *Boost Innovation*

Innovation has gained momentum at XYZ. Among the interviewees, there is a common feeling that innovation is in the DNA of XYZ’s employees. Interviewees pointed their identification as a main barrier to bring them together and foster their creativity. For instance: “There are so many people working in XYZ with many ideas, and good attitude. It is a pity…we cannot bring them together” (Interviewee3, 2014a). A different interviewee states: “There is many people looking for external knowledge in our company. What we have to do is to connect this people, build on each other’s knowledge and connect them with the stakeholders” (Interviewee2, 2014). Therefore, interconnection among intra-preneurs is unlikely to occur in XYZ. Hence:

➢ **Rc6:** “The Company must provide a place where ideas could be shared and discussed”

5.3 *Conclusions*

In this chapter, XYZ’s innovation goals were first identified. Requirements were also extracted by the means of interviews. Requirements mentioned by less than two interviewees were excluded. Rejected requirements were assumed personal opinions rather than real expectations of the company.

Concluding, the present chapter aimed to identify XYZ’s requirement for knowledge management activities and the expected contribution thereof in relation to its innovation goal. Efficiency and the boost of innovation are sought by XYZ. XYZ’s requirements are featured as follows:

<table>
<thead>
<tr>
<th>Table 4: XYZ’s Requirements</th>
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</table>

**Efficiency**

➢ **Rc1**: “The Company must provide employees with the mechanisms, tools and procedures to access to important knowledge when they need it, learn from others’ mistakes, and find previous ideas and solutions”
 **R\(_{C2}\):** “The Company must provide employees with the mechanism or routines that allow employees to share their knowledge and improve their willingness to do it.”

 **R\(_{C3}\):** “The Company must provide employees with the means to co-create in different locations”

 **R\(_{C4}\):** “The Company must provide employees with some kind of compensation for their knowledge contribution, either intrinsic or extrinsic.”

 **R\(_{C5}\):** “The Company must provide employees with the tools and procedures to capture ideas and lesson learned during the innovation process.”

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**Boost of innovation**

 **R\(_{C6}\):** “The Company must provide a place where ideas could be shared and discussed”
Case description

In the previous chapter, the XYZ's innovation goals and requirements were extracted by means of interviews. This chapter deals with the description of the company and its knowledge management activities in relation to innovation. The description of the case study has been obtained by means mentioned in Appendix A. The following research question will be explored in the present chapter:

“Which current knowledge processes can be identified in the case study?”

This chapter is structured in the following manner. First, a description of the company, its structure, activities and related innovation activities will be provided. Afterwards, a description of the initiatives in relation to both innovation and knowledge management will be exposed in section 6.2. This section includes the identification of knowledge processes involved in the explored initiatives. Finally, section 6.3 will picture the conclusions of the chapter.
6.1 XYZ Bank

6.1.1 Overview of the company

In 1991, two major banks were merged to shape the XYZ Group (Anonymous, 2014c). Nowadays, XYZ Group is present in more than 40 countries distributed among Europe, North America, Latin America, Asia and Oceania. The number of employees has surpassed 75000 and the company provides services to more than 48 million customers, including private, corporate and institutional customers (Anonymous, 2014b).

After the financial crisis in 2008, the “X” government announced a capital support with a value of EUR 10 billion. In Nov 2009, as part of the agreement to receive the financial aid, XYZ Group, together with the European Commission and the “X” State, agreed to proceed with a restructuring plan. As a result, XYZ Group became the umbrella of two separate operating entities, namely the Bank and the Insurance (Anonymous, 2009).

6.1.2 Structure of the company and its environment

The result of the restructuring caused by the financial crisis is featured below (Anonymous, 2009):

The company endures a continuous restructuring process, which will be finished by 2016. Nowadays, the structure of the company similar to the one presented above. For the present analysis, the primary focus is on the XYZ Bank and its activities regarding innovation and knowledge management.

There are three main entities under XYZ Bank’s umbrella. Retail Banking (RB) delivers products via different channels (e.g. internet, mobile, telephone or face-to-face interaction). These include products like savings, mortgages, payment accounts, investment products and consumer lending (Anonymous, 2014b). On the other hand, Commercial Banking (CB) provides professional entities with banking services such as lending and payments, and cash management. These organizations are of diverse size (from medium to large) and nature (private and public sector). Moreover, Commercial Banking products include tailor-made solutions - e.g. Commercial Finance, Financial Markets, Corporate Finance, Structure Finance and Leasing (Anonymous, 2014b). Beside CB and RB, there is Operations and IT Banking (OIB), which has a supporting role for the bank activities.

XYZ Bank’s structure can be defined as complex. Its structure varies on country to respond to different cultural contexts (Interviewee6, 2014). This can be especially observed in RB, where customers need to be more locally managed. Contrary, CB’s clients are generally large corporations operating in multiple countries. Hence, a more centrally managed structure is required (Interviewee3, 2014b).

XYZ’s environment is shaped by various factors. First, governments and the society have pointed to financial institutions as partially responsible for the crisis of 2008. Consequently, regulations have become stricter than ever, and winning back the customer’s trust a primary objective for the bank (Anonymous, 2014b). Secondly, new entrants in the market, including start-ups and companies from other industries – e.g. Google or Amazon- have altered the traditional financial sector. These companies disrupt and
accelerate the pace of innovation in the financial industry with new technologies and business models (Interviewee2, 2014). Finally, the combination of lack of trust, dissatisfaction with financial institutions, and the crisis motivate the customers to seek alternatives to finance their activities. Crowdfunding and Co-sharing services are two examples of this trend. Therefore, traditional financial institutions face a complex environment, characterised by inflexible regulations in their traditional business model, fast-changing non-regulated opponents and shifts in their customer’s behaviour.

6.1.3 XYZ and Innovation

XYZ’s historical attempts to innovate can be described as discontinuous. “XYY has a history in innovation and pushing innovation away” (Interviewee2, 2014). Different innovation initiatives were accomplished at XYZ. For instance, the E-Business Centre was founded by one of the banks that shaped XYZ Bank. It was created to research the value the Internet could bring to the organization. Several services were resulted. Both services were considered failures in the sense they did not bring any additional value to the group (Das, 2013). Therefore, both services were sold. E-Business Centre was dismantled because the value created mismatched the standards of the Group. Since that, other innovation initiatives were also created and dismantled. Nevertheless, the dynamics of this tendency have been positively influenced with the designation of the new CEO.

The new CEO is greatly committed to innovation (Interviewee2, 2014). A demonstration of his commitment is the designation of a new role, namely the Chief Innovation Officer (CIO). The new CIO has been appointed recently (Anonymous, 2014b). Innovation is gaining momentum in the company due to the CEO’s commitment and the endeavour of the XYZ’s Innovation Hub (IH). The IH is responsible for the stimulation, acceleration and success of innovation at the company. Moreover, the IH takes part of the process as an integrator of new and innovative technologies from XYZ’s knowledge partners. Additionally, IH bridges market needs with business units (customer centricity). Finally, IH is embedded within OIB’s structure below the Innovation, Strategy and Architecture division (ISA).

Innovation at XYZ is IT driven. Therefore, OIB has a supporting role for banking activities (Anonymous, 2014b). This means that the Retail Banking and the Commercial Banking drive innovation and OIB is the means to obtain it (Interviewee1, 2014). XYZ’s innovation outputs are generally described as purely incremental and innovative is produced by a strong sense of urgency (Interviewee1, 2014; Interviewee2, 2014; Interviewee6, 2013). Similarly, new regulations and legacy systems consume much of the budget to adapt to the new circumstances of the environment. This is considered as the first priority of company (Interviewee2, 2014).

XYZ’s innovation goals were identified in the previous chapter. Efficiency is aimed in relation to resource employment and time-to-market in the development of new products and services. Moreover, harmonization on provided solutions and a reduction of expenditure are sought. Finally, XYZ assumes that customers in different countries might have similar needs. Hence, co-creation in new products among similar departments from different countries is targeted. On the other hand, the company aims to boost innovation. Hence, XYZ promotes innovation among their employees to involve and stimulate them on innovation activities.

Finally, multiple approaches are employed for innovation activities (Interviewee3, 2014a; Interviewee6, 2013). Before the IH, there was no one responsible for innovation at XYZ (Interviewee3, 2014a). Innovation was an independent responsibility of each business unit. Therefore, new product and service approaches were independently created by business units. These approaches responded to customers’ local needs. Local needs could be detected by marketing or business analytics departments (Interviewee2, 2014). Strategy departments and the Top Management Team could also indicate which strategic products and services should be implemented (Interviewee6, 2014). Moreover, intra-preneurs lacked a common place to share ideas. Hence, they would submit their ideas to managers. In the best-case scenario, ideas would be attended by managers and explored for a possible implementation (Interviewee2, 2014). These dynamics have commenced to shift due to the action of IH.
IH’s centralised position delivers business units with a central place to resort to. The IH provides business units with the means to satisfy their customers’ needs (Interviewee3, 2014a; Interviewee6, 2013). Occasionally, IH foresees the potential of existing solutions in one country to solve the needs of other countries (Interviewee1, 2014). The IH is also responsible for many initiatives related to innovation such as the Global Innovation Portal and the Innovation Days. Some of these initiatives will be discussed in the next section.

6.2 Knowledge Management Activities

6.2.1 Introduction

First, XYZ lacks a centralized knowledge management system. Likewise, there is not a globally defined knowledge manager role (Interviewee1, 2014; Interviewee3, 2014a; Interviewee4, 2014; Interviewee5, 2013). Local knowledge managers role are not predefined in the company, which hampers their identification. The size and the complexity of the company’s structure do not contribute to this. The structure of the company varies by country. This is especially observed in the Retail business domain, where the structure diverges in relation to the country. This structure responds to local approaches followed by local business units and countries.

XYZ is involved in a complex transition period. Consequently, the present research has dealt with the two realities or horizons of the company. These horizons will be referred as Present Horizon and Future Horizon during the identification of initiatives. The Future Horizon constitutes how XYZ aims its future toward the implementations of the novel initiatives/programmes described in the present research. These initiatives are oriented to support the attainment of the new company’s strategy, which defines collaboration as one of the cornerstones. Similarly, some of these programmes are oriented to improve the efficiency of the company, and reduce the complexity of the products catalogue. Others are aimed to boost innovation. Future Horizon initiatives operate at the global level. Consequently, they apply to the entire company. Future Horizon initiatives’ impact and scope is limited due to their novelty.

Therefore, non-formalised and fragmented approaches are widely used at XYZ in the coined Present Horizon. The identification of all knowledge management practices and people in charge was unmanageable due to the XYZ’s fragmentation and the time available for the research. This means that knowledge management practices isolated in specific departments are invisible for their exploration in the present research. Therefore, the Present Horizon represents most common approaches generally employed by business units in innovation activities on the daily basis. Therefore, an overview of new product/service development approaches and the knowledge process involved will be provided in the Present Horizon.

Finally yet importantly, the initiatives/programmes description in the Future Horizon is structured answering the questions Why, How and What. The “Why” is related to the company’s innovation goals previously discussed. The “How” describes processes, tools, procedures, etc. at the initiative/programme. Finally, the “What” provides a general description on what the initiative/programme is.

6.2.2 Identification of knowledge processes

| Present Horizon |

RB customers’ needs are satisfied locally. Different countries follow different approaches to acquire customer’s knowledge. For instance, Design Thinking (an approach that involves innovation activities and focus on people’s needs, desires and preferences (Brown, 2008)) is generally employed by business units. By means of this approach, business units acquire customer and non-customer requirements about products or services they aim to be implemented by XYZ.
A complementary approach is employed in France. An Internet Portal is used to acquire customers’ ideas. These ideas can be voted and selected by other customers. In a later stage, these ideas might be taken into consideration for a possible development. Contrary, in the Netherlands, customer groups, suppliers, and universities are asked to provide inputs on certain subjects. Finally, Customer Intelligence departments also play a role in customer knowledge acquisition.

The acquired customers’ needs are not shared/transferred across different business units and countries. The lack of visibility in acquired knowledge hampers common needs identification or current solutions among countries. Knowledge integration is observed at the country or business unit level. Consequently, XYZ repeatedly develops similar products in different countries. In other words, XYZ fails in preventing wheel reinvention in products/services developed from customers’ needs – see figure below. This might be aggravated due to the lack of inter-country product/service sharing.

The strategy of the company might also trigger new product/service development activities. The strategy drives the definition and selection of future themes to be researched. Different countries and business units, based on their specific expertise, work in the same defined trends. Simultaneously, every department is responsible for monitoring technological trends, competitors, potential new entrants, etc. in their respective sectors. The lack of a formalised procedure to share/transfer the acquired knowledge might cause reinventing the wheel once more – see picture below.
On the other hand, Commercial Banking follows a similar approach to Retail Banking. However, CB is involved in a restructuring process to unify departments at the global scale. This will be later described at the CB TOM programme. To certain extend, the business domain has been motivated due to the character of its clients.

**Identified Knowledge Processes**

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<td>Present Horizon</td>
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**Future Horizon**

A detailed description of the Future Horizon initiatives and the knowledge processes initiatives can be found in Appendix D.

**Social Networking Intranet (SNI)**

**Why**

*Efficiency*: to improve the time-to-access to internal knowledge and expertise, increase connectivity among employees, share skills, work more efficiently, and increase engagement.

*Boost innovation*: to promote free discussion.

**How**

A set of interconnected tools are provided to obtain the aimed objectives:

- First, the SNI includes communities organized by topic. Communities -private or public- can be owned by the company or by any employee. Questions, documents, links and videos can be posted, and ideas can be shared in communities. Besides, employee’s participation is acknowledged with recognition (*SNI Badges*).
- Second, the SNI provides a “Yellow Pages”. Employees are encouraged to fill in their profile during the initial weeks after their employment. This is a self-fulfilled profile.

**What**

The SNI is a social networking intranet.

**Identified Knowledge Processes**

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**Sharing programme**

**Why**

*Efficiency*: To stimulate the sharing of knowledge, skills, experiences and best practices across XYZ Retail Banking.

*Boost innovation*: To create novel products, to improve the customer experience, and reduce time-to-market.

**How**

The Sharing programme is led by the *Retail Standard Board* (RSB). The Sharing programme is featured by different initiatives. A fundamental pillar is the *Collaborative Communities (CC)*. The Collaborative Communities’ objectives might be divided in short-term and long-term period. Short-
Long-term ambitions include the attainment of co-created solutions. Access to the platform has to be requested by employees and granted by the community leaders. The creation of communities must be approved by the RSB. Approval is subjected to:

- The community has to have a clear goal that can be shared and replicated.
- Deliverables must be clear.
- Team Members have to be from different countries.

Employees must share results of their activities on a regular basis so that other employees could reuse it. Solutions would be stored and displayed at the CIO's community. Several tools are available aimed to assist the community’s goals (e.g. Confluence, Jira, conference tools, chat, etc.).

Community are formed by:

- **Leader**: responsible for the achievement of the deliverables, goals and time schedule.
- **Members**: Employees that actively contribute to the community.
- **Non-members**: Follow the community and provide feedback.

Differences between Collaborative Communities and the SNI can be found in Appendix E.

### What

The Sharing programme is an ambitious programme to facilitate the execution of XYZ's strategy. The Sharing programme initiatives are delineated in collaboration, orchestration and communication for the Retail Banking.

#### Identified Knowledge Processes

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### Commercial Banking Target Operating Model (CB TOM)

#### Why

**Efficiency**: To Reduce the complexity in the offered products/services catalogue, and facilitate its clients' operations. The CB TOM also seeks increasing mobile and online capabilities.

#### How

The CB TOM aims the standardization of products, services and processes to deliver harmonized products across borders. The process is centrally managed and supported by tools like SharePoint or Jira. Besides, the CB TOM initial phases completed a restructuration to unify globally several units such as Global Markets.

#### What

The CB TOM is a transformation programme aimed to create a differentiating client experience across products and countries under the mantra “One Bank”.

#### Identified Knowledge Processes

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</table>
Innovation Days

**Why**

**Boost innovation:** To accelerate the pace of innovation, stimulate creativity and get employees involved.

**How**

The Innovation Days is formed by the *Innovation Platform* and the *Innovation Fund*. The Innovation Days process is divided into eight phases. Employees are encouraged to submit their ideas in the Innovation Portal, and contribute to improve the ideas of others.

In the Innovation Portal, ideas can be created, edited, deleted, commented, voted, documents can be attached, and other employees can be referred. The Innovation Days process commences with the submission of ideas and team formation. XYZ arranges various procedures to facilitate the process (brainstorming techniques, ideas communication: describe the value/benefits for customers and XYZ, etc.). Four hours per week are provided to work on ideas. Each process phase is followed by a selection phase.

In following phases, “ideators” seek experts and ambassadors (business unit sponsors) supporting their ideas. Finally, most promising ideas would culminate in a Minimum Viable Product (MVP).

**What**

The Innovation Days is an initiative where employees and business units are encouraged to think about innovation in XYZ, share raw ideas, and improve them over time with some funding.

**Identified Knowledge Processes**

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**Global Innovation Portal (GIP)**

**Why**

**Efficiency:** To facilitate and enable cross-country communication and collaboration.  
**Boost innovation:** to explore and assess possible external technologies provided by High-Tech start-ups, and discover solutions to be potentially implemented internationally by the business units.

**How**

The GIP delivers XYZ the opportunity to globally discuss business and/or technical challenges, and bridge them to novel external business models and technological solutions. Different entities define challenges to be discussed in the GIP. The involved entities are:

- Business units (BU) define challenges from a business need or a market opportunity.
- GIP or the IH establish challenges based on new disruptive business models or market trends. The IH also provides funding.
- Expert Groups and Collaborative Communities provide themes based on their priorities.
- the SNI Communities might also propose topics to be studied.
- The CBT Consulting introduces the most interesting start-ups and solutions. It also provides use cases from other banks and other industries.

Proposed challenges are discussed and possible solutions investigated during thematic calls. Besides,
each business unit appoints a Single Point of Contact (SPOC). The process begins by defining the challenge scope to assure the participation of the right experts. Subsequently, the problem is defined. This is proceeded by internal thematic calls where XYZ’s previous solutions are explored. IH also contributes by sharing solutions taking place in its facilities. The CBT Consulting compliments the search by introducing promising start-ups solutions. The CBT Consulting also shares use cases from other financial institutions. Once solutions are decided for an implementation phase and MVPs are developed, BUs will locally implement them in their countries. Finally, the result of the implementation phase is shared in a final thematic call.

What

The Global Innovation Portal (GIP) is a platform that provides international connection of XYZ’s business units with start-ups and innovative companies.

Identified Knowledge Processes

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6.3 Conclusions

The present chapter dealt with the description of the case. First, an overview of the company and its activities was provided. Similarly, it was described that society, governments, new regulations, and new entrants (Blue-chip companies and start-ups) have altered the financial industry.

Innovation has finally found momentum in XYZ with the new CEO and the IH. The IH role has positively influenced XYZ’s innovation activities. It was observed that XYZ lacks a central knowledge management system and global representatives for these affairs. Therefore, the identification of all the existing knowledge management activities in the company was far to be possible. The present research has accordingly focused on two horizons (Present and Future). Future Horizon dealt with five initiatives in relation to the company’s innovation goals. In contrast, the Present Horizon provided an overview in new product/service development approaches. Knowledge processes involved in both horizons were identified (see Appendix D for a detailed explanation). Therefore, the present chapter aimed to answer the following research question:

“Which current knowledge processes can be identified in the case study?”

The processes identified in the different initiatives are summarised in the following table:

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<th>Table 5: Identified Knowledge Processes</th>
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<tr>
<td>Present Horizon</td>
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<td>Future Horizon</td>
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<td>CB TOM</td>
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<td>Innovation Days</td>
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<td>GIP</td>
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Analysis & Recommendations
Once concluded the previous phases, the present research is equipped with the means to explore the following objectives. First, identification of the gaps between literature preconditions and existing conditions at the company case will be presented. Subsequently, the gaps will be filled with the recommendations purposed on chapter 8.
Gaps and Improvements identification

In previous phases, the theoretical framework and the literature preconditions were defined. Similarly, the company’s requirements and innovation objectives were described. Finally yet importantly, the case description was provided. Therefore, the present chapter deals with the analysis of the findings. The findings observed in the company are contrasted to the literature preconditions. In other word, the current chapter explores the following research question:

"Which gaps and improvements can be identified between the literature and the actual knowledge processes at the case company?"

This chapter is structured in three sections. Section 7.1 identifies the existing gaps in both horizons. Subsequently, Present Horizon’s gaps and Future Horizon initiatives are contrasted to investigate whether the former are solved by the latter (Section 7.2). Conclusions and the answer for the chapter’s question is provided in Section 7.3.
7.1 **Gaps Identification**

**Present Horizon**

7.1.1 **Knowledge Acquisition**

P_{L1}: “Companies must acquire knowledge/ideas from the described sources”

No gaps were found for knowledge acquisition in the Present Horizon. Different approaches are employed to acquire external knowledge on a country and business unit basis. Different contexts might require different approaches. Similarly, diversification of methods increases the number of channels to acquire external knowledge. However, KA diversification in approaches might negatively influence in the efficiency thereof.

- I_1: “Harmonization of KA approaches to increase efficiency thereof”

7.1.2 **Knowledge Transfer/Sharing**

P_{L2}: “Companies must provide the means to exchange acquired elements so that enabling their availability to the rest of the organization.”

XYZ fails to prevent reinventing the wheel in new product/service development activities, driven either by the identified customers’ needs or by the company’s strategy. Lack of communication among countries was observed as the main cause. This was perceived in the transfer/sharing of both customers’ needs and the result of knowledge acquisition for strategic products. As a result, common challenges are not detected and co-creation among countries not obtained. Similarly, local knowledge about technologies or local suppliers is not exploited. For example, Dutch suppliers could have a state of art technology compared to Spanish suppliers. Dutch suppliers could bring competitive advantages in Spain. However, the lack of communication between the XYZ Netherlands and Spain hinders reaping the competitive advantage. Therefore:

- G_{L1}: “XYZ Bank lacks formalised procedures for the inter-country sharing of their local acquired knowledge so that common needs could be detected and local knowledge exploited.”

7.1.3 **Knowledge Integration**

P_{L3}: “Companies must facilitate access to a greater pool of knowledge – internal and external, which could be integrated to address a specific innovation need.”

Knowledge Integration was observed at the national level. However, the lack of communication among countries affects the availability of internal and acquired knowledge for other countries. As a result, nationally constrained and disconnected silos of knowledge are created. This hampers inter-country knowledge integration, and prevents the detection of common problems/needs and the possible co-creation of solutions. Therefore:

- G_{L2}: “XYZ Bank lacks a formalised approach for detecting common needs among countries, which hinder inter-country integration and product development.”

Accessibility of internal knowledge depends on employees’ informal networks. Consequently, employees’ access to internal knowledge is still limited to the people they already know. Therefore:

- G_{L3}: “XYZ Bank lacks a formalised approach for accessing internal knowledge to address its innovation challenges.”
7.1.4 Knowledge Creation

**P1.4:** “Companies must provide the means to transfer/share innovation and its related knowledge for successful adaption to other areas or contexts of the company.”

No formalised procedure or database containing the existing solutions was found. This, combined with the observed lack of communication (G1), might reduce opportunities to exploit existing solutions. Therefore:

- **G1:** “XYZ Bank lacks a formalised procedure or database to share/transfer the new products/services.”

**P1.5a:** “Companies must capture generated ideas from the knowledge integration.”

**P1.5b:** “Companies must share generated ideas from the knowledge integration.”

No formal procedure was found to capture ideas created during innovation activities neither to share/transfer them. Therefore:

- **G1:** “XYZ Bank lacks a formalized approach to capture ideas and a central place to share/transfer the created ideas.”

**P1.6a:** “Companies must provide the means to capture lessons learned.”

**P1.6b:** “Companies must provide the means to share these lessons learned to the rest of the company.”

No formal procedure was detected for capturing experiences created during innovation activities. Certain departments informally reflect on the experienced events. For instance, IH reflects on the experiences accomplished during projects. These experiences are not shared/transferred to the rest of the company. Therefore:

- **G1:** “XYZ Bank lacks a formalized approach to capture lesson learned so that being shared/transferred.”

**Future Horizon**

7.1.5 Knowledge acquisition

**P1.7:** “Companies must acquire knowledge/ideas from the described sources.”

Knowledge acquisition was not observed in the SNI communities. However, knowledge acquisition in the SNI, as a social networking intranet, is not strictly required. Employees are encouraged to discuss about topics of their attention. This might include discussion on external technologies with no presence in XYZ Bank. However, the acquisition of knowledge would depend on employees’ discussions and their required needs. Therefore, mismatching was not found in relation to the SNI and KA.

No gap was observed regarding to the other initiatives. In the Collaborative Communities, KA could be a pre-step to define community goals that will grant access to the platform. Additionally, KA might be complementary in communities where leaders require access for external entities. Similarly, acquisition of knowledge/ideas was observed as a pre-step for the Innovation Days. In last stages of the Innovation Days, “ideators” and their sponsors could employ the Innovation Fund if specific external knowledge is required. In the GIP, KA results in business challenge definitions that will initiate the process. Moreover, if internal solutions do not fulfil business challenges, KA would be triggered again. Finally, local customers and competitors’ knowledge is acquired in the CB TOM.
Some of the initiatives have their own specific approaches for KA once projects are initiated. Nevertheless, Present Horizon’s approaches for KA, which might trigger innovation projects, are yet used in the Future Horizon. Consequently, I1 still applies in the Future Horizon.

- **I1:** “Harmonization of KA approaches to increase efficiency thereof”

### 7.1.6 Knowledge Transfer/Sharing

**P_L2:** “Companies must provide the means to exchange acquired elements so that enabling their availability to the rest of the organization.”

KA is required to detect business needs. In the Collaborative Communities, this could trigger the community creation process. Different countries must be involved to create a community in the platform. Therefore, business needs sharing/transferring among countries is required to identify common needs. However, no formalised procedure was found. This might be one of the reasons for the little number of communities created–apart from the immaturity of the initiative. Therefore:

- **G_l2:** “The XYZ Bank lacks a formalized approach for sharing the detected business needs among countries so that other countries could associate for the development of a common solution in the Collaborative Communities.”

In contrast, the GIP provides the means for sharing/transferring detected business challenges and KA results from potential external solutions. However, sharing detected business challenges would be dependent on knowledge that SPOCs have about thereof. Hence, some improvements could be obtained to increase SPOCs’ awareness about detected needs.

- **I_l2:** “Increase SPOCs awareness about detected needs”

No gaps were detected in relation to the other initiatives. Diverse themes are discussed in the SNI. This might include sharing/transfer of acquired elements. Similarly, the CB TOM centralised structure is designed to collect acquired knowledge. Finally, the Innovation Days platform is itself a place for sharing/transferring ideas that might have been acquired.

### 7.1.7 Knowledge Integration

**P_L3:** “Companies must facilitate access to a greater pool of knowledge—internal and external, which could be integrated to address a specific innovation need.”

The SNI is the company’s greatest pool of internal knowledge. The potential to access internal knowledge in the SNI is enormous. Furthermore, acquired knowledge become internal once acquired. Hence, external knowledge has the potential to be found in the SNI. However, some malfunctions were detected. Interviewees pointed that there is reduced number of employees sharing/transferring knowledge in the SNI (Interviewee2, 2014; Interviewee4, 2014; Interviewee6, 2013). Another appointed reason is the SNI’s unstructured character for finding internal knowledge (Interviewee4, 2014). Therefore, recommendations will be provided to improve the SNI’s performance.

- **I_l3:** “Increase the SNI’s performance to find pinpoint knowledge”

Regarding to the other explored initiatives, their structure provide the means to integrate and apply knowledge. Nevertheless, they perform as independent silos. That is, the integration of knowledge is limited to the members in the platforms. This reduces the availability of knowledge in XYZ Bank. Although there is no gap within the initiatives, their interconnection would positively affect their performance. This will be further discussed in the **P_L7.**
7.1.8 **Knowledge Creation**

**P1L4:** "Companies must provide the means to transfer/share innovation and its related knowledge for successful adaptation to other areas or contexts of the company."

Means to share/transfer the created innovations were observed in three out of five initiatives – GIP, Collaborative Communities, and the CB TOM. As explained, this initiatives function as independent silos, reducing the visibility of created solutions. This will hinder their future exploitation in other areas/contexts. Therefore:

> **L4:** "Increase the visibility of the created solutions for the rest of the organization to reduce underperformance on their exploitation in other contexts"

On the other hand, no evidences were found for the SNI and Innovation Days. If this is accomplished, it occurs in a non-formalised way. Additionally, Innovation Days is not sufficiently mature to identify any company’s intention to share/transfer the resultant solutions. XYZ Bank will benefit from a formalised approach to share all the created solutions. This also includes the Present Horizon solutions. Therefore, the Future Horizon and the Present Horizon shares **G1L4** as a common gap:

> **G1L4:** "XYZ Bank lacks a formalised procedure or database to share/transfer the new products/services."

**P1L5a:** "Companies must capture generated ideas from the knowledge integration."

**P1L5b:** "Companies must share generated ideas from the knowledge integration."

Generated ideas can be shared/transferred in the Innovation Days platform. The Innovation Days enables various procedures to facilitate ideas capture and sharing (e.g. brainstorming techniques, ideas’ value description, etc.). Additionally, ideas shared in the Innovation Days have a temporal character. Once ideas are rejected, they will vanish. This could be prevented if employees would decide to continue improving their ideas and submit them again in the next Innovation Day process. If this were not the case, XYZ would not exploit efficiently employees’ ideas. Therefore:

> **L5:** "Improve efficiency in exploiting ideas."

**P1L6a:** "Companies must provide the means to capture lessons learned."

**P1L6b:** "Companies must provide the means to share these lessons learned to the rest of the company."

After the MVP local implementation, SPOCs share/transfer the results with other countries and business units in the GIP. However, there are not sufficient evidences to describe the used method. In other initiatives, no formal approach was found to capture lesson learned. Therefore, the Future Horizon and the Present Horizon shares **G1L6** as a common gap.

> **G1L6:** "XYZ Bank lacks of a formalized approach to capture lesson learned so that being shared/transferred."

7.1.9 **General**

**P1L7:** "Companies must synchronously coordinate their knowledge processes to maximise the benefits for innovation purposes."

The lack of centralized knowledge management systems, globally defined knowledge manager roles, and the continuous company’s restructuration has resulted in a number of disconnected initiatives. Different processes were observed in the initiatives. Some initiatives contain the complete set of knowledge processes discussed in the literature. The GIP and the Collaborative Communities are two of these examples. However, their benefits are limited to their members.
Similarly, interaction between initiatives is yet missing. The initiative’s immaturity and the lack of employees’ awareness might be two factors influencing this. Employees might be confused about the utility of different initiatives and contexts to be employed. This could be a reason for why employees continue using Present Horizon approaches instead of the Future Horizon. Nevertheless, company’s attempts to promote the new initiatives in order to increase awareness thereof were observed. Promotion is oriented to explain employees the initiatives functioning and goals. Consequently, no procedure was found explaining employees which initiative to use, under what circumstances. Therefore, there was not found evidences of a synchronized coordination among initiatives. If there is, it is casual. Hence:

- **G18**: “XYZ Bank lacks a formalized procedure to coordinate the different initiatives.”

### 7.2 Present Horizon VS Future Horizon

As described, XYZ is involved in a transition period. This decomposes the company into the two defined horizons. The Present Horizon is differentiated by non-formalised and inconsistent approaches among countries. Business units and countries are silos where innovation activities are accomplished independently from each other. In contrast, Future Horizon initiatives constitute XYZ’s effort to achieve its operational excellence ambitions. These initiatives aim to support the attainment of the new company’s strategy. However, their impact is yet limited. Employees are affected on the daily basis in their working activities by having to deal with two realities in relation to innovation activities. This might create confusion about the approach to be follow in different situations.

XYZ recognises certain problems in the Present Horizon. In its search for operational excellence, XYZ have created the Future Horizon initiatives to respond detected problems in the Present Horizon. However, the early stage of the Future Horizon initiatives has little impact in the Present Horizon. Moreover, it is important to analyse whether detected Present Horizon gaps are closed by Future Horizon initiatives. This will reveal the company’s actual gaps, and harmonization between the two horizons gaps will be obtained. This analysis will be discusses next.

Five gaps where detected in the Present Horizon:

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<th>Table 6: Detected Gaps in the Present Horizon</th>
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**KS/KT**

- **G13**: “XYZ Bank lacks formalised procedures for the inter-country sharing of their local acquired knowledge so that common needs could be detected and local knowledge exploited.”

**KI**

- **G12**: “XYZ Bank lacks a formalised approach for detecting common needs among countries, which hinder inter-country integration and product development.”
- **G13**: “XYZ Bank lacks a formalised approach for accessing internal knowledge to address its innovation challenges.”

**KC**

- **G14**: “XYZ Bank lacks a formalised procedure or database to share/transfer the new products/services.”
- **G15**: “XYZ Bank lacks a formalised approach to capture ideas and a central place to share/transfer the created ideas.”
- **G16**: “XYZ Bank lacks a formalized approach to capture lesson learned so that being shared/transfered.”
Lack of communication among countries and business units causes gaps \( G_{L1}, G_{L2}, \) and \( G_{L4} \). Likewise, the lack of needs sharing reduces the detection of mutual needs among countries. Therefore, the possibilities to co-create with other countries are reduced. Similarly, the lack of previous solutions’ sharing hinders their detection and the coupling of needs and solutions.

These gaps have been found in both business domains. In the CB domain, gaps \( G_{L1}, G_{L2}, \) and \( G_{L4} \) might be closed once CB TOM programme will be implemented. First, locally acquired needs will be shared with their specific Global Divisions (\( G_{L1} \)). Then, Global Divisions will centrally integrate them for a common product development. This will facilitate common needs detection and integration (\( G_{L2} \)). Subsequently, common products would be adopted by all countries, preventing wheel reinvention. That is, common solutions are shared with all countries. However, Future Horizon initiatives function as silos, preventing the visibility of solutions for the RB domain and vice versa. As a result, possibilities to exploit them in the other business domain are reduced. Therefore, \( G_{L4} \) is not completely satisfied and improvements could be achieved (\( I_4 \)).

The GIP also responds to certain gaps in the RB domain. Acquired needs are shared among country representatives (SPOCs). Similarly, acquired knowledge about external solutions is shared in the GIP. Therefore, \( G_{L1} \) is satisfied. Nevertheless, an improvement was suggested for increasing SPOCs’ awareness in the GIP (\( I_2 \)). Additionally, by sharing country specific needs, global integration of common needs is obtained. This would satisfy \( G_{L2} \). In contrast, the RB business line does not have any database to store existing RB’s products. The GIP approach depends on IH’s knowledge to detect suitable existing solutions. Although the GIP approach partially improves the visibility of previous solution (\( G_{L4} \)), improvements can be accomplished (\( I_4 \)).

Besides, both business domains rely on employees’ informal networks to access to internal knowledge in the Present Horizon. Therefore, access to internal knowledge is limited, reducing the opportunities to exploit it (\( G_{L5} \)). The SNI is used in the Future Horizon to access to a broader pool of internal knowledge. Consequently, the SNI would cover \( G_{L3} \). Nevertheless, the potential to reach internal knowledge in the SNI was found challenging (\( I_3 \)).

As far as the \( G_{L5} \) is concerned, both RB and CB have a place to share ideas via the Innovation Days. Moreover, the Innovation Days provides means to capture and share ideas. However, ideas contained in the Innovation Days are temporally. Once ideas have been rejected, they will be missed. \( I_5 \) was included to improve this feature. Additionally, XYZ Bank lacks a formalised approach to capture lesson learned (\( G_{L6} \)) so that preventing similar mistakes in the future.

As discussed, certain gaps in the Present Horizon are satisfied by the Future Horizon initiatives. As a result, gaps harmonisation between the Present Horizon and the Future Horizon is achieved. However, certain gaps are not completely satisfied due to improvements detected in the Future Horizon initiatives. The following table summarised the findings:

<table>
<thead>
<tr>
<th>Present Horizon</th>
<th>Future Horizon</th>
<th>CB TOM</th>
<th>GIP</th>
<th>SNI</th>
<th>Innovation Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>CB KS/KT</td>
<td>( G_{L1} )</td>
<td></td>
<td>( \checkmark )</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CB KI</td>
<td>( G_{L2} )</td>
<td></td>
<td></td>
<td>( I_4 )</td>
<td></td>
</tr>
<tr>
<td>CB KC</td>
<td>( G_{L4} )</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RB KS/KT</td>
<td>( G_{L1} )</td>
<td></td>
<td>( I_2 )</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RB KI</td>
<td>( G_{L2} )</td>
<td></td>
<td>( \checkmark )</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RB KC</td>
<td>( G_{L4} )</td>
<td></td>
<td>( I_4 )</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Both KI</td>
<td>( G_{L3} )</td>
<td></td>
<td>( I_3 )</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Both KC</td>
<td>( G_{L5} )</td>
<td></td>
<td>( I_5 )</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Both KC</td>
<td>( G_{L6} )</td>
<td></td>
<td>( X )</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Nevertheless, Future Horizon initiatives do not have the impact expected. Their early stage and their yet little visibility among employees prevent their adoption. Moreover, employees’ confusion about what initiatives they should use in different circumstances could negatively influence in their adoption. Therefore, coordination between initiatives from both horizons is required to reduce the existing confusion. Furthermore, coordination will be also required to complete the horizon harmonization and eliminate the Present Horizon gaps. However, coordination between both horizons is yet missing (GL8). Therefore, GL8 will be modified to represent the coordination between both approaches in order to complete the harmonization:

- GL8: “XYZ Bank lacks a formalized procedure to coordinate the different horizons’ initiatives.”

### 7.3 Conclusions

The present chapter dealt with the detection of gaps between literature preconditions and the actual reality of XYZ. In other words, the chapter dealt with the following research question:

“Which gaps and improvements can be identified between the literature and the actual knowledge processes at the case company?”

Although gaps where identified, some improvements might also be obtained in specific initiatives. Moreover, various gaps are observed in both horizons. Common gaps are GL4, GL5, GL6, and GL8. Especially important is GL8. The gap is related to the inexistence of formal procedures to coordinate the horizons’ initiatives. The conceptual model specifies that the knowledge processes presence does not guarantee the benefits attainment. The synchronized coordination of knowledge processes is essential to reap the potential benefits in relation to innovation. This coordination is yet missing in XYZ.

Additionally, Future Horizon’s initiatives are a demonstration of the company’s effort to attack the Present Horizon’s problems (e.g. wheel reinvention). For that reason, an assessment was accomplished to evaluate whether the Future Horizon’s initiatives satisfy Present Horizon gaps. Certain gaps will be satisfied by coordinating and orchestrating the horizons’ initiatives (GL8). Therefore, the XYZ’s actual gaps are exposed and renamed in the table below (e.g. GL7 → GL3):

<table>
<thead>
<tr>
<th>Table 8: Harmonized Gaps and Improvements</th>
</tr>
</thead>
</table>

#### KA

- I1: “Harmonization of KA approaches to increase efficiency thereof”

#### KS/KT

- GL7 → GL3: “The XYZ Bank lacks a formalized approach for sharing the detected business needs among countries so that other countries could associate for the development of a common solution in the Collaborative Communities.”
- I2: “Increase SPOCs awareness about detected needs”

#### KI

- I3: “Increase the SNI’s performance to find pinpoint knowledge”

#### KC

- GL4 → GL2: “XYZ Bank lacks a formalized procedure or database to share/transfer the new products/services.”
- I4: “Increase the visibility of the created solutions for the rest of the organization to reduce underperformance on
their exploitation in other contexts”

- I: “Improve efficiency in exploiting ideas.”
- GL6 → GL3: “XYZ Bank lacks a formalized approach to capture lessons learned so that being shared/transferred.”

General

- GL8 → GL4: “XYZ Bank lacks a formalized procedure to coordinate the different horizons’ initiatives.”
In the previous chapter, gaps between actual levels of performance at the case and the literature preconditions were observed. The present chapter aims to provide recommendations and improvements to solve the detected gaps at the case company. Recommendations provided at this chapter are generalised to the entire company for two main reasons. First, a general overview of common new-product development approaches, employed by business units and employees in different countries, was exposed in the Present Horizon description. Therefore, detected problems and gaps in this horizon are generalised for the entire company. Second, explored Future Horizon initiatives function at the global level. Any business unit or employee around the globe can employ these initiatives. Consequently, suggested recommendations will apply for the entire organization. Moreover, recommendations will consider XYZ’s requirements, obtained in the interviews, where possible. Hence, the present chapter explores the following research question:

“What could be recommended to improve XYZ’s knowledge management practices in order to stimulate innovation?”

First, the chapter features recommended solution to harmonize both horizons, achieve the coordination of initiatives and close gaps from the Present Horizon. This will be presented in section 8.1. Second, a solution is provided to solve several gaps related to the couple of needs and solutions. It is critical for the case company to solve this problem in order to increase efficiency in the use of resources for innovation activities and prioritize product/services development for needs with non-existing solutions. It also provides the means to obtain the improvements detected. This will be exposed in section 8.2. Thirdly, solutions will be provided for the remaining gaps and improvements in sections 8.3, 8.4, 8.5, 8.6. Finally yet importantly, conclusions will be provided at the end of the chapter.
8.1 Coordination of XYZ’s knowledge processes

During the theory development phase, certain influential authors (e.g. Burt, 2002; Almeida et al., 2003; Grant, 1996; Nonaka & Takeuchi, 1995), who pointed specific knowledge processes in relation to innovation, were studied. A deep exploration of their work led to conclude that coordination among knowledge processes is required to maximize the benefit of knowledge processes in relation to innovation. However, the study at the case company has leaded to the observation that different initiatives include several knowledge processes. Therefore, coordination of initiatives and their knowledge processes must be obtained.

Moreover, described factors resulted in two horizons at the case company. Certain Future Horizon initiatives attack the problems originating the Present Horizon gaps. However, the early stage of Future Horizon initiatives has hampered the transition from the Present Horizon to the Future Horizon. XYZ Bank must realise this transition in order to cover the Present Horizon gaps. The transition from Present to Future first requires mapping out the situations that could initiate the innovation process, and second, the coordination of the Future Horizon initiatives.

Mapping out the situations will provide the means to interconnect the initiatives. Therefore, the following gap will be overcome:

➢ **G2:** “XYZ Bank lacks of a formalized procedure to coordinate the different horizons' initiatives.”

**Coordination of the initiatives**

**Situations initiating the innovation process:**

The XYZ’s innovation process will be triggered by specific business units and employees. Initiating elements will be:

1) **Ideas**
2) **Business needs**

1. **Ideas**

Ideas will be:

➢ Externally acquired (e.g. Burt, 2002)
➢ Generated while acquiring external knowledge (accidental ideas) (e.g. Nonaka, 1994)
➢ Generated within the company while integrating knowledge (e.g. Nonaka, 1994)

Acquired ideas – including accidental ideas – are discovered by employing one of the multiple KA approaches researched at XYZ (see Figure 16). This can occur in both business domains. Employees’ ideas must be shared to the rest of the organization (e.g. Almeida et al., 2003; Segarra-Cipres et al., 2013). This will be done in the Innovation Days portal at the case company. Maturing ideas and overcoming different stages before reaching the development phase require:

1.1. **Seek support**

Employees will be able to see the value of ideas once they are shared (e.g. Almeida et al., 2003; Segarra-Cipres et al., 2013). Those employees who detect ideas value will be willing to support them. At the case company, support can be gained in the Innovation Days platform via voting and team formation. Team formation is critical in knowledge integration (e.g. Grant, 1996). Team members’ knowledge will be combined in such a way that the final solution could be developed. Team formation can also be accomplished in the Innovation Days portal at the company studied. Employees, departments or business units at XYZ will team up to support specific ideas. This includes the possibility to integrate employees or business units from different countries within the team.
1.2. **Ideas incubation**

Once support is obtained and teams are formed, incubation will proceed. To incubate and mature ideas, teams need an environment where knowledge can be integrated through social interactions (e.g., Grant, 1996). At the case, social interactions can be obtained in the SNI by creating private communities. Team members’ knowledge integration, decision-making process, improvement, etc. will be accomplished within the community. Non-existent specific knowledge within the team might be required. Therefore, availability to external knowledge to the team is essential (Koch, 2011). Yellow pages and other communities can be seized to access internal knowledge at XYZ. Nevertheless, in case required knowledge cannot be found internally, KA will be required (e.g., Zahra & George, 2002). This will depend on the resources available. At XYZ, the outcome of teams’ knowledge integration at this point will be the creation of business propositions that will compete with other ideas in the Innovation Days.

Based on the evidence of the case, business propositions will have to overcome different phases. Feedback from employees and the Innovation Days committee is provided in each phase. Teams will integrate feedbacks in their business propositions. This will create a feedback loop that would continue as long as ideas remind in the process.

### Interconnection:

<table>
<thead>
<tr>
<th>Situation</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seek support for ideas</td>
<td>Share ideas in Innovation Days</td>
</tr>
</tbody>
</table>

1.3. **MVP development**

Once ideas reach the MVP phase, selected ideas will be developed. As described in the case description, the Collaborative Communities provide a safe environment for a collaborative MVP development. Therefore, the SNI can be substituted for the Collaborative Communities if ideas are supported by various countries - XYZ’s requirement to access to the platform. Otherwise, MPVs will be developed within the supporting business unit.

Similarly to the process described in the SNI community, the MVP development could require specific knowledge or skills that are lacking in the team. Employees will seek internal knowledge in the SNI. If the company lacks the required knowledge, KA will be needed. At XYZ, the ID provides the Innovation Funds, which can be used for this purpose. Social interaction among team member will result in the creation and implementation of the MVP (e.g., Nonaka, 1994). As described in the literature (e.g., Cooper, 1990; Nonaka, 1994; Rhodes & Dawson, 2013), innovation outcomes must be shared. However, no formal procedure to share resultant elements with the rest of the company was found at the case company. However, the ID team communicates the results of each phase. “Survivors” from each phase will have improved their visibility and, hence, the possibility to be exploited in other contexts.

### Interconnection:

<table>
<thead>
<tr>
<th>Situation</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ideas supported by different countries</td>
<td>Request community creation in CC for MVP development</td>
</tr>
<tr>
<td>Ideas supported by a single Business Unit</td>
<td>MVP development in Business Unit</td>
</tr>
<tr>
<td>Lack in the team of specific knowledge</td>
<td>Find knowledge internally in the SNI Communities &amp; People Finder</td>
</tr>
<tr>
<td>Specific knowledge not found internally</td>
<td>KA using Innovation Funds</td>
</tr>
</tbody>
</table>
2. Business needs

The process is different for detected business needs during KA (see Figure 17). Detected needs from KS must be shared (e.g. Almeida et al., 2003). At the case company, distinction in needs nature is required due to company’s division in two business domains. If needs proceed from CB, the CB TOM approach must be followed. In contrast, the GIP approach will be employed if needs proceed from the RB domain.

2.1. Business Needs in Commercial Banking

In the CB TOM, business needs are centrally collected by global units. As explained, since new products will be adopted by all countries, they will be interested in the development. Consequently, Collaborative Communities requirements are fulfilled. XYZ must decide whether a centralised development or a development in the CC will facilitate the process. Both have their own benefits. Less coordination is required in central product development because team members will usually be located in the same region. Therefore, when rapid development is required, a centralised approach must be followed. In contrast, the CC could contain knowledge and experiences from previous solutions that can be exploited.
2.2. Business Needs in Retail Banking

As observed, local acquired needs are shared among SPOCs in the GIP. SPOCs will decide whether their business units have similar needs. Knowledge about existing solutions will be shared by the IH in the GIP. At this moment, four situations might occur:

2.2.1. Existing solution and multiple business units interested: local implementation and sharing of the results will follow.

2.2.2. Non-existing solution and multiple business units interested: business units and the IH will acquire knowledge about local suppliers and start-ups. Subsequently, KA results will be shared among entities involved. The research is complemented by CBT consulting. MVPs development will require knowledge integration via social interactions (e.g. Nonaka, 1994) from involved business units and IH collaboration. Since multiple countries are involved, virtual teams must be formed to obtain social interactions. At the case company, this is facilitated via Collaborative Communities. Since the Collaborative Communities’ requirements (multiple countries involved) are fulfilled, MVPs will be developed within the platform. At this moment, the situation describe above is repeated.

2.2.3. Exiting solution and single interested business unit: local implementation must follow.

2.2.4. Non-existing solution and single business unit interested: If needs are specific to a particular business unit and no previous solution is available, conditions will not fulfil the CC’s requirements. Therefore, MVPs will be locally developed by the business unit.

Finally, MPVs development is identical to the process described in the Innovation Days.

Interconnection:

<table>
<thead>
<tr>
<th>Situation</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Needs Commercial Banking</td>
<td>Share needs with Global division in the CB TOM</td>
</tr>
</tbody>
</table>
| MVP | Request community creation in CC for MVP development  
Central MVP Development |
| Lack in the team of specific knowledge | Find knowledge internally in the SNI Communities & People Finder |
| Specific knowledge not found internally | KA |

<table>
<thead>
<tr>
<th>Situation</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Needs Retail Banking</td>
<td>Share needs in the GIP</td>
</tr>
<tr>
<td>2.2.1 Existing solutions and multiple business units</td>
<td>Local implementation and sharing of the results</td>
</tr>
</tbody>
</table>
| 2.2.2 Non-existing solution and multiple BU | KA about local suppliers and start-ups  
KS/KT from CBT consulting  
MVP development in Collaborative Communities |
| 2.2.3 Existing solutions and single BU | Local Implementation |
| 2.2.4 Non-existing solutions and single BU | MVP development by business unit |
| Lack in the team of specific knowledge | Find knowledge internally in the SNI Communities & People Finder |
| Specific knowledge not found internally | KA |
Concluding, the interconnection and coordination among the Present and Future Horizon’s initiatives lead to the closure of the Present Horizon’s gaps. Coordination included initiatives from both horizons and business domains that operate at the global level. Hence, the described solution delivers a formal procedure to coordinate initiatives in relation to innovation and which is representative to the entire XYZ Bank. Employees and business units from different countries are provided with a method that will indicate them how to proceed in different situations. Moreover, coordination among knowledge processes was reported in the theoretical phase. However, in practice, coordination is required not only among knowledge processes at the case company, but also coordination among initiatives. It is expected that large-scale corporations arrange multiple initiatives for its innovation activities, including discussed knowledge processes. For instance, IBM (Computer industry) and Eli Lilly (pharmaceutical) employ different approaches for new product selection, R&D, find pinpoint knowledge within their company, or manage their ideas (Benbya & Alstyne, 2010). Therefore, companies with multiple initiatives will require coordinating them together with the involved knowledge processes to achieve the maximum benefit.
8.2 Coupling business needs and existing solutions

It was observed at the case a number of interrelated gaps and improvements in relation to common needs detection and existing solution identification. The following table expose them:

**KS/KT**

- **G1:** “The XYZ Bank lacks a formalized approach for sharing the detected business needs among countries so that other countries could associate for the development of a common solution in the Collaborative Communities.”
- **I2:** “Increase SPOCs awareness about detected needs”

**KC**

- **G1:** “XYZ Bank lacks a formalised procedure or database to share/transfer the new products/services.”
- **I4:** “Increase the visibility of the created solutions for the rest of the organization to reduce underperformance on their exploitation in other contexts”

**G1** revealed an issue in common needs detection among countries so that facilitating the co-creation of mutual solution in the Collaborative Communities. Moreover, co-creation in different location was appointed as a requirement by interviewees:

- **Rc3:** “The Company must provide employees with the means to co-create in different locations”

The coordination of both horizons’ initiatives resulted in a solution for **G1** and the fulfilment of **Rc3.** The Commercial Banking via the CB TOM model and the Retail Banking via the GIP have a formal procedure to identify mutual needs in different countries. However, SPOCs’ awareness about detected needs in their specific business units must be improved (**I2**). Similarly, the identification of similar needs between the RB and the CB is still missing.

Likewise, the XYZ Bank lacks a database containing all the company’s existing solutions (**G2**). This was also appointed as a requirement by interviewees.

- **Rc1:** “The Company must provide employees with the mechanisms, tools and procedures to access … and find previous ideas and solutions”

This is not satisfied by the exposed initiatives coordination. In the GIP, pairing needs and solution is dependent on the IH's knowledge about existing solutions. This hampers the possibility to exploit previous solutions. Contrary, the detection of previous solutions is not required in the CB TOM due to its centralised structure. Global Divisions will be aware of all the available solutions in the CB. However, in some extreme cases, RB and CB might have similar needs. These needs could have been previously solved by the other business domains. By increasing the visibility of the existing solutions, the possibility to exploit them in other contexts will be increased (**I4**).

A centralised database containing all existing solutions will increase the opportunities to recognize potential solutions for solving current problems. However, the possibility to encounter existing solutions will depend on the various barriers. Barriers include:

- Searching tool,
- The motivation to find previous solutions (“no invented here syndrome”: syndrome is a factor that deters employees to seek for solutions in the mentioned systems (Andriessen, 2006).
- A common language to articulate problems solved by the solution.

A central database is a static tool. Solutions are transferred rather than shared. As explained, employees’ ability to evaluate and identify opportunities to exploit existing solutions in new contexts is dependent on
prior knowledge (Cohen & Levinthal, 1990). Databases do not exploit this ability. Therefore, the recommended solution should avoid the described barriers and exploit employees’ ability to match prior solutions to new needs.

A possible solution is the development of Internal Knowledge Markets. Internal knowledge markets are an alternative to traditional KM approaches. The principal idea is the creation of knowledge markets where “knowledge seekers” are matched to “knowledge sources… via price mechanism”, and exploiting market forces (Benbya & Alstyne, 2011). “Knowledge seekers” will be managers who will identify specific business needs in their departments or business units. Likewise, “knowledge sources” will be managers/SPOCs with existing solutions and the ability to recognise the applicability of prior solutions in new contexts.

Internal knowledge market in relation to needs and solutions will be referred as Innovation Markets (IM). The IM will become a central place where managers will post their business needs. The IM’s centrality will provide visibility to other departments, business units, countries, and even between business domains. Subsequently, “knowledge seekers” from other areas of XYZ will identify common business needs via voting.

The Internal Knowledge Market approach encompasses the creation of some type of virtual coin or points. “Knowledge seekers” will be rewarded with virtual coins for sharing needs and voting. The higher the number of votes, the higher the prize to provide a solution. Consequently, “knowledge sources” will have an incentive to share their solutions — virtual coins. Virtual coins should be granted to the department rather than a specific person. Departments will be able to exchange their earned virtual coins for additional resources in new products/services development activities. Furthermore, a higher number of votes in a specific need will entail a higher priority to find or create a solution for it. Therefore, an instrument to quantitatively evaluate business needs’ priority is provided.

The creation of a database to make visible all the existing solutions will not facilitate mutual needs detection. On the other hand, detected gaps, improvements, requirements and barriers are dealt by applying the Internal Knowledge Market approach. Moreover, some additional benefits will be obtained. However, the Innovation Market implementation will also require its coordination with the other initiatives. The coordination can be found in the final solution provided at the end of the chapter.

The table below summarises how both solutions, IM and Databases, deal with detected gaps, improvements, and barriers. Furthermore, it describes additional benefits for both.

<table>
<thead>
<tr>
<th>Table 9: Database Solution VS Innovation Markets</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Database</strong></td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td>G₁₂</td>
</tr>
<tr>
<td>I₂</td>
</tr>
<tr>
<td>G₁₂</td>
</tr>
<tr>
<td>I₁</td>
</tr>
<tr>
<td>R₁</td>
</tr>
<tr>
<td>R₂</td>
</tr>
<tr>
<td><strong>Possibility to find previous solutions</strong></td>
</tr>
<tr>
<td><strong>Solution for “not invented here syndrome”</strong></td>
</tr>
</tbody>
</table>
Common Language

Difficult to achieve

Direct discussion between “seekers” and “sources” provides adjustment in the communication.

Additional Benefits

- Shared solutions are always available
- Powerful approach to detect critical needs in the company due to the ranking system (quantitative). The higher the number of seekers voting for a need, the higher the priority to be solved by the company.
- In companies with internal resources competition, rewards could be exchanged for resources (e.g. increase department’s budget to create new products).
- Internal knowledge markets are especially beneficial for large segmented organizations like XYZ Bank
- Increase efficiency on resources exploitation

To conclude, the suggested solution attacks the lack of communication among silos (departments, business units, business domains, and countries) to detect common needs, find previous solutions and co-create. Therefore, the solution will apply to any manager from any silo at XYZ, being able to communicate their needs, detect common needs, co-create with others, and share their solutions. Similar markers to math problems with solutions, and prevent reinventing the wheel have been implemented in diverse range of industries such as aeronautics (Boing), pharmaceutical (Eli Lilly) or biotech (Syngenta) (Benbya & Alstyne, 2010). Therefore, the exposed problem and solution is, neither unique for XYZ, nor specific to a particular industry. Evidences indicate that the problem is primarily related to size and complexity of the company rather than the industry.

8.3 Harmonization of KA approaches to increase efficiency thereof (Ii)

No gap was identified between the literature and the case study. At XYZ, countries and business units were observed to behave as independent units with different KA approaches. Different situations might require different approaches. Due to their specific context and the independency from each other, silos are created. Consequently, countries explore their own approaches to acquire knowledge. A continued exploration of approaches is likely to erode company’s resources and reduce the efficiency thereof (Benner & Tushman, 2003; Cohen & Levinthal, 1990; March, 1991). Exploitation is also required in order to reap the benefits of the solutions (Benner & Tushman, 2003; March, 1991).

Exploiting the existing solution will require XYZ Bank researching best KA practices in each country. Once best practices will be detected, XYZ Bank must standardise them. Subsequently, best KA practices implementation in all countries must be obtained by sharing/transferring them. There is a risk to exclude contextual solutions if the recommended approach is followed. Reducing the risk will require XYZ Bank identifying and authorising the use of contextual approaches to specific countries. This will enable XYZ Bank to exploit country specific approaches and increase efficiency in standardised approaches. Besides, efficiency might be increased in employees’ internal mobility. That is, employees would not have to learn new approaches when they move to other countries.

Furthermore, in the Commercial Banking domain, the CB TOM programme is implementing a similar approach. Therefore, the company could exploit experiences created in the CB TOM transformational program by applying them to the Retail Banking domain.

Finally, it is difficult to conclude whether organizations similar to the case company suffer fragmentation on KA approaches. Therefore, generalization will require studying KA approaches in multiple organizations. However, it would be expected to observe fragmentation in large-scale companies
operating in multiple countries to exploit country specific contexts. If that were the case, recommendations could be applied to them.

8.4 **Increase the SNI’s performance to find pinpoint knowledge (I₃)**

The SNI is the preferred space to seek internal knowledge in XYZ. However, the reduced number of employees using the SNI, and its unstructured character hinder the search of pinpoint knowledge. Three company’s requirements (Rₑ) are related to these issues. They could be translated into three categories of recommended improvements for the SNI.

- Rₑ:“The Company must provide employees with the mechanisms, tools and procedures to access to important knowledge when they need it.”

The SNI is principally employed to encounter internal knowledge. However, the SNI’s chaotic and segmented structure hampers the internal knowledge search. Moreover, self-assessment approach used to fill yellow pages hinders reliability in employees’ skill. Similar comments about these problems have been reported by the literature in Silicon Valley companies (Benbya & Alstyne, 2008).

Two categories might be extracted from these conditions:

1) **Structure:** To organize internal knowledge so that facilitating its detection

2) **Different approach for employees’ skills assessment:** To improve reliability of sources

- Rₑ:“The Company must provide employees with the mechanisms or routines that allow employees to share their knowledge and improve their willingness to do it.”

- Rₑ:“The Company must provide employees with some kind of compensation for their knowledge contribution, either intrinsic or extrinsic.”

A reduced number of employees participate in the SNI. This might related to the employees’ unwillingness to contribute and/or the XYZ’s intrinsic reward. In this context, the following category might be extracted:

3) **Improve willingness and contribution compensation**

The recommended solutions are explained below:

1. **New SNI Structure**

   Based on the interviews, employees find difficult to find knowledge in the SNI. However, the SNI is also pointed as one of the preferred approaches to find internal knowledge. Therefore, improvements on how the SNI is organized can increase detection of internal knowledge. As described, company-owned and employee-owned are the two types of the SNI communities. Certain company-owned communities directly include recently hired employees. This could be exploited in the recommended solution.

   A new structure will facilitate detection of internal knowledge by indicating employees where they should seek. To facilitate it, the company must organize company-owned communities by virtualising the structure of the company in the SNI. That is, the company must replicate its global structure. For example, Commercial Banking will be structured in Commercial Finance community, Financial Markets community, Corporate Finance community, Finance and Leasing community and so on. If the company requires a more elaborate structure, communities will be structured at departmental communities. However, the fragmented character in XYZ’s structure, specifically in Retail domain, will difficult this approach. Nevertheless, the company’s bulk departmental structure should be similar in all countries for similar reason explained in I₁.
Subsequently, employees must be added to their specific departmental community. Employees will be able to ask questions in the right department due to this structure. Moreover, similar departments would be included in the same community. Therefore, cross-country knowledge sharing or even common problems and needs detection might be obtained. Finally, the company would increase control on the knowledge shared/transfered.

An alternative or complementary solution is the development of employees’ informal networks. However, providing recommendations on how to improve employees’ informal networks will require time to analyse its status. This will also require exploring a different theoretical area not framed in the present research. Therefore, based on the evidences found, a new structure will require XYZ a minimum effort and resources to implement the suggested solution.

The new structure will increase the possibilities to find operational and functional knowledge in the SNI. Communities will be organized in relation to their departmental or business operations and functions. For instance, if an employee needs knowledge about financial market operations or its clients, he/she will be able to identify that the Financial Market business unit have this knowledge. Instead of resorting to their informal networks, he/she will post a question in the Financial Market community. As a result, the employee will have access to a larger number of employees with this specific knowledge. Otherwise, the possibilities to find an answer for his/her question by other means like, for instance, his/her informal network would have been unlikely.

2. New Approach for assessing employees’ skills/experiences

The new structure explained above will improve internal knowledge detection of specific business functions. However, different employees have different specific knowledge. Employees would appeal to yellow pages for specific knowledge. As explained, employees’ skills and knowledge are self-assessed in yellow pages. This approach will not warrant the reliability on the knowledge and skills found in yellow pages. Moreover, knowledge might be qualified as an “experience good”. Employees must use it before being able to assess its value (Benbya & Alstyne, 2008).

Therefore, to improve reliability in experiences and skills included in employees’ profiles, XYZ must implement a peer-review assessment. This will allow employees (requester), who has consumed other employees’ knowledge/skills (contributor), to assess the value of contributors’ skills/experiences. Once the collaboration is terminated, requesters could endorse skills/experiences in contributors’ profile. Furthermore, team members could employ same approach after the termination of projects. The LinkedIn professional network features a similar approach. This approach will increase reliability by a continuous process of validation and update.

3. Improve willingness and contribution compensation

1. Employees’ yearly evaluation:

Yearly evaluations are accomplished to assets employees’ performance. Evaluations influence employees’ careers, promotions, salaries, bonus, etc. XYZ must include assessment on employees’ contribution in knowledge management activities (including the SNI). The more an employee shares knowledge, the better its evaluation will be, and the better the extrinsic compensation (e.g. better promotion opportunities). This will positively affect willingness to collaborate with others for employees with ambitions to be promoted, to have better salaries, etc. Moreover, it will contribute to create a collaborative culture. However, measuring employees’ contribution might be challenging. A complementary approach could facilitate evaluation based on collaboration. This will be explained next.

2. Implementation of an Internal Knowledge Market:

There is a complementary possibility to the one exposed above. Internal Knowledge Markets was included as a recommendation to create an Innovation Market. Companies like Siemens, IBM or
SAP employ this approach (Benbya & Alstyne, 2008). Some of the benefits that the SNI could achieve are:

- Increases existing knowledge exchange
- Improve time-to-respond critical questions
- Increase employees’ willingness to self-identify and collaborate
- Increase efficiency in employing company’s resources

Benbya & Alstyne (2011) defined three phases for internal knowledge markets implementation in companies, namely Market Design and Launch, Market Development, and Evolution. Explanations and instructions of the Market Design and Launch phase for the SNI are provided in Appendix F.

The internal knowledge market approach must be included in the new communities’ structure. Critical functional knowledge for XYZ’s operations is contained there, and could require an external compensation to answer critical questions (explained in Appendix F). This includes vital knowledge for the correct performance of innovation activities. In contrast, employee-owned communities are created by employees’ intrinsic motivation. Perhaps, a more social incentive could assist to maintain the degree of intrinsic motivation (Appendix F). Besides, internal knowledge market would provide XYZ Bank with the means to detect the shortage of knowledge in certain areas. A high price would indicate areas of investments. Similarly, knowledge markets points or coins system could facilitate the yearly evaluation based on knowledge contribution. For instance, a number of critical questions answered. Critical questions can be identified by a high price.

Concluding, the SNI – including yellow pages – was appointed by interviewees as the company’s platform to seek internal knowledge. However, they remarked the difficulty to find pinpoint knowledge and the quality thereof. Similar problems have been observed in other corporations (Benbya & Alstyne, 2008, 2010). Therefore, suggested solutions will be applicable to other large-scale organization. At the case company, application of these recommendations in the SNI would provide XYZ Bank with the means to increase pinpoint knowledge identification, and employees’ willingness to share. Similarly, the recommended solutions must be coordinated with the other initiatives. This can be found in final solution provided at the end of the chapter.

8.5 *Improve efficiency in exploiting ideas (I5)*

There are three company’s requirements related to this improvement:

\( \text{Rc}_1: \) “The Company must provide employees with the mechanisms, tools and procedures to access to… and find previous ideas…”

\( \text{Rc}_3: \) “The Company must provide employees with the tools and procedures to capture ideas and lesson learned during the innovation process.”

\( \text{Rc}_6: \) “The Company must provide a place where ideas could be shared and discussed”

\( \text{Rc}_6 \) is satisfied by the Innovation Days initiatives. However, ideas would be vanished once rejected. This will reduce the access to previous ideas (\( \text{Rc}_1 \)) and their future exploitation (\( \text{I}_3 \)). This is even more important considering that unsuccessful contemporary ideas might be a success in the different contextual future. For instance, the first electric car was invented in the 19th century, but it is in the 20th century when, due to the increasing price of petrol, its value is observed. Satisfying these requirements and the temporal dimension of ideas will require capturing ideas generated during the innovation process and their storage.
An Ideas Market could be created by XYZ. However, there is little extra value, if any, comparing to the Innovation Days platform. The Innovation Days provides a similar voting system. Moreover, the Innovation days provides a procedure to formulate ideas that could be employed to capture ideas. However, management involvement will be required by encouraging employees to share these ideas in the Innovation Portal.

At the time Innovation Days process is open, employees will submit their ideas in the Innovation Days portal. However, once the process is closed, employees will submit their ideas in the database including their contact data. A database including rejected ideas and new ideas must be created to solve the issue related to time dimension of ideas. Employees will be able to seek for potential ideas to their future problems in the database. Regarding to the visibility of the ideas for the rest of the company, the XYZ Bank must decide which employees will be granted with access to the database. This is important because some ideas could become a future competitive advantage or strategic products. Subsequently, business unit’s managers desiring to participate in future Innovation Days will be able search previous ideas in the database.

8.6 XYZ Bank lacks a formalized approach to capture lesson learned so that being shared/transferred (G_Ls)

Two company’s requirements connected to this gap were detected during interviews:

**Rc1:** “The Company must provide employees with the mechanisms, tools and procedures to access to important knowledge when they need it, learn from other’s mistakes, and find previous ideas and solutions.”

**Rc5:** “The Company must provide employees with the tools and procedures to capture ideas and lesson learned during the innovation process.”

In the GIP approach, results are shared among project participants. Due to the GIP degree of novelty, sufficient evidences were not found about the approach followed. Similarly, the CB TOM is not sufficiently mature to explore whether lesson learned would be conducted once projects will be concluded. Likewise, the Collaborative Communities and the Innovation Days lack a formal approach to capture lesson learned.

There are great deal of lesson learned approaches in current literature and used by companies. One potential method to capture and transfer this knowledge in order to correct deficiencies is the After-Action Review used by the U.S. Army. Nevertheless, agility has become an XYZ Bank’s strategic pillar (retrieved from www.scrumalliance.org, 2014). XYZ Bank is investing in providing training to employees to embrace agile methodologies. One of the adopted methods by the company is the Scrum framework. Scrum method is especially used for IT projects.

As mentioned, XYZ Bank’s innovations are principally IT driven. Scrum framework is divided in phases called *sprints*. After each sprint, a *sprint retrospective* follows. Sprint retrospective analyses project process, including whether previous springs were steered efficiently and whether improvements could have been conducted. In essence, the framework is similar to other lesson learned approaches (e.g. AfterAction Review). However, researching whether sprint retrospective could function as a lesson learned is out of the scope of the present research. Scrum framework might better fit in companies in which their innovations are IT driven, like at the case company. This will cause lesson learned implementation unnecessary. Future studies could address this observation.

Nevertheless, the question reminds on how to communicate lessons learned. If any lesson learned method is used, reflections on the events would be incorporated in the team members experiences. If experiences are referred to the process, responsible for the process should collect suggested improvements and adapt the changes. For instances, the IH could gather lessons and best practices from innovation teams and employ them to improve the innovation process. Similarly, described initiatives are immature, leaving
improvement areas in their processes. Lessons could be extracted from teams involved in the initiatives to enhance the process.

On the other hand, lessons learned might be conducted on the product/service. Lessons might include specific knowledge about the new product/service. Reflections could contribute to adapt products to other context. Adaption teams will contact development teams by one of the explained means (e.g. Internal Knowledge Market) to exchange best practices on the product.

8.7 Conclusions

This chapter aimed to provide recommendations and improvements to solve detected gaps. XYZ’s requirements obtained from interviewees were considered and included in recommendation where this was possible. Therefore, the following research question was explored:

“What could be recommended to improve XYZ’s knowledge management practices in order to stimulate innovation?”

First, horizons’ harmonization was recommended to eliminate the gaps detected in the Present Horizon. This was obtained by integrating and coordinating the horizons’ initiatives. Furthermore, the provided solution includes the procedure that employees and business units should follow for innovation activities in relation to ideas and business needs. Secondly, the creation of the Innovation Market was recommended. The IM aims to solve the lack of communication among countries, business units, or even between RB and CB in relation to common needs detection, existing solutions identification and their coupling. Therefore, the IM will contribute to avoid “wheel reinvention” and the “not invented here syndrome”.

Thirdly, other recommendations were provided to cover the remaining gaps and improvements. It was recommended the identification of best practices for KA in the company to minimize the number of approaches. This will increase the efficiency in KA approaches and resources employed. Subsequently, recommendations were provided to improve the SNI’s performance. Provided recommendations include:

- a new structure for company-owned communities,
- a peer-review assessment in skill included in yellow pages,
- the design of internal knowledge market for the new communities’ structure and,
- the inclusion of employees’ contribution to knowledge management activities in the yearly evaluation.

A recommendation to improve the exploitation of generated ideas was provided. It was recommended the creation of a database to store all the ideas. As a result, previous ideas could be exploited in the future by other employees different to the “ideators”. Similarly, business units without ideas and interested to participate in the Innovation Days could appeal to the database and find preferred ideas.

Moreover, recommendations related to lessons learned were not provided. The principal reason is XYZ’s use of the Scrum methodology. The Scrum approach includes a phase where reflection on previous phases and actions to be taken are identified. This could better fit in XYZ context more than any other lesson-learned approach. Due to the limited time to conduct the present research, it could not be investigated. XYZ’s future research could be directed to explore this possibility.

Finally yet importantly, knowledge management role or department in relation to knowledge management was not found in XYZ. Although the creation of the roles or a department for this is not included in the present report, this is highly recommended. One of the possible reasons for initiatives fragmentation can be this. Nobody is aware of all initiatives in XYZ. This could cause the creation of similar initiatives, which hamper the exploitation of know-how related to knowledge management practices in XYZ. XYZ should explore the creation of roles or departments dedicated to these affairs. To conclude, it is important to integrate and coordinate the recommendations into the harmonized horizon. This is featured in the following figure:
Figure 18: Final Solution
Conclusions and Discussions

In the present economy, innovation becomes a mean for companies to survive and develop competitive advantage. Knowledge, as a building block for any production task, becomes a critical factor to deliver value to organizations’ innovation activities. Therefore, the management of employees’ knowledge can contribute to improve the innovation capabilities of companies. However, the direct management of employees’ knowledge is unlikely.

Contrary, the management of the processes involved in its creation, diffusion and application can be organized. Nevertheless, the complete picture on how to deal with knowledge processes in relation to innovation is yet missing in literature. An overview of the knowledge processes that influence innovation activities was aimed by this research. This was conducted within the context of a financial firm. XYZ Bank was featured as a case study to analyse its current knowledge management practices related to innovation. Therefore, the study intended to provide an answer for the following research question:

“How should XYZ Bank organize their knowledge processes to stimulate innovation in practice?”

In order to find an answer, the research was organized in three phases. The first phase explored current literature in the area of knowledge management and organization learning. Principal relevant theories in the context of knowledge processes stimulating innovation were investigated. The central outcome was an ideal picture of which knowledge processes should be incorporated by organizations in order to steer innovation. The main knowledge processes and their specific preconditions are summarised in the following table:

<table>
<thead>
<tr>
<th>Knowledge Acquisiton</th>
<th>Knowledge Transfer/Sharing</th>
<th>Knowledge Integration</th>
<th>Knowledge Creation</th>
</tr>
</thead>
<tbody>
<tr>
<td>(P_{L1})</td>
<td>(P_{L2})</td>
<td>(P_{L3})</td>
<td>(P_{L4}, P_{L5a-b}, P_{L6a-b})</td>
</tr>
</tbody>
</table>

- \(P_{L1}\): “Companies must acquire knowledge/ideas from the described sources.” (e.g. Burt, 2002)
- \(P_{L2}\): “Companies must provide the means to exchange acquired elements so that enabling their availability to the rest of the organization.” (e.g. Almeida et al., 2003; Segarra-Cipres et al., 2013)
- \(P_{L3}\): “Companies must facilitate access to a greater pool of knowledge –internal and external-, which could be integrated to address a specific innovation need.” (e.g. Almeida et al., 2003; Grant, 1996)
- \(P_{L4}\): “Companies must provide the means to transfer/share innovation and its related knowledge for successful adaptation to other areas or contexts of the company.” (e.g. Nonaka, 1994)
- \(P_{L5a}\): “Companies must capture generated ideas from the knowledge integration.” (e.g. Cooper, 1990)
- \(P_{L5b}\): “Companies must share generated ideas from the knowledge integration.” (e.g. Cooper, 1990; Nonaka, 1994)
- \(P_{L6a}\): “Companies must provide the means to capture lessons learned” (e.g. Rhodes & Dawson, 2013)
- \(P_{L6b}\): “Companies must provide the means to share these lessons to the rest of the company.” (Rhodes & Dawson, 2013)
The research additionally contributes to science with the principal conclusion from the theory development phase. The coordination of the exposed knowledge processes is required to maximise the benefits of the knowledge processes in relation to innovation. This was presented as follows:

➢ **P1:** “Companies must synchronously coordinate their knowledge processes to create the benefits for innovation purposes.”

Knowledge processes coordination for innovation purposes was represented in the integrated model in chapter 3. The model also describes how inflows of external knowledge have to be incorporated, and integrated to the company’s current knowledge in order to generate innovation outputs. Similarly, innovation outcomes would be distributed among the company for their future exploitation. This observation is aligned to the exploration-exploitation discussion that can be found in current literature (e.g. Benner & Tushman, 2003). Companies must explore new knowledge to renovate their knowledge at the same time exploiting their current knowledge and innovation outcomes.

The theory development phase provided the means to investigate the case as conducted in the second phase. An overview of XYZ’s innovation goals and expected level of knowledge processes performance regarding to innovation were acquired. This was obtained by means of interviews and desk research. Following a similar approach, knowledge processes were identified in XYZ’s knowledge management activities related to innovation. It was observed that XYZ is involved in a transformation period, which resulted in company fragmentation into two horizons. Both horizons Present and Future were investigated and their knowledge processes were identified.

Subsequently, the analysis and recommendation phase followed. Gaps and improvements were detected for both horizons. Then, it was analysed whether the Future Horizon initiatives solve the Present Horizon gaps. It was observed that the Future Horizon initiatives deal with the majority of the gaps detected in the Present Horizon. This comparison between the Present and Future Horizon also revealed the actual gaps and possible improvements for XYZ. This provided the research with specific areas where recommendations were accommodated.

Last chapter contained the answer for the main research question. The answer can be synthetize as follows. First, coordination between Present Horizon and Future Horizon initiatives was required to overcome Present Horizon gaps. Recommendations on what, when, and how employees and business units should employ the different initiatives for innovation activities were provided. Second, the creation of an internal knowledge market –named as Innovation Market- was recommended to facilitate common needs detection, current solutions identification, and their match. Third, other recommendations were provided to improve knowledge identification within XYZ, and to better exploit previous ideas. The former implies the creation of a new structure in the SNI’s communities owned by the company. This comprises the development of an internal knowledge market and a peer-review assessment for employees’ skills in XYZ’s yellow pages. Finally, exploitation of previous ideas would require the creation of a database.

There is a final conclusion that can also be considered a limitation. The principal conclusion from the literature was the knowledge processes coordination to get the most out of thereof. However, the reality is far more complex than a simplified theoretical model. Different knowledge processes were observed in different initiatives at the company case. This is caused because different objectives entail the creation of different initiatives. Therefore, coordination is required not only among processes, but also between processes of different initiatives. This was achieved in chapter 8. Moreover, although the conceptual model is a simplification of the reality, the conceptual map can be observed in the final solution –see Figure 19. The conceptual model proceeds in the following way: step 1 (KA), step 2 (KS/KT), step 3 (KI – which could involve KA - KT/KS), step 4 (KC), and step 2 (KT/KS of the outputs). Taking ideas as initiator in the final solution, the process would be:
1. Ideas can be acquired (KA).
2. Ideas are shared in the Innovation Days portal (KT/KS).
3. Teaming up to support ideas and integration of the members’ knowledge, including looking for lacking specific knowledge (KI).
4. The creation of a MVP and other outputs (KC) and their share are accomplished (KT/KS).

Therefore, the final solution fits into the integrated model created during the theoretical phase. It is expected to encounter similar conditions in other companies. Following the conceptual map and the preconditions, knowledge managers should be able to observe similar conditions and obtain the coordination among processes in different initiatives.
Implications

Implications for MSc Management of Technology (MOT):

The present research is relevant to the master program studied by the researcher. Innovation is the main stream of MOT program. Elements, theories, and authors from different courses of the program are included. Courses such as Economic Foundations, Innovation Management, Technology and Strategy, Corporate Entrepreneurship, Strategic Niche Management, and Technology Battles are reflected in the research. Furthermore, these courses have contributed to increase the researcher’s understanding of some complex theories included in the research.

Scientific Implications:

Knowledge management in relation to innovation is a growing topic. However, current literature has focused on small pieces of a complex puzzle, missing an overview. Therefore, the thesis aimed to contribute science with a theoretical overview of knowledge processes in relation to innovation. The study of these processes resulted in an integrated model of knowledge processes to stimulate innovation that contributes to the innovation management area. The model also contributes to increase the understanding on how knowledge and ideas flow from the external organizational environment (exploration) to their internal exploitation, resulting in the creation of new knowledge, ideas, and innovation outputs that will be similarly exploited.

Moreover, the number of empirical research in the area is limited, especially in the financial sector. The research contributes to the area by providing an empirical case study. Furthermore, it is probably a pioneering study on how to reorganize knowledge processes for innovation purposes, especially in financial firm’s contexts.

Practical Implications:

Numerous organizations and managers explore new approaches to increase their innovative capacity. The present thesis has focused on the use of knowledge processes as a mean to stimulate innovation. The case study illustrates the application of the theoretical overview to analyse and organize knowledge processes in order to boost innovation within companies. Therefore, the present study provides organizations with a means to detect possible misalignments and improve their current knowledge management practices. The developed theoretical model is not framed in any specific industry. Hence, its application can be obtained for any large-scale organization.

Suggested solutions and recommendations are representative to the case. However, there are two principal reasons to generalize the results to entire company, including both business domains. First, the Present Horizon description reports the most common approaches for new-product development activities that business units and employees in different countries and domains follow. Therefore, detected problems and gaps in this horizon can mostly be mostly generalised to the entire company. Second, Future Horizon initiatives operate globally in the entire company. Any business unit or employee in any location can use these initiatives. Consequently, suggested recommendations can be generalised to the company.

The solution regarding to the coordination of knowledge process at the case are contextual to the explored initiative. Other organizations will have different initiatives that will require a different coordination. Although the need of knowledge processes coordination among initiatives can be generalised to other organizations, their coordination will require conducting a similar analysis to the accomplished in the present research.

Internal knowledge markets have been employed to solve issues similar to those detected at the case company by companies from different industries. These industries include banking (e.g. Bank of America), technology (e.g. Siemens, IBM), insurance (e.g. Samsung Life Insurance), and consulting (e.g. McKinsey)
(Benbya & Alstyne, 2008, 2010; Cooper et. al, 2005). Equally, similar approaches to IM are used by organizations like Boeing (aeronautics), and Syngenta (biotech) to match problems and solutions, and prevent reinventing the wheel (Benbya & Alstyne, 2008, 2010). Therefore, problems and solutions discussed in the present research are not industry dependent. They seem to be related to size and complexity of the company rather than the industry. The larger and more complex the organization, the lower the chance to find pinpoint knowledge, common needs, existing solutions, and matching needs and solutions.

Reflexions and Limitations

First reflection is related to the last exposed conclusion. In the conceptual map and in the final solution, the flow of knowledge seems like a linear process (KA -> KT/KS -> KI -> KC -> KT/KS). However, knowledge can be created and integrated while being shared. These processes are difficult to separate. Therefore, any intent to replicate this would not do any other thing than complicate the understanding of the research. Moreover, this would have affected the feasibility of the research finalization due to the limited time, affecting the quality of the final report.

Second, the theoretical framework is not exempt of limitations. First, the research relies on availability of current literature and the present researcher criteria. The researcher is also constrained by the limited time to conduct the literature review. To reduce the risk the researcher incorporated both seminal studies (e.g. Cohen & Levinthal, 1990; Grant, 1996; Nonaka & Takeuchi, 1995) and recent articles in the explored areas –last 5 years in prominent journals. Furthermore, the theoretical framework is principally based on knowledge management and organization learning areas. Although the theoretical framework incorporate elements from the Absorptive Capacity (e.g. Cohen & Levinthal, 1990; Zahra & George, 2002), selected elements from these areas have only been included for KA. Absorptive capacity includes other elements that could have resulted in a completely different research.

Third, the present study has been focused on internal management of knowledge processes in relation to innovation. However, an increasing number of companies establish relationship with external partners to innovate (Powell, Koput, & Smith-Doerr, 1996). This entails the creation of a collaboration network for innovation purposes, where knowledge would be exchanged, integrated and created among the members. Nevertheless, this research aimed to aid XYZ to improve its current knowledge practices. Improving internal management of knowledge is or should be a priority of any company before exploring how these processes could be managed with external entities. This would have required an enormous amount of time to be completed compared to the time available for the present research.

Certain limitations related to the case study can be mentioned. First, the research is dependent on the data accessed. This includes interviews and documents accessed. The researcher is limited to the interviewees’ perspective, which could cause bias and have implications in the argumentation provided. In this context, the present research can be criticised arguing that the small interviewees sample (empirical base), where the majority of interviewees pertain to IH, does not warrant the conclusions. It is likely that people from the same department have similar opinion in a particular issue. However, contacting personnel from other areas of the company in large-scale organizations is complex. This requires the involvement of senior managers in a rapidly transforming environment, who might be placed in other locations. Moreover, this would require personnel to allocate free time from their busy schedule for a university researcher. At times, it is highly probable that the meeting is cancelled because of other important commitments of the person. These factors escape from the researcher control and have affected the finalization of the research.

An alternative approach would have been to create a survey that would have incorporated some of the findings. Then, the survey could have been sent to managers in different locations to validate the data. The results could have been contrasted with the findings from the interviews. However, this approach is
not exempt of uncertainties. First, the design and analysis of surveys require time. Second, reliability of a quantitative approach requires a sufficient number of respondents which escapes from the researcher control. A low respond rate would have resulted in the removal thereof.

Additionally, the company is divided in two main business domains. To reduce possible biases, interviewees from both business domains were contacted and interviewed. Both business alignment managers are greatly knowledgeable in their respective domains due to IH’s centralised position in relation to innovation activities. In addition, two senior managers from other departments were interviewed, each one from a different domain. This reduced the risk to bias the research to one business domain and increase the reliability of data obtained. To reduce the bias of interviewees’ perspective, data was acquired by accessing internal documents and by observation where possible. Although risks have been tried to be mitigated, the possibility to encounter bias is yet there. A possible solution would have been to only focus the research on one business domain of the bank. Nevertheless, the researcher’s ambition and his interests to discover the problems in the entire company prevented this. As a master student and possible professional in innovation and knowledge management, the researcher is extremely interested to understand the problems that large corporations deal with in relation to both fields. The research is also a learning opportunity that the researcher could not resist.

Similarly, provided recommendations were validated by IH members related to both business domains. To reduce bias and increase reliability, a senior manager from other department was contacted and validation obtained. Furthermore, the researcher intended to contact one of the higher positions of the company for validation purposes. Nevertheless, time constrains and its busy agenda was an impediment to schedule meetings.

Second, XYZ lacks a formalised procedure to capture lesson learned. However, it was observed that XYZ follows a Scrum methodology that includes a retrospective phase to analyse project events. Due to the ICT origin of both Scrum and XYZ’s innovations, Scrum approach could fit better as a lesson learned in the XYZ’s context. The present research lacked of sufficient time to contrast different lesson learned approaches with Scrum and investigate whether Scrum fit better. Therefore, no solution is provided to XYZ.

Furthermore, the financial industry is currently shaken by the factors exposed in the case study. One of them is inflexible regulations. Knowledge preceding from regulators could hamper innovation activities in financial firms. This factor is not included in the present research. This knowledge is critical for XYZ to continue its operations. However, due to the importance, its study would have required an amount of time not available for this research.

Future Studies

Knowledge processes in relation to innovation within a single company was the scope of the present research. As mentioned, an increasing number of companies are embracing the Open Innovation paradigm or collaborating in innovation networks. In innovation networks, knowledge is expected to be shared, integrated, and created among the involved companies. Future studies could investigate how the discussed knowledge processes could be managed in these innovation networks. The study of this phenomenon could have academic and managerial implication (e.g. how to reorganize knowledge processes to obtain maximum benefits, gain competitive advantages, etc.)

Similarly, the researcher found various unclear elements in current literature. This study was not aimed to investigate them. Table 2 described them (see chapter 3). Future investigations would increase their understanding and dissipate misconceptions. Furthermore, the study of these elements could have important managerial implication. For instance, companies could increase innovations rate of market success by designing knowledge sharing/creation strategies. These strategies could incorporate factors such as how companies should share knowledge with society to make understand the possibilities of the
new product, or how society creates knowledge on a particular product that radically transform the product - see e.g. (Kline & Rosenberg, 1986).

Another interesting element to be researched is the indicative formula provided in chapter 3 \((KA + X + KI + KC = Y)\). The formula is a representation of the conceptual map. Future studies could investigate how to operationalize the elements included in the formula. This will enable measuring the performance of specific knowledge processes and their impact on innovation. A possible approach might be a multi-case study, comparing the performance of different processes in companies from the same industry or even different industries.

Future studies to be conducted by XYZ include the exploration of the observation about Scrum’s retrospective sprint in relation to its application as a lesson learned approach. The research would have managerial implications, not only for XYZ, but also for similar organizations innovations are ICT driven. Future research could also explore ways to share these lessons to the rest of the organization.

Another possible future research in XYZ is related to the co-creation of new products or services among countries. As described, the Collaborative Communities have the goal to co-create new solutions where various countries are involved. This requires the formation of virtual teams. Working in virtual teams could require managers to consider other factors not commonly observed in teams where their members are located in the same location. Possible factors to be considered might be cultural differences among countries, lack of trust among countries, differences in goals, and differences in time zones. These factors might lead to new challenges for the company that would hamper the co-creation process. XYZ could investigate how to prevent these barriers and train its managers in these new settings.

Finally even yet importantly, the financial sector is being disrupted by new entrants in the market. This includes start-ups or incumbents from other industries (e.g. Apple, Amazon, and Google). It is observed that new entrants do not find many barriers to enter in the market. A possible reason could be that, whilst financial institutions must fulfil inflexible regulations to prevent negative impacts in the society, new entrants introduce product and services in areas of the business that are not regulated yet. Regulators have not faced these new business models before. Moreover, new entrants generally have technological capabilities that financial institutions lack. XYZ could research its current business model and ecosystem. This includes detecting stakeholders and areas of the business that are not regulated, work together with regulators to create barriers. Furthermore, investigate possible alliances with strong technological companies to establish an innovation network, and possibly to redefine its business model.
Appendix

Interviews process and criteria selection

Figure 20: Interviews process

Overall, fourteen interviews were conducted from twenty-one that were planned. Nine interviews had the purpose to acquire data, two for data validation, and three for recommendations validation. First, a preliminary round of three interviews was steered to gather some initial data about the company. Interviewees in this phase are IH’s managers. The principal selection criterion was based on IH central
position in relation to innovation. The Head of IH is the promoter of the present research. His opinion is essential to gather XYZ’s expected levels of performance related to knowledge management. The other two interviewees’ functions are closely related to innovation and the two XYZ’s business domain (Commercial and Retail). This reduces the possibility to bias the research in the direction of a single business domain. Principal discussed themes were Innovation and knowledge management practices at XYZ. Results were processed for further investigation via desk research – see Figure 20 (Intranet, internal documents, internal magazine, etc.). Some initiatives (e.g. Global Innovation Portal) and their related stakeholders resulted from this phase.

The second round was prepared by employing the previous outcomes. Interviews in this phase are also IH’s managers. A selection criterion is similar to the exposed above. It only differs in one interviewee who was contacted due to his role as responsible for one of the explored initiatives. Additionally, this round dives on XYZ’s knowledge management practices. This round was structured to cover each knowledge process. An overview on different knowledge management initiatives was obtained. Once more, a desk research was followed in order to collect further insights on the identified initiatives. Key stakeholders of detected initiatives were also identified to provide deep insights on them. The selection criterion was their proximity to identified initiatives.

XYZ’s requirements were acquired by addressing a question about the desired contribution of the knowledge management practices to innovation in the first two rounds. Beside, XYZ’s innovation goals were investigated in the interviews. Results were contrasted with XYZ’s internal documents in order to be verified. The following table summarise criteria and outcomes from the three set of interviews in the data collection phase:

<table>
<thead>
<tr>
<th>Interviewees Position</th>
<th>Criteria Selection</th>
<th>Outcomes</th>
<th>Recommended interviewees</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>First Round Interviews</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Head of Innovation Hub</td>
<td>• Research promoter • Relation to innovation due to his role as Head of the global innovation department (IH)</td>
<td>• SNI • KM requirements • Innovation Goals • Collaborative Communities</td>
<td>IH team members CIO</td>
</tr>
<tr>
<td>Business Alignment Manager CB</td>
<td>• Relation to innovation (IH member) • Relation to CB business domain and its innovation activities</td>
<td>• SNI • Innovation Goals • KM requirements</td>
<td>IH team members CB TOM</td>
</tr>
<tr>
<td>Business Alignment Manager RB</td>
<td>• Relation to innovation (IH member) • Relation to RB business domain and its innovation activities</td>
<td>• SNI • Innovation Goals • KM requirements • GIP</td>
<td>Head of Execution &amp; Delivery (GIP responsible)</td>
</tr>
<tr>
<td><strong>Second Round Interviews</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Business Alignment Manager RB Benelux</td>
<td>• Relation to innovation (IH member) • Relation to RB Benelux and its innovation activities • Investigate differences between RB and RB Benelux</td>
<td>• SNI • Innovation Goals • KM requirements • XYZ Economic Bureau • XYZ and TED</td>
<td>IH team members for Innovation Days Global Market Research Manager (XYZ Economic Bureau) Responsible for TED</td>
</tr>
<tr>
<td>Head of Execution &amp; Delivery</td>
<td>• Relation to innovation (IH member) • GIP responsible • Relation innovation activities in the GIP • Collaborate in the Innovation Days</td>
<td>• SNI • KM requirements • Innovation Goals • Collaborative Communities • XYZ Economic Bureau</td>
<td>IH team members for Innovation Days Global Market Research Manager (XYZ Economic Bureau) Head of Strategy Office (Sharing programme)</td>
</tr>
</tbody>
</table>
Seven interview candidates were contacted in relation to some detected initiatives. These initiatives were found interesting to further investigation. Busy agendas, limited time to conduct the research and their low value added are some of the reasons to be rejected or to not interview the candidates. Related initiatives to those candidates are not included in the present research due to the insufficient evidence to be analysed. Additionally, stakeholders from less critical initiatives (e.g. internal magazine, training programmes) were contacted by e-mail.

Table 12: Non-included initiatives, interest on initiatives, and reasons for non-inclusion

<table>
<thead>
<tr>
<th>Interviews’ candidate</th>
<th>Non-included initiatives</th>
<th>Interest on the initiative</th>
<th>Reason to not be included</th>
</tr>
</thead>
</table>
| Chief-editor company’s internal Magazine | Internal Magazine | XYZ’s internal magazine could be useful for sharing successful stories and lessons learned | Not being able to contact have an interview, only email conversations  
Limited time for the research and low value added |
| CIO | He governs many included initiatives (e.g. ID, CG) and non-included (e.g. Forwards Thinkers) | Forward Thinkers is related to innovation and knowledge sharing | Busy agenda  
Limited time for the research to find evidences |
| Communication Manager PowerIT | PowerIT | Transformation programme to upgrade IT systems | Not being able to contact the interviewee  
Initiative related to Netherlands, not global presence (out of the boundaries of the research) |
| Global Market Research Manager | XYZ Economic Bureau | Knowledge acquisition activities not employed yet for innovation activities | Busy agenda  
Limited time for the research to find evidences |
| XYZ Bank Academy consultant | XYZ Bank Academy | Trainings and employees' development programmes provided by the company | Only email conversations shows that the initiative does not provide specific training for innovation activities |
| HR Business Consultant | Employees Mobility and hiring activities | To understand how easy is to integrate or hire | Only email conversations shows that the initiative does
employees from other countries or areas when they are required in innovation projects

| Responsible of TED conferences | XYZ TED conferences | Potential to acquire external knowledge for XYZ | Limited time for the research to find evidences |

Two interviews and a presentation at IH were conducted to validate the data. Findings were confirmed and misinterpretations detected and corrected. There following table summarised the criteria selection and some minor corrections:

Table 13: Confirmation interviews and criteria selection

<table>
<thead>
<tr>
<th>Confirmation</th>
<th>Criteria Selection</th>
<th>Detected misalignments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Alignment Manager RB</td>
<td>• Member of IH • Relation to RB business domain and its innovation activities • SNI user</td>
<td>• Related to knowledge acquisition in the Retail domain.</td>
</tr>
<tr>
<td>Head of Execution &amp; Delivery</td>
<td>• GIP responsible • Relation innovation activities in the GIP • Collaborate in the Innovation Days • SNI user</td>
<td>• Small corrections on the GIP</td>
</tr>
<tr>
<td>IH team presentation</td>
<td>• IH is part of the governance for the following initiatives: Innovation Days, Collaborative Communities and GIP • Knowledge in both business domains</td>
<td>Not found</td>
</tr>
</tbody>
</table>

Finally, three interviews were conducted for the validation of the recommendations. Some small questions appeared about the internal knowledge market approach. Questions were clarified. Both interviewees believed that the solution would fit into the company context and would increase innovation efficiency and boost innovation.

Table 14: Confirmation interviews and criteria selection

<table>
<thead>
<tr>
<th>Confirmation</th>
<th>Criteria Selection</th>
<th>Questions about the solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Alignment Manager RB</td>
<td>• Relation to innovation (IH member) • Relation to RB business domain and its innovation activities</td>
<td>• None</td>
</tr>
<tr>
<td>Business Alignment Manager RB</td>
<td>• Relation to innovation (IH member) • Relation to CB business domain and its innovation activities</td>
<td>• Which recommendations should be the priority?</td>
</tr>
<tr>
<td>Head of Strategy Office</td>
<td>• Relation to strategy of the company • Find a different perspective out of the IH context</td>
<td>• None</td>
</tr>
</tbody>
</table>
The literature is dispersed in relation to the terminology employed to describe Knowledge Sharing (KS) and Knowledge Transfer (KT). Certain scholars (e.g. Kumar & Ganesh, 2009; Nonaka, 1994) have indifferently used KT and KS. However, the present research followed the taxonomy suggested by Pinho et al. (2012):

- “Knowledge sharing is the process of exchanging tacit knowledge, through social and collaborative processes.”
- “Knowledge transfer deals with transmitting explicit knowledge from one source/agent (individual, team/department, and/or organization) to another.”

These definitions implicitly contain the direction in which the knowledge moves. KS suggests a both-way communication – two individuals exchanging tacit knowledge to each other throughout a “social and collaborative process” (Pinho et al., 2012) (see Figure 21a). The social interaction will facilitate the clarification and understanding of the exchanged knowledge. On the other hand, KT implies to transmit explicit knowledge – documents, manuals, products, etc. - in one way. That is, knowledge is transfer from one point to another, and therefore, there is not communication between individuals (see Figure 21b).

Although there is a discussion in the literature about the differences between KS and KT, the benefits can be hardly differentiated. In present research, the distinction between both processes was made to show
the different existing knowledge strategies, and tools to deal with both processes. These strategies and tools employed in the strategies are highly related to the type of knowledge and the knowledge process.

According to Segarra-Cipres et al. (2013), knowledge transfer/sharing is required for its integration and exploitation. They empirically demonstrated that knowledge would remain at individual level if it were not transferred/shared. At this point, the difference between knowledge transfer and sharing commence to appear. First, full understanding of knowledge is required by individuals in order to be able to articulate it. Articulation in explicit form would favour its transfer –see Figure 22 (Almeida et al., 2003, p. 363; Zahra & George, 2002).

![Figure 22: Mediating factors to transfer acquired knowledge](image)

Once the knowledge or ideas are articulated in explicit form, it can be stored in ICT repositories. This would facilitate its accessibility from other members of the organization for its future use in innovation projects. This is also known as “Codification strategy” (Andriessen, 2006). However, although some authors (e.g. Dev Amar & Juneja, 2008; Segarra-Cipres et al., 2013) have emphasised the necessity to transform tacit knowledge into explicit for its transfer, this is extremely challenging. There are several reasons this. First, tacit knowledge is extremely difficult to articulate due to the personal and contextual character thereof. Another reason is associated with “psychological resistance against using such a knowledge system.” Finally, “the not invented here” syndrome is a factor that deters employees to seek for solutions in the mentioned systems (Andriessen, 2006) –see Figure 23.b. A different way to deal with the transmission of knowledge within the organization is “personalization strategy.”

This strategy consists of tacit KS by, for instance, social interaction or communities. It emphasises the development of social networks between employees (Andriessen, 2006). The use of ICT tools is not excluded in this strategy. However, instead of focusing on storing knowledge, it requires, for instance, the development of communities or “yellow pages”. This would offer direct access to experts on a specialised knowledge (Andriessen, 2006) – see Figure 23.a. In other words, instead of accessing to explicit knowledge, an employee can directly access to the source of tacit knowledge - the person. Personalization might stimulate creativity for innovation activities when there is a need for speeding up the delivery of product and services (Kumar & Ganesh, 2011). Concluding, depending of the company’s knowledge strategy, knowledge might be transferred, shared or both.

In their literature review, Kumar & Ganesh (2011) distinguish two schools of thoughts regarding the use of Codification and Personalization. They report that some authors argue that an imbalance must be present in favour of one of the strategies in order to be effective in both strategies. They also found that other authors suggest that both strategies must be at equilibrium. In their research, Kumar & Ganesh (2011) analyse 54 Indian manufacturers that have product development units to investigate whether those units perform better depending on how they deal with both strategies. They find that those product development units rely more on Personalization rather than in Codification. This has no negative influence on performing new product development activities. Existing research are clear that both strategies must be present in any company. However, the literature lacks of research focused on whether firms’ innovation performance increases due to favouring one strategy in detrimental to the other or due to the balance of both.

Hitherto, the reasons and possible benefits for companies to acquire external knowledge have been explored. Additionally, it was explained that transferring/sharing the acquired knowledge internally –e.g. to a database, communities of practice, etc. - will increase the company’s knowledge base and the availability of diverse knowledge. As a result, this knowledge could be used in future innovation projects.

---

1 Yellow Pages are directories containing employees’ information about their skills or experiences they have
Then, it was pointed that the literature lacks of research about what should be transferred/shared. Next, it was exposed that transferring/sharing everything would be inefficient and counterproductive. For that reason, the author expressed his opinion about what must be transferred or shared. Nevertheless, future research must clarify this. Next sub section will explain knowledge integration.

Figure 23: Personalization and Codification Strategy
Knowledge Creation process

The role of the organization is the formulation of problems (Nonaka, 1994) that would be solved by the knowledge produced during the innovation process. According to Nonaka (1994), ideas and knowledge are generally created within human minds by social interactions between individuals in a collaborative process. Tacit and explicit knowledge is exchanged in this process. Interactions enhance individuals’ ability to formulate problems and apply previous knowledge to them (Sáenz et al., 2012). Therefore, interactions between employees during the innovation process cause the creation of knowledge and ideas. Specifically, knowledge and ideas would be created during the exchange and conversion of knowledge in the following four ways (Nonaka, 1994):

<table>
<thead>
<tr>
<th>Socialization</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Tacit</td>
<td>Tacit</td>
</tr>
<tr>
<td>Externalization</td>
<td>Tacit</td>
<td>Explicit</td>
</tr>
<tr>
<td>Internalization</td>
<td>Explicit</td>
<td>Tacit</td>
</tr>
<tr>
<td>Combination</td>
<td>Explicit</td>
<td>Explicit</td>
</tr>
</tbody>
</table>

 Whilst explaining KA, KT/KS, and KI, KT was defined as the process transmitting explicit knowledge from one entity to another. In this process, two types of conversion can be observed. Employees individually acquire explicit knowledge. Explicit knowledge is transformed into tacit during the acquisition (Internalization). Then, tacit knowledge must be transformed to explicit to be transferred (Externalization). Once the explicit knowledge is available to the rest of the organization, other employees can transform it into tacit knowledge (Internalization) during the innovation process – see Figure 24.

Team formation is required in innovation projects. Team formation facilitates the social and collaborative interaction for tacit knowledge sharing. Knowledge sharing is “the process of exchanging tacit knowledge, through social and collaborative processes” (Pinho et al., 2012). According to Nonaka (1994), the transmission of skills, experiences, and insights is especially important in innovation activities. KS (e.g. experiences) from tacit to tacit (Socialization) is facilitated in teams. Innovation team members will commence a dialog to share their tacit knowledge by using “metaphors”. Metaphors could be used as a mean to transform tacit knowledge into explicit (Externalization). Subsequently, knowledge could be recombined with the external or internal knowledge (Internalization). Therefore, both KS and KT can be observed during the innovation process. Knowledge and ideas are created during the described knowledge conversion, combination and integration of different specialised knowledge – internal and external, or multidisciplinary (Grant, 1996; Nonaka, 1994; Okhuysen & Eisenhardt, 2002) – see Figure 24. The resultant knowledge contains the recipe to replicate the new product/service.
Figure 24: Knowledge Creation, Integration, SECI
Complete description of Future Horizon initiatives & Knowledge processes identification

Social Networking Intranet (SNI)

Why

*Efficiency:* to improve the time-to-access to internal knowledge and expertise, increase connectivity among employees, share skills, work more efficiently, and increase engagement.

*Boost innovation:* to promote free discussion.

How

A set of interconnected tools are provided to obtain its objective:

- First, the SNI includes communities organized by topic. Each person at the company can create communities – private or public -, join communities and commence conversations to ask questions or share their ideas. Answers can be selected as the most appropriate. Before creating a new community, employees are responsible for verifying the existence of similar communities. The company leads some communities, for instance, the XYZ Global Bank. Employees are directly subscribed to them. Besides, documents, links and videos can be posted in communities. Employee’s participation is acknowledged with recognition (*the SNI Badges*).

- Second, the SNI provides a “Yellow Pages”. All the company’s employees are encouraged to fulfill their profile during the initial weeks after their recruitment. This is a self-fulfilled profile where employees indicate their role, contact data, interests, skills, expertise area, and select the buzz communities that fit their preferences. Employees might decide to follow other co-workers and their streams as well.

What

The SNI is a social networking intranet.
Identified Knowledge Processes

**Knowledge Acquisition:**

Knowledge acquisition might occur during discussions. Nevertheless, no evidences were observed due to the inexistency of formalised processes.

**Knowledge Sharing/Transfer:**

The SNI provides employees with a place for “unrestricted” discussions. Employees have the possibility to create communities based on their preferred topic. Topics might be diverse. These discussions might imply sharing/transfer of acquired knowledge/ideas or even accidental ideas. For instance, discussions might include a new technology, technologies used by other industries, etc.

The SNI is a social networking intranet with the aim of improving the time-to-access to internal knowledge and expertise, share skills, connect employees and promote free discussion. Therefore, a primary objective is internal Knowledge Sharing (KS) and Knowledge Transfer (KT). This is accomplished in two ways.

First, communities bring employees with a space to discuss about topics of their interests in a social environment. These topics might be related to their area of expertise, their jobs, or simply to personal preferences. Besides, there are communities owned by the company. For instance, the IH has its own community. In this community, employees are able to ask questions related to innovation that would finally answered by the IH team. The IH team might share topics to be discussed by its members. Other examples are the MyWorkplace where tips and tricks connected to the working environment (remote access, Wifi access, etc.) are shared. However, the company does not control the majority of communities and repeated independent silos might share/transfer similar knowledge/ideas.

Second, the SNI provides a kind of “Yellow Pages”. As mentioned, people are encouraged by the company to self-fulfil their profiles. Employees’ expertise area and contact information are displayed in employees’ profile. Therefore, employees are able to directly connect with the source of specific knowledge and mutually share their knowledge. Similarly, knowledge is transferred within the communities. Employees might post documents, presentation, videos, news, etc. that would either be to provide clarification to topics or to promote discussion and share opinions.

**Knowledge Integration:**

The SNI communities contains all the ingredients for KI. Although KA was not observed in the SNI, acquired knowledge and internal knowledge are shared/transferred in the SNI. This would be likely to produce accidental integration. This integration could result in the generation of ideas or initiatives with the potential to become a new product/service. Integration of internal knowledge might include diverse functional expertise from different countries, business domains (RB, CB, and OIB).

**Knowledge Creation:**

As explained, the integration of specific knowledge could accidentally create new knowledge/ideas that, in the best-case scenario, could lead to a new initiative. Because this is accidental, the company has little control on it. Similarly, the sharing/transfer of created elements might be achieved. However, there is not a formalised process for it and it could not be observed.

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<tbody>
<tr>
<td>SNI</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td></td>
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</table>
Sharing Programme

Why

**Efficiency:** To stimulate the sharing of knowledge, skills, experiences and best practices across XYZ Retail Banking.

**Boost innovation:** To create novel products, to improve the customer experience, and reduce time-to-market.

How

The Sharing programme is led by the Retail Standard Board (RSB). The Sharing programme is featured by different initiatives aimed to achieve the goals mentioned above. A fundamental pillar is the Collaborative Communities (CC). The Collaborative Communities provides the resources to bring specialist from different locations, domains and disciplines together. It also delivers the means to share documents outside the normal organizational structures. It objectives might be divided in short-term and long-term period. The short-term ambitions include the sharing of knowledge, expertise, experiences, solutions and best practices. On the other hand, the company envisions the attainment of co-created solutions in the long run. Access to the platform has to be requested by employees and granted by the community leaders. Moreover, external individuals might request to enter in the community. External individuals might be vendors or providers. Once the permission is granted, employees have access to the entire set of documents shared, previous solutions. Employees can also contribute with their insights and solutions. In contrast, external parties have limited access to the platform. Nevertheless, the creation of communities must be approved by the RSB. Approval is subjected to:

- The community has to have a clear goal that can be shared and replicated.
- Deliverables must be clear (by using a common language: What, How, Why, When, Who)
- Team Members have to be from different countries, and, potentially, from different disciplines.

The team might be appointed by senior managers (top-down), or by employees sharing a common goal (bottom-up). Furthermore, employees should share results of their activities in a regular basis so that other employees could reuse it. Solutions would be stored and displayed at the CIO's community. Several tools are available aimed to assist the community's goals, (e.g. Confluence, Jira, conference tools, chat, etc.).

Community are formed by:

- **Leader:** responsible for the achievement of the deliverables, goals and time schedule. The leader is also responsible to maintain the community active, publish the results, and preserve the quality of the content.
- **Members:** Employees that actively contribute to the community.
- **Non-members:** Follow the community and provide feedback.

Finally, answers to comments might be graded with points. This could result in the employees recognition as an expert. Differences between Collaborative Communities and the SNI can be found in Appendix E.

What

The Sharing programme is an ambitious programme to facilitate the execution of XYZ's strategy. The Sharing programme initiatives are delineated in collaboration, orchestration and communication for the Retail Banking.
**Identified Knowledge Processes**

**Knowledge Acquisition:**

Clear goals are required to create communities in the Collaborative Communities. Goals might be preceded by a previous identification of opportunities or business needs. In other words, the acquisition of knowledge could result in the identification of opportunities or business needs, which would lead to the definition of community goals. Therefore, KA might be a pre-step of the Collaborative Communities. Additionally, community leaders might request access for external users in order to provide their specific knowledge in the Collaborative Communities. Therefore, KA is formalised and is expected to be as an initiators or a complementary process of the Collaborative Communities.

**Knowledge Sharing/Transfer:**

As described, community leaders might request external entities to have access. External entities might be experts from vendors/providers who supply knowledge about specific topics. Further KA would depend on knowledge available in the company and its availability. Nevertheless, this is very uncommon to date.

Internal knowledge sharing/transfers is limited to the members of the platform. Moreover, teams must be formed by people from different countries, with the potential to be from different functions. Besides, cross-community knowledge sharing/transfer could be accomplished.

**Knowledge Integration:**

Knowledge is intentionally integrated within the Collaborative Communities. Community goals trigger KI within the platforms. Community members integrate their specific knowledge in their community. Therefore, cross-country, cross-function, cross-community integration might be achieved. Besides, internal-external knowledge integration might be accomplished if communities provide access to external members.

**Knowledge Creation:**

The ultimate goal of communities is to create something. Therefore, the creation of solutions is guarantee. During the process, ideas and new knowledge is expected. However, the Collaborative Communities do not provide any formal procedure to capture the ideas or new knowledge. Additionally, the sharing/transfer of created solutions is a primary goal of the communities. However, solutions are only visible for the member of the platform, reducing their potential exploitation in other area of the company.

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<tr>
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<th>KA</th>
<th>KT/KS</th>
<th>KI</th>
<th>KC</th>
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<tbody>
<tr>
<td>Collaborative</td>
<td>✓</td>
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<td>✓</td>
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<tr>
<td></td>
<td></td>
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</tbody>
</table>
Commercial Banking Target Operating Model (CB TOM)

**Why**

*Efficiency*: To Reduce the complexity in the offered products/services catalogue, and facilitate its clients’ operations. The CB TOM also seeks increasing mobile and online capabilities.

**How**

The CB TOM aims the standardization of products, services and processes to deliver harmonized products across borders. The standardization will reduce the number of products from 1000 to about 100. A large budget is accommodated to accomplish the harmonization. The process is centrally managed and supported by tools like SharePoint or Jira. Besides, the CB TOM initial phases completed a restructuration to unify globally several units such as Global Markets. The principal reason behind the CB TOM programme is due its clients’ needs. As explained, the Commercial Banking’s clients are organization operating their business in different countries. These clients demand to execute their operation simultaneously in different countries. Therefore, CB targets to provide the identical tools, procedures and processes to facilitate their clients’ operations.

**What**

The CB TOM is a transformation programme aimed to create a differentiating client experience across products and countries under the mantra “One Bank”.

**Identified Knowledge Processes**

*Knowledge Acquisition:*

The CB TOM approach to acquire customers’ needs is accomplished locally - acquired by country or local business unit. That is, because of the importance of these clients, XYZ locally attends their demands. In contrast, supplier’s knowledge, technical knowledge, etc. is centrally acquired to avoid fragmentation of similar products.

*Acquired Knowledge Sharing/Transfer:*

The CB TOM initiative is unfinished. However, once it would be operative, it is intended to collect clients’ demands and centrally implement them. Countries and business units would share/transfer their locally acquired customers’ knowledge with their specific Global Divisions. In this context, Global Divisions collect local demands from different countries in order to identify mutual needs. In contrast, internal knowledge is shared/transferred by members of centralised development teams in specific projects.

*Knowledge Integration:*

As explained, the CB TOM provides the CB business domain with the means to centrally integrate external and internal knowledge. Therefore, cross-country knowledge integration is achieved. The CB TOM programme claims the future collaboration across divisions to encounter similar needs. Therefore, it is expected future cross-division integration—see Error! Reference source not found.

*Knowledge Creation:*

New products/services would be created because of the integration. The CB offers same products all over the world so that sharing of new products would not be required. New knowledge and ideas might also be generated. However, the programme is not finished and no evidences about the generation thereof where observed. Furthermore, it could not be observed any formalised plan for
capturing and sharing/transferring the created knowledge or ideas.

**Figure 25: CB TOM: Knowledge Processes**

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<th>KA</th>
<th>KT/KS</th>
<th>KI</th>
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<tbody>
<tr>
<td>CB TOM</td>
<td>✔</td>
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<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

**Innovation Days**

**Why**

*Boost innovation:* To accelerate the pace of innovation, stimulate creativity and get employees involved.

**How**

The Innovation Days is contained by the *Innovation Platform* and the *Innovation Fund.* The Innovation Days process is divided into eight phases. Employees are encouraged to submit their ideas in the Innovation Portal, and contribute to improve others’ ideas.

In the Innovation Portal, ideas can be created, edited, deleted, commented, voted, attach documents and refer to other employees. The company provides some categories where ideas could fit. The Innovation Days process commences with the submission of ideas and team formation. XYZ arranges various procedures to facilitate the process (brainstorming techniques, ideas communication: describe the value/benefits for customers and XYZ, etc.). Four hour per week are provided to work on ideas.

Each process phase is followed by a selection phase. Ideas are ranked by the Innovation Days Steering Committee in this phase (reporting to the Management Board Banking). Factors considered during the evaluation include elements such as strategic alignment or their quality. In following phases, “ideators” must seek experts and ambassadors (business unit sponsors) supporting their ideas. Finally, the most promising ideas would culminate in a Minimum Viable Product (MVP).
What

The Innovation Days is an initiative where employees and business units are encouraged to think about innovation in XYZ, share raw ideas, and improve them over time with some funding.

Identified Knowledge Processes

Knowledge Acquisition:

Similarly to the Collaborative Communities, Innovation Days has a clear goal. The goal is sharing/transfer employees’ ideas. These ideas might be acquired, accidently generated, or created because of interaction with other employees. Therefore, ideas acquisition might be a pre-step of the Innovation Days. As far as KA for the improvement of ideas, it might occur. However, there is not a formalised process for it. It would depend on specific ambitions and goals of employees. Besides this, KA could be expected while executing ideas.

For instance, in the Innovation Days process, ideas would overcome phases before ending in a MVP. Ideas creators are encouraged to find a sponsor (business unit) and the specific knowledge they require. An Innovation Fund is available for ideas that would reach the latest stages. In case required knowledge is inexistent at XYZ, teams would be able to use the Innovation Fund to acquire external knowledge.

Knowledge Sharing/Transfer (Internal – Acquired):

The Innovation Days is an initiative that provides employees with the means to share/transfer their ideas. In this context, each employee of the company is able to share their idea – external or internal - that they might consider an opportunity for the company. Besides, there are not restrictions regarding to the access of the platform and no limitation of the kind of knowledge to be shared/transferred. That is, employees from CB, RB, and OIB in different countries might share ideas or contribute with their expertise, experiences, skill to improve other’s ideas. Consequently, each employee might be able share/transfer their knowledge to improve other ideas so that avoiding bounded rationality. Nevertheless, a small percentage of employees are aware about the Innovation Days due to its immaturity (Anonymous, 2014a). As a result, its full potential is hampered.

Knowledge Integration:

Ideas drive and trigger employees’ creativity in a way that their previous experiences could be exploited in a new context. It provides direction to exploit employees’ prior knowledge. That is, ideas direct the integration of the knowledge shared/transferred in the platform. The Innovation Days has the theoretical potential to integrate any existing internal knowledge as far as employees are willing to do so. That is, internal knowledge from different business domains, cross-function, cross-country, and cross-hierarchy can be integrated. Similarly, as ideas get over the Innovation Days process, ideas evolve integrating more knowledge. This is accomplished by two means.

First, it is accomplished by employees’ feedback. Second, it is obtained by teaming up with other employees. As a part of the process, the company encourage idea’s owners to detect gaps in their team and find other employees who might have that knowledge. However, the company does not provide any procedure on where to find knowledge within the company. Likewise, XYZ does not indicate whether detected knowledge gaps could be externally acquired. Nevertheless, it was explained that an Innovation Fund is available for ideas that would reach the latest phases. In case required knowledge is inexistent within the company, teams would be able to use the Innovation Fund to acquire external knowledge if they decide to do so. Finally, the company recommends idea owners to encounter a business unit that sponsor them, assuring alignment of ideas with their existing operations.
Knowledge Creation:

The most promising ideas would result in the development of a MVP. Moreover, it is expected to find creation of knowledge and other ideas. However, the Innovation Days is an immature initiative that commenced in 2014. The whole process has not been completed for first time. Although concluding whether knowledge would be created or not is difficult, products/services are expected to be created. Finally, it could not be observed any intention of the company to share the outputs of the process with the rest of the organization.

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<tr>
<td>Innovation Days</td>
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</tbody>
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Global Innovation Portal (GIP)

Why

*Efficiency:* To facilitate and enable cross-country communication and collaboration.

*Boost innovation:* to explore and assess possible external technologies provided by High-Tech start-ups, and encounter solutions with the potential to be internationally implemented by the business units.

How

The GIP’s delivers XYZ the opportunity to globally discuss business and/or technical challenges and bridge them to novel external business models and technological solutions. Different entities define challenges to be discussed subsequently in the GIP. The entities involved are:

- Business units define challenges from a business need or a market opportunity.
- GIP or the IH establish challenges based on new disruptive business models or market trends. The IH also provides funding.
- Expert Groups and Collaborative Communities provide themes based on their priorities.
- The SNI Communities might also propose topics to be studied.
- The CBT Consulting introduces the most interesting start-ups and solutions. It also provides use cases from other banks and other industries.

Proposed challenges are discussed and possible solutions investigated during thematic calls. These thematic calls are on a monthly basis. Besides, each business unit appoints a Single Point of Contact (SPOC). The SPOCs have access to a solution database.

The process begins by defining the challenge scope to assure the participation of the right experts. Subsequently, the problem is defined using a common language (Why and What). This is proceeded by internal thematic calls where internal solutions are explored. These are solutions previously implemented, in implementation phase or offered by providers. Similarly, the IH shares solutions taking place in its facilities. The CBT Consulting operates as a filter for introducing the most promising solutions provided by start-ups. The CBT Consulting also shares use cases from other financial institutions. Next steps are decided in a subsequent call. Once solutions are decided for an implementation phase and MVPs are developed, business units will locally implement them in their respective countries. Finally, the result of the implementation phase is shared in a final thematic call.

What

The Global Innovation Portal (GIP) is a platform that provides international connection of XYZ’s business units with start-ups and innovative companies.
**Identified Knowledge Processes**

**Knowledge Acquisition:**

Different internal entities of the company might define business/technical challenges according to their needs. These challenges might be resultant from KA of customers, other industries, competitors, etc. – See Figure 26: Step 1. Business’s needs steer the discussion around possible solutions. IH might provide knowledge about potential internal solutions they are aware of. However, if there is not an internal solution, involved entities are encouraged to acquire knowledge about external solutions. Furthermore, the CBT consulting plays an important role in the process by acquiring and supplementing with promising solutions from start-ups – see Figure 26: Step 4a. Similarly, CBT consulting brings ideas and use cases from other financial institutions or other industries.

**Knowledge Sharing/Transfer:**

The GIP initiative is a place where internal and external knowledge converge. First, internal entities define business/technical challenges according to their needs. Business’ needs drive the direction of internal knowledge exchange among internal entities – see Figure 26: Step 2. Moreover, each country appoints a Single Point Of Contact (SPOC) for each business unit. SPOCs might decide to join business challenges matching their local needs. Due to the structure of the GIP approach, internal distant knowledge is shared/transferred during thematic calls.

Beside, business units, Expert Groups/Collaborative communities, and the IH share experiences based on previously implemented solutions, or potential solutions they are aware of – see Figure 26: Step 3. This could prevent the exploration of outside-the-company solutions due to the existence of existing internal solutions suitable for current challenges.

Secondly, if internal knowledge is not sufficient to solve current challenges, internal entities are encouraged to explore outside the company and exchange their findings. In this context, the CBT consulting filters the external research and shares/transfers knowledge throughout uses-cases from other financial institutions, other industries and start-ups – see Figure 26: Step 4a.

**Knowledge Integration:**

Similarly, challenges provide thematic calls participants with a clear objective to integrate their specific knowledge. This could be achieved in four ways. First, sharing/transfer of business challenges with other SPOCs provides the opportunity to integrate common internal needs see Figure 26: Step 2. Distant geographical knowledge and, potentially, distant functional knowledge integration might be integrated.

Second, knowledge about internal solutions might be integrated with existing challenges – see Figure 26: Step 3. Integration might have the potential to be contextually distant. Third, external knowledge/ideas about potential solutions are shared/transferred by different entities (SPOCs, IH, CBT Consulting, and Expert Groups) to be integrated with existing challenges - see Figure 26: Step 4a. Forth, resulted experiences and knowledge might be integrated due to the sharing of local implementation results – see Figure 26: Step 6.

**Knowledge Creation:**

It is expected to find the different outcomes described by the literature from the KI process explained above. However, the principal created outcome found is the MVP in step 5. The MVP would be subsequently transferred/shared to implement it at local level in order to respond the particularities of different contexts. Finally, the implementation phase result and the experiences thereof would be shared between the different business unit – see Figure 26 – Step 6. Although the GIP has been operational for a couple of years, the approach described in the present research is based on the last review of GIP approach accomplished by the company. Therefore, there are not sufficient evidences to describe the forthcoming method used for sharing the outcomes. Finally, during the different knowledge integration, it
is also likely to find the generation of ideas. However, no evidences of an ideas capture approach were found, at least not formalised.

Figure 26: GIP Approach

<table>
<thead>
<tr>
<th></th>
<th>KA</th>
<th>KT/KS</th>
<th>KI</th>
<th>KC</th>
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<tbody>
<tr>
<td>GIP</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
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</tbody>
</table>
Collaborative Communities VS SNI

The first primary difference is the objective of the platforms. Whilst the SNI is intended to provide free discussion, the objective of Collaborative Communities is to create solutions and share them. In this context, the Collaborative Communities stimulate the integration of different specialised knowledge by establishing several requirements. First, the community must have a goal. The establishment of a goal might be considered as a problem formulation that has to be solved by the members of the community. In other words, the problem provides direction in the integration and combination of the community members’ knowledge. The problem might respond to a previously detected business need. Therefore, KA is not accomplished within the community, but rather a previous step. Similarly, acquired external knowledge (e.g. business need) is not shared within communities. It is a non-formalised previous step. As explained, the process could be initiated following a top-down approach. That is, the CIOs from different countries might discuss about a detected need to then appoint the members of the team.

Second, members from different countries must form the team. As result, geographically distant knowledge is shared/transferred and integrated. External entities might be added into the team upon previous request. This could be the case when vendors or providers are required for providing their knowledge of their technology. However, this is very infrequent. Therefore, finding external knowledge in the collaborative communities is very unlikely. Finally, a new product or service would be created, and eventually shared/transferred to other countries. For that reason, the organization encourages cross-community collaboration to adopt the solutions provided by other communities as well as the sharing of their experiences/skills to assist in problem solving activities of other communities.

Contrary, the SNI has no formalised requirements or procedures established for including members from other countries. Cross-country membership might be accidentally accomplished if employees from different locations join the community. Similarly, communities in the SNI have no different goal than providing discussion. Because of the discussion, knowledge might or might not be integrated. In the best-case scenario, this would lead to creation of an initiative or new ideas to be explored. Nevertheless, there is no need to create anything and therefore to share/transfer it with the rest of the organization or other communities. If there is collaboration between communities, this is obtained arbitrarily. Finally, because topics are from the taste of employees, internal and external knowledge might be shared/transferred. An example might be discussing about a promising technology that could affect the environment of the company. The following table summarises the differences between the two platforms.
<table>
<thead>
<tr>
<th><strong>Objective</strong></th>
<th><strong>SNI</strong></th>
<th><strong>Collaborative Communities</strong></th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Facilitate free discussion.</td>
<td>Create and Co-create novel products, improve customer experience and reduce time to market.</td>
</tr>
<tr>
<td></td>
<td>Improve internal knowledge sharing.</td>
<td>Stimulate the sharing of knowledge, skills, experiences and best practices</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Access</strong></th>
<th><strong>SNI</strong></th>
<th><strong>Collaborative Communities</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Free access for all the employees</td>
<td>Access upon request</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Community creation requirements</strong></th>
<th><strong>SNI</strong></th>
<th><strong>Collaborative Communities</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Applicable</td>
<td></td>
<td>The community has to have a clear goal that can be shared and replicated</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The community has to provide clear deliverables.</td>
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<tr>
<td></td>
<td></td>
<td>Team Members have to be from different countries, and, potentially from different disciplines.</td>
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</tbody>
</table>

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<thead>
<tr>
<th><strong>Knowledge Sharing/Transfer</strong></th>
<th><strong>SNI</strong></th>
<th><strong>Collaborative Communities</strong></th>
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</thead>
<tbody>
<tr>
<td>Deliberately shared/transfered:</td>
<td>Internal knowledge</td>
<td>Internal Knowledge</td>
</tr>
<tr>
<td></td>
<td>Ideas</td>
<td></td>
</tr>
<tr>
<td>Accidentally shared/transfered:</td>
<td>External Knowledge</td>
<td>Best Practices</td>
</tr>
<tr>
<td></td>
<td>Functionally distant knowledge</td>
<td>Solutions</td>
</tr>
<tr>
<td></td>
<td>Geographically distant knowledge</td>
<td>Geographically local/distant Knowledge</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Knowledge Integration</strong></th>
<th><strong>SNI</strong></th>
<th><strong>Collaborative Communities</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Not formalised</td>
<td></td>
<td>Internal Knowledge</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Geographically Distant</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cross-community</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Integration Outputs</strong></th>
<th><strong>SNI</strong></th>
<th><strong>Collaborative Communities</strong></th>
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<tbody>
<tr>
<td>It might result in new ideas and initiatives for the company.</td>
<td></td>
<td>Innovations (Solutions)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>New Knowledge</td>
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</tbody>
</table>

<table>
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<tr>
<th><strong>Output sharing/transfer</strong></th>
<th><strong>SNI</strong></th>
<th><strong>Collaborative Communities</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Not formalised</td>
<td></td>
<td>Innovations (Solutions)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>New Knowledge</td>
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</table>
Internal Knowledge Market in SNI

Internal Knowledge Markets (IKM) are implemented in companies like Siemens, SAP or IBM (H. Benbya & Alstyne, 2011). Similarly to good markets, buyers –demanders- and sellers –suppliers are required to be competitive (Cross & Prusak, 2003, p. 455). In IKM, buyers are referred as “knowledge seekers” and sellers are “knowledge sources”. Knowledge seekers are matched with knowledge sources using prices mechanism and market forces (H. Benbya & Alstyne, 2011). Internal knowledge markets are especially beneficial for large segmented organizations. Some of the benefits are listed below:

- Increases exchange of existing knowledge,
- Improve time-to-respond critical questions,
- Increase employees’ willingness to self-identify and collaborate
- Increase efficiency on the employment of resources.
- IKM is likely to impact in both individual and collective learning. (Cross & Prusak, 2003, p. 455)
- It could result in the creation of new knowledge when required
- It could facilitate best practices capture.

The SNI is a suitable environment to develop a IKM in XYZ due to the increasing number of employees that are aware thereof. Benbya & Alstyne (2011) define three phases for IKM implementation, namely Market Design and Launch, Market Development, and Evolution. The following recommendations are oriented for the design phase. XYZ should explore the subsequent phases once implemented. The design phase includes the following elements (H. Benbya & Alstyne, 2011):

**Material, intellectual and social incentives**

**Social incentives**

Incentives are critical for collaboration. Three types of rewards might be defined. Types include recognition, peer ranking and professional identity. Recognition and professional identity is already in use in the SNI via SNI Badges. However, peer ranking does not exist in the SNI. A new approach for the employee’s skills assessment is included in the set of recommendations provided in the present research. Beside, incentives could be socially responsible donations. In this context, XYZ could recognize employee-owned communities that reach objectives defined by the company. A number of questions answered or creation of initiatives can be seen as an example these objectives. Then, community members will decide to donate money to their preferred social causes.
**Intellectual Incentives**

It should include learning, challenging problems and autonomy.

**Material Incentives**

In companies with the XYZ’s size, the relationship among employees is far to be close. Material Incentives are justifies the more distant is the relationship. A material incentive could involve the creation of a virtual currency. To increase the efficiency of a virtual currency system, price fluctuation must be permitted. That is, valuable knowledge might require higher incentive to be shared than superfluous knowledge. A higher price will increase willingness to share critical knowledge. However, speculators might appear waiting for the price to increase. Nevertheless, the nature of perfect competition (threat of potential competitors) will prevent speculators gamble. Another solution could involve XYZ acts as a regulator, establishing a maximum price.

*Capture knowledge at both ends of the “long tail”*

This element involves two strategies. First, the *seed* provides critical expert knowledge in key company’s issues. In contrast, the *subsidy* supplements experts’ knowledge (seed) with context-dependent knowledge via peer-to-peer support. Social and material incentives might be used as a mean for exchange. This could be very interesting for XYZ in new product development activities. For example, XYZ would decide to globally develop a new mobile app. Global requirements would represent the seed, whilst country-specific context requirements would access to the long tail knowledge. Country-specific knowledge is valuable content that should be obtained by the subsidy.

*Consider offering points for improving information quality*

Awarding employees with points for flagging answers as outdated or correct, and commenting on each other answers will improve the quality of the knowledge provided. Existing SNI functionalities include the possibility to flag answers as correct, and comment on each other answers. However, the outdated flag is missing.

*To overcome shyness, provide protected spaces*

Employees might hesitate to show their ignorance about a topic. This could prevent employees to ask questions or acquire advice from colleagues about critical issues. Therefore, communities should provide anonymity and privacy. In this context, the SNI can provide private questions to other employees. However, this is limited to the knowledge that employees have about who could provide the answer. The possibility to ask anonymously questions to the whole community is yet missing. With the new structure and the IKM implementation, employees could address questions to virtual departments anonymously.

Spaces that are more private allow “freestyle brainstorming where ideas can incubate” (Benbya & Alstyne, How to find answers within your company, 2011). This is related to what an interviewee appointed: “Real discussions are not in the open social media like the SNI. Best ideas are created with a couple of people sitting in a room… All those new ideas are very vulnerable, you need to expose yourself. If you want to be creative… I am not going to do that on the SNI. This is too risky I guest. It doesn’t work for me. So, you have to find a way to have a save environment.”

Therefore, the SNI must provide save spaces to overcome shyness and improve willingness to share by shy employees.

---

2 Confidential Interview with AvD.
To reduce hoarding, balance competition

Knowledge might be retained by employees for their own interest in high internal competition environment. A possible solution is using absolute rewards instead of relative. Absolute incentives promote collaboration. Sales teams are a highly competitive environment where knowledge usually is retained. This was appointed by an interviewee in the conclusion of the interview- out of the record. This problem was observed in CB sales teams. XYZ should implement an absolute reward system in competitive sales teams.

Protect strategic information

If strategic information is shared in internal knowledge markets, this knowledge can reach the media. At the beginning of 2014, a XYZ director announces XYZ’s experiments with Big Data. His announcement shocked XYZ, and the bank had to justify to the public that the information was misinterpreted. Although this case was not the leakage of strategic knowledge, it demonstrates how strategic information might shake the company. Therefore, XYZ could use same protected spaces than for shy employees. In this case, Collaborative Communities already plays an important role.
Definitions

**Design Thinking** (Brown, 2008)

An approach involving innovation activities focusing on people’s needs, desires and preferences.

**Explicit knowledge** (Andriessen, 2006)

Explicit knowledge can be easily transferred among people via databases or intranet and is codified in many forms such as manuals or products.

**Implicit/Tacit knowledge** (Popadiuk & Choo, 2006)

It is knowledge that has a personalised character. It is usually originated from people’s experiences and related to a specific context.

**Innovation** (du Plessis, 2007, p. 21)

“The creation of new knowledge and ideas to facilitate new business outcomes, aimed at improving internal business processes and structures and to create market driven products and services.”

**Internal Knowledge Market** (H. Benbya & Alstyne, 2011)

It is an approach where “knowledge seekers” are matched to “knowledge sources… via price mechanism”, by exploiting market forces.

**Knowledge Acquisition** (Swan et al., 1999)

The search, identification, selection, and obtainment of essential knowledge for the correct functioning in firms’ operations

**Knowledge Creation** (Nonaka & Takeuchi, 1995)

Knowledge and ideas are created during innovation activities. These outcomes are obtained by combining, recombining and integrating knowledge to respond a particular context.

**Knowledge Integration** (Haddad & Bozdogan, 2009)

It is a combination of sub-processes that is obtained when KA, KS/KT and its application are involved in problem solving activities
Knowledge Management (Andriessen, 2006, p. 277)

“The planning, organizing and managing of the knowledge processes and its individual, structural, cultural and technological conditions in such a way that realization of the organization’s objectives and strategy is advanced”

Knowledge Mobility (Rosenkopf & Almeida, 2003)

Hiring scientist, engineers, and inventors previously employed by other firms.

Knowledge Sharing (Pinho et al., 2012)

“The process of exchanging tacit knowledge, through social and collaborative processes.”

Knowledge Transfer (Pinho et al., 2012)

“Deals with transmitting explicit knowledge from one source/agent (individual, team/department, and/or organization) to another.”

Network Externalities (Katz & Shapiro, 1985)

The value and quality of the product increase with the number of users. The telephone can be seen as an example. If there is only one user of the telephone in the world, the telephone will not have value. In contrast, if every person in the world has a phone, the value of using phone increases.

Not Invented Here syndrome (Andriessen, 2006)

Syndrome is a factor that deters employees to seek for solutions in the information systems.
### Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>CB</td>
<td>Commercial Banking</td>
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<tr>
<td>CB TOM</td>
<td>Commercial Banking Target Operating Model</td>
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<tr>
<td>CC</td>
<td>Collaborative Communities</td>
</tr>
<tr>
<td>CInO</td>
<td>Chief Innovation Officer</td>
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<td>GIP</td>
<td>Global Innovation Portal</td>
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<tr>
<td>G\textsubscript{Lx}</td>
<td>Detected Gap</td>
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<td>IH</td>
<td>XYZ Innovation Hub</td>
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<td>ID</td>
<td>Innovation Days</td>
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<td>IKM</td>
<td>Internal Knowledge Market</td>
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<td>IM</td>
<td>Innovation Market</td>
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<tr>
<td>ISA</td>
<td>Innovation, Strategy and Architecture</td>
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<td>I\textsubscript{s}</td>
<td>Detected Improvement</td>
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<td>MVP</td>
<td>Minimum Viable Product</td>
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<td>OIB</td>
<td>Operations and IT Banking</td>
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<td>Retail Banking</td>
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<td>Retail Standard Board</td>
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<td>SPOC</td>
<td>Single Point of Contact</td>
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Appendix

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References


