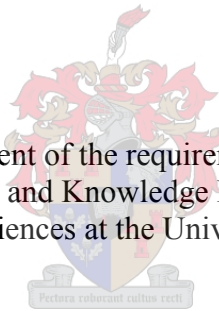


# **Improving Knowledge Codification: A Case Study of a Knowledge Management Initiative at an Australian Insurance Company**

by

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Thesis presented in fulfilment of the requirements for the degree Master  
of Philosophy (Information and Knowledge Management) in the Faculty  
of Arts and Social Sciences at the University of Stellenbosch



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March 2017

## **DECLARATION**

By submitting this dissertation electronically, I declare that the entirety of the work contained therein is my own, original work, that I am the owner of the copyright thereof (unless to the extent explicitly otherwise stated) and that I have not previously in its entirety or in part submitted it for obtaining any qualification.

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Date: March 2017

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## SUMMARY

The thesis presents a case-study of a knowledge management project undertaken in a large Australian insurance company. The project aimed to determine the existing gaps in the organisation's knowledge codification process. The thesis seeks to evaluate the approach adopted by the knowledge management initiative team and to review whether the target audience in the organisation embraced the initiative's vision and project outcome.

This is done by describing the requirements elicitation process, the progression of the project and its working methods, and the participants' and the targeted beneficiaries' perceptions of the initiative's outcome. The primary data were collected through participant observation during team meetings and face-to-face interviews with both participants and beneficiaries.

The data from the case study is then interpreted against the background of theoretical literature on knowledge codification. The findings attribute the codification gaps to organisational culture, a focus on project delivery over knowledge codification, and the complex relationship between the technology division and the business units it is supposed to serve. In addition the codification gaps are exacerbated by the large number of tools used, the focus on tools rather than processes, knowledge leakage, a lack of accountability and ownership leading to mistrust of the codified knowledge, and lack of metrics for knowledge use. Problems such as duplication, the use of numerous KM tools, the lack of standardisation, and challenges in searching for content were evident.

The thesis makes suggestions for improving the codification process by proposing a model for knowledge management projects of this nature that involves creating interest, gap analysis, idea generation, experimentation, implementation, responsibilities, ownership, and review.

## OPSOMMING

Die tesis bied 'n gevallestudie van 'n kennisbestuursprojek in 'n groot Australiese versekeringsmaatskappy. Die projek is daarop gemik om die bestaande leemtes in die organisasie se kennis-kodifiseringsproses te bepaal. Die tesis evalueer die benadering van die kennisbestuurspan en probeer vasstel of die teikengroep in die organisasie die inisiatief se visie en projekuitkomste aanvaar het.

Dit word gedoen deur 'n beskrywing van die proses waardeur vereistes bepaal is, die verloop van die projek en die span se werkswyses, en die persepsies van beide die deelnemers en die begunstigde teikengroep oor die inisiatief se uitkomste. Die primêre data is ingesamel deur middel van deelnemende waarneming tydens spanvergaderings en onderhoude met beide deelnemers en begunstigdes.

Die data van die gevallestudie word dan geïnterpreteer teen die agtergrond van teoretiese literatuur oor kennis-kodifisering. Die bevindinge skryf die kodifiseringsgapings toe aan die organisasiekultuur, 'n fokus op projek uitkomste eerder as kennis-kodifisering en die komplekse verhouding tussen die tegnologie-afdeling en die sake-eenhede wat dit veronderstel is om te dien. Daarbenewens is die kodifisering gapings vererger deur die groot aantal instrumente wat gebruik word, die fokus op tegnieke eerder as prosesse, kennis-lekkasies, 'n gebrek aan aanspreeklikheid en eienaarskap wat lei tot wantroue van die gekodifiseerde kennis, en 'n gebrek aan maatstawwe vir kennisgebruik. Probleme soos duplisering, die gebruik van talle tegnieke en sagteware, die gebrek aan standaardisering en probleme met die soek na inhoud was duidelik in die geval.

Die tesis maak voorstelle vir die verbetering van die kodifikasie proses deur 'n model vir kennisbestuursprojekte van hierdie aard voor te stel wat die skep van belangstelling, gapingsanalise, idees, eksperimentering, implementering, verantwoordelikhede, eienaarskap en hersiening behels.

## **ACKNOWLEDGEMENTS**

I would like to express my sincere gratitude to my supervisor, Christiaan Maasdorp, for devoting time to lead, encourage, and guide me through the research process.

My wife was instrumental with her incalculable support.

It would be unfair not to acknowledge the support of the people who took part in the interviews and the participants of the KM initiative. The research would not have been possible without their views and ideas.

I would like to thank my family, friends, and colleagues, who motivated me to complete my studies.

To my mother, thank you for the hard work you devoted towards my education and the sacrifices you made to ensure I had the best education possible. This opened up opportunities for me to enhance my studies at this level.

To my late dad, I will continue to make you proud.

I thank the Lord for giving me strength, good health, energy, wisdom, and courage to go through this rigorous, time-consuming, and challenging programme.

## **DEDICATION**

This study is dedicated to two special women: my mother, for motivating me to study from a young age; and my wife, for her unwavering support when I had to commit time and effort to get this research over the line.

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# 1 Introduction

There is growing talk, appreciation, and acceptance of knowledge management (hereafter referred to as “KM”) in organisations. In the context of a knowledge-intensive environment, Newell, Robertson, Scarbrough, and Swan (2009:231-41) propose the promotion of specific knowledge processes and the active fostering of an enabling context to achieve the overall strategic knowledge purpose. Knowledge-intensive settings require adherence to agreed-upon practices to ensure a common approach to solving problems or ways of working. With this in mind, there is a need for a well-structured codification process that highlights key learning points, reference material, and an integration of KM content into everyday working practices.

Part of this investigation involves a case study of a business technology division of a major Australian insurance company. The organisation’s senior management has identified KM as a strategic focus area to enhance business competitiveness and operational efficiency through proper utilisation of knowledge work and the avoidance of knowledge waste. A cross-functional team was set up in an effort to improve the codification process as an aspect of the business’ KM experience. One question that should be kept in mind is how an organisation can utilise codification to increase competitiveness and business value without compromising quality. The organisation in question has invested resources and effort into KM processes in their technology division, but there are gaps and the codification process is ongoing.

The study investigates how the organisation addresses these problems and examines the processes that ensued. It is the researcher’s belief that academic research is critical in industry. Thus, parallels were drawn between theory and practice, and the study considers whether the process would have been smoother had reference to theory been made. The findings are intended to add to the body of knowledge in the KM domain. The following question challenged the research: How does one ensure that knowledge stays relevant, and how does one guarantee that captured knowledge reaches its target audience?

The following section begins by providing the background to the research.

## **1.1 Research background**

As an employee in the organisation under study, I have witnessed the benefits derived from codification and the problems that can arise when different tools are used for collating knowledge. I have worked in investment banking, consultancy, research, training, and telecommunications. Here, I have observed challenges faced in KM codification such as duplication, obsolete material, a lack of confidence in the sources of knowledge, and a lack of collaborative effort or cultural shift to make the process work. I have also witnessed some benefits, such as adherence to agreed-upon practices, trust in the sources of knowledge, commitment to adding new knowledge for the benefit of the wider community, and driving innovation on the basis of readily accessible knowledge sources.

Muras and Hovell (2014:52) highlight the value and importance of intangible assets such as knowledge in relation to the company's value; though they do raise concerns about this intangible value walking out of the door at the end of each day. This observation can be argued to justify the need for a well-structured and efficient codification process.

The dominance of intangible assets in organisations makes a compelling case for incorporating KM into business improvement strategies (Muras and Hovell 2014:53). It can be argued that initiatives for the codification of KM should be encouraged to manage, track, and promote the creation of intangible assets. This codification is intended to increase the company's value, its ability to create a competitive edge, and its potential to remain competitive for the foreseeable future. This research builds on the existing literature based on the outcome of the targeted company's KM initiative. It is paramount to examine how the KM initiative contributes to the existing literature and to review the process once it has been completed to determine whether it realises the intended value.

## **1.2 Problem statement**

It can be argued that the tendency to focus on what brings in income in the short term can lead to complacency and the neglect of important KM aspects. In the targeted organisation, it can be assumed that codification efforts are restricted by the nature of the work involved, which places emphasis on meeting deadlines and delivering

projects. Superiors or more experienced colleagues often discourage those who challenge methodologies by requiring that things be done “our way”.

The division in question is a knowledge-intensive environment that puts emphasis on project delivery. There is no structured KM, leading to waste and lost opportunities to utilise existing knowledge. Existing knowledge is not effectively utilised and the process is not effectively managed due to the lack of confidence or trust in the state of knowledge repositories. The presence of numerous KM tools leads to confusion, duplication, and the usage of preferred tools even when they should not be used for some purposes. Management has approved the establishment of a team with a mandate to review and improve the existing codification process. This team had to identify areas to focus on and make decisions regarding the approach. The expected outcome was an improvement of the KM codification process and guidelines for the way forward to ensure that the business would gain value by exploiting the existing knowledge. The work carried out by this team constitutes the case study providing input to this research. The chosen KM team was initially given six weeks to work on this initiative. Three team members were permanent and available every week, and another three or four members were engaged every other week to manage the limitation of the business unit not being able to commit more than three members from other projects in flight.

The questions that arise based on the problem statement presented for this organisation are as follows. Firstly, what is the importance of codification in improving the structure and management of existing knowledge? And secondly, how can this be used to ensure a sustainable competitive advantage?

Given the initial team discussions, the research statement is:

“There is no trust in existing knowledge due to the unclear structure of the codification process.”

### **1.3 Definitions**

Knowledge management (KM): Newell et al. (2009:25) define KM as explicit strategies, tools, and practices applied by management that seek to make knowledge a resource for the organisation.

Birasnav, Goel, and Rastogi (2012:8) present the following definitions:

- KM is an integrated, systematic approach for identifying, acquiring, transforming, developing, disseminating, using, sharing, and preserving knowledge relevant to achieving specified objectives.
- KM is a process of creating, structuring, and leveraging an organisation's collective know-how, experience, and wisdom to improve its business performance. The knowledge sources encompass databases, documents, policies, and procedures, as well as the un-captured tacit expertise and experience stored in individual workers' heads.
- KM refers to all systematic activities for the creation and sharing of knowledge, so that knowledge can be used for the success of the organisation.

Codification: Dalkir (2005:26) defines "codification" as valuable knowledge translated into an explicit form, often referred to as "codification of knowledge", in order to facilitate more widespread dissemination. Dalkir (2005:66) references the Boisot KM model, which describes codification as the creation of content categories. The fewer the number of categories, the more abstract the codification scheme. It is assumed that well-codified abstract content is much easier to understand and apply than highly contextual content.

Bergeron (2003:48) defines "collaboration" as a formal task- or project-oriented group designed to facilitate information sharing. Formal collaboration typically involves the participation of employees who would not normally work together in the course of their regular work.

#### **1.4 Research objectives**

The research objectives were drawn from the problem statement and the KM team's mandate to drive the improvement of the codification process over a given time period. There was no pre-defined approach to tackling the problem, and the expected outcome was the adoption of the recommended process by the wider audience in the business unit. From this, the following objectives were defined:

What were the existing gaps in the pre-existing codification process?

What approach did the KM initiative team adopt?

Was the outcome of the KM initiative embraced by the target audience?

The first objective examined the gaps in the current codification process in the business technology division on which the KM initiative team focused. This was done to establish the magnitude of the problems and to determine how these could be addressed. It also aimed to provide insight into targeted codification aspects within the allocated time frame. It was however known upfront that it would not be possible to address all existing gaps unless more time and resources were allocated. The assessment of the gaps benefited the research by looking at how the team coordinated and collaborated in an effort to address them. The first objective focused primarily on the elicitation of requirements as a means of identifying the existing gaps.

The second objective was an extension of the first objective. It considered the approach adopted by the KM team to address the gaps identified. This encompassed building a plan of action based on the elicitations from the first objective; carrying out the work; and evaluating the outcome, taking into account reviews from the participants.

This fed into the third objective, which examined the initiative's intended beneficiaries. The question was whether they saw value in the work carried out and whether they had suggestions for different approaches for similar future initiatives. What the participants thought about the outcome was compared to the perceptions of the target audience. This highlighted the failures or successes of the approach, which could be adopted to resolve such issues in future initiatives, and may benefit organisations facing a similar challenge.

For each of the objectives, reference was made to secondary research detailed in the literature review section. The research did not focus on the entire organisation, but on the business technology division that delivers the software solutions for the insurance business. The objectives targeted the work of the KM team. The researcher drew data from the work of the team in tackling the prevalent challenges.

## **1.5 Research question**

How can the codification process be improved so that people can trust existing knowledge?



## **1.6 Significance of the study**

The study has both practical and theoretical significance. Practically, it contributes towards codification strategies or approaches. It can be a reference for knowledge-intensive firms who thrive on high levels of competitiveness and innovation. Theoretically, it contributes to the KM knowledge base. Much codification literature is on adoption, so this study adds to the literature on how to review, improve, or streamline the codification process. It provides input as to what should be avoided in similar cases. It is worth noting that the research, being a case study, only explores some codification aspects, given that the case study's KM initiative was short-lived.

## **1.7 Research limitations**

The research was purely qualitative. The findings cannot be explained with a great degree of certainty, as is the case with quantitative research. The study's qualitative nature can be argued to make it more difficult to determine the extent of the researcher's influence. Despite the limitations, it should be noted that the guidelines described in the research methodology section were followed to ensure the research's reliability and validity.

The research was conducted in one particular insurance company and used a small sample, mainly because of time limitations and the need to work closely with the KM initiative team. Ideally, the study would have included participants from other insurance companies to incorporate a broader perspective of the industry's state of knowledge codification. However, this presents an opportunity for further research in this area, involving either other insurance firms or similar businesses with highly skilled employees. The research only focused on codification, as the research topic was directly related to management's directive to address the problem areas in the existing codification approach.

## **1.8 Overview of the study**

The thesis consists of five chapters. The first chapter sets the tone of the research by introducing the study topic, the research background, the problem statement, the study

objectives, and, most importantly, the significance of the research topic. Useful research has been conducted in areas related to the study topic. For this reason, the second chapter reviews this secondary research and explores the existing literature aligned to the research objectives. Amongst other matters, the literature examines strategies for codification, approaches to projects, existing frameworks, leadership for team effectiveness, and research in the context of a knowledge-intensive organisation. Chapter three provides a detailed account of the research methodology, covering areas such as research design, analysis, data collection, and the study's limitations. In essence, this gives an appreciation of how the research process was conducted and why certain methods were applicable to this research. Chapter four presents and analyses the research findings, making reference to what was discussed in chapter two. The final chapter brings the research to a close with research conclusions and recommendations from the research findings.

The recommendations are perceived as being beneficial to the organisation under study and to other organisations facing similar quandaries. The following chapter is a review of the literature that is pertinent to this research.

## **2 Literature review**

### **2.1 Introduction**

This chapter contextualises the research by discussing the rich academic knowledge base. The literature review acknowledges the KM concepts of ‘knowledge exploitation’ and ‘knowledge exploration’, as well as the two KM approaches of personalisation and codification. Because the research topic is codification, this subject is emphasised in the literature review. Amongst the themes discussed are codification strategies, codification challenges, KM frameworks, and KM in the context of a knowledge-intensive organisation. Although the research is on codification, the literature review acknowledges that codification cannot be done in isolation from other organisational goals, but must be supported by other strategies such as personalisation. The review also reflects on relationships between concepts such as ‘knowledge exploitation’ and ‘codification’, as well as ‘exploration’ and ‘personalisation’. The following sub-sections review previous literature relevant to the study topic, starting with the two broad concepts of ‘codification’ and ‘personalisation’.

### **2.2 Managing knowledge: A codification perspective**

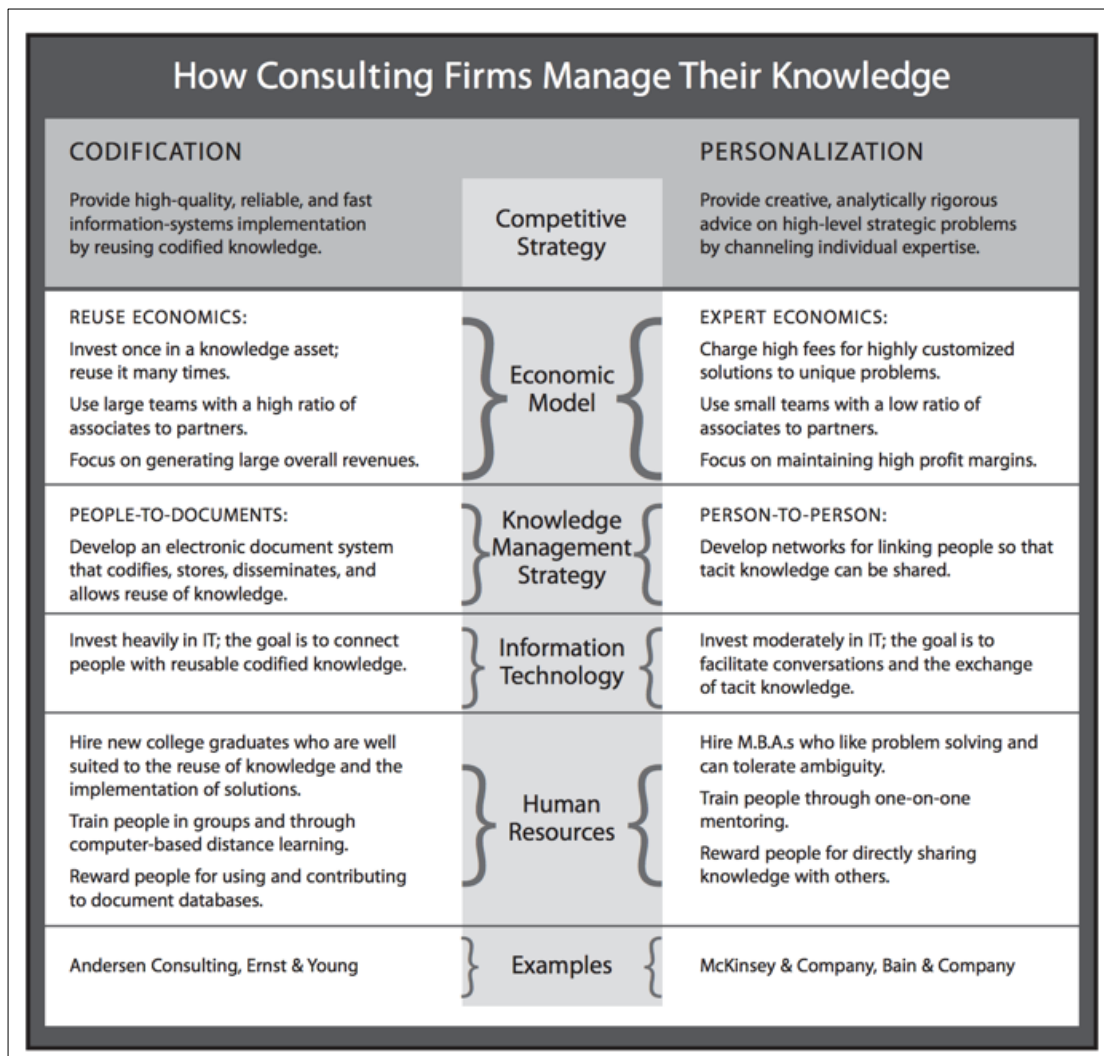
Knowledge management is broad and can be considered from different angles. The focus of this research is codification, in line with the problem statement and the research objectives. This section looks at codification, personalisation, and collaboration; though more emphasis is placed on codification.

Hansen, Nohria, and Tierney (1999:2) highlight two broad strategies in large consulting companies. These are codification and personalisation. The essence of codification is the “people-to-documents” approach, where knowledge is extracted from the person who developed it, made independent from that person, and reused for various purposes. On the other hand, personalisation involves “person-to-person” contact with knowledge that is closely tied to the person who developed it and shared directly. It can be assumed that a combination of codification and personalisation creates a competitive strategy and supports the claim in section 1.1 that knowledge contributes significantly to a company’s value. It can thus be argued that there is a

greater chance of knowledge being accessed if codification is done properly and is well-structured. Regarding the two strategies of personalisation and codification, Hansen et al. (1999:7-10) posit that companies using knowledge effectively pursue one strategy predominantly and have the second support the first in an 80/20 split. They state further that KM benefits are greatest when co-ordinated with human resources, information technology (IT), and competitive strategy.

Figure 2.1 gives an idea of the scale of knowledge usage and re-use brought about by knowledge codification. It can be assumed that the codification approach requires investment in IT in order to connect people and facilitate the reusability of knowledge. Personalisation seems to encourage more collaboration and teamwork, as well as encouraging the hiring of highly skilled personnel. In the context of this study, IT had been invested in and the codification approach was in use, but, as avowed in the problem statement, there were gaps and pain points in the process.

Newell et al. (2009:230-233) adopt a broader perspective, where the strategic knowledge purpose determines which knowledge process(es) to pursue. Codification is one option, and is pursued when the strategic objective is high exploitation and low exploration. Going back to Hansen et al. (1999:4), “a company’s knowledge management strategy should reflect its competitive strategy: how it creates value for customers, how that value supports an economic model, and how the company’s people deliver on the value and the economics”.



**Figure 2.1: How consulting firms manage knowledge**

Source: Hansen et al. (1999:, 1-2)

The competitive strategy mentioned above is linked to the knowledge residing in an organisation and how it adds value to customers, because only then can either personalisation or codification be chosen as a strategy. It is clear from Figure 2.1 that a company cannot pursue one of the two stated strategies as a matter of preference, but must carefully consider what the organisation hopes to achieve with the existing knowledge and how it will contribute towards the organisation’s competitiveness. The deciding factor seems to be whether the organisation thrives on reusing or creating knowledge.

The aspect of investing in IT in order to connect people and facilitate codified knowledge in Figure 2.1 can be assumed to indicate the need for collaborative effort on the part of those contributing and consuming the knowledge. Collaboration, while relevant to codification, has benefits and drawbacks, as shown in Table 2.1 below.

This indicates the need to closely monitor what could go wrong when working in collaborative teams.

<b>Advantages</b>	<b>Disadvantages</b>
<b>Potential for synergistic solution that integrates knowledge in new ways</b>	Knowledge boundaries can restrict knowledge sharing
<b>Increased pool of knowledge to draw upon</b>	Conformity can stifle knowledge sharing
<b>Increased acceptance of and commitment to selected decision</b>	Groupthink can override overall judgement
<b>Wider range of perspectives taken into account</b>	Group polarisation can lead to overly risky decisions
<b>Novice team members can learn from more experienced team members</b>	Diffusion of responsibility leads individuals to avoid feeling responsible
<b>Greater understanding of rationale behind the selected decision</b>	Satisficing so that the decision is acceptable rather than optimal
<b>Learning opportunities are enhanced by learning from colleagues in different departments</b>	Peer surveillance exerts normalising control that stifles creativity and innovation

**Table 2.1: Advantages and disadvantages of collaborative work**

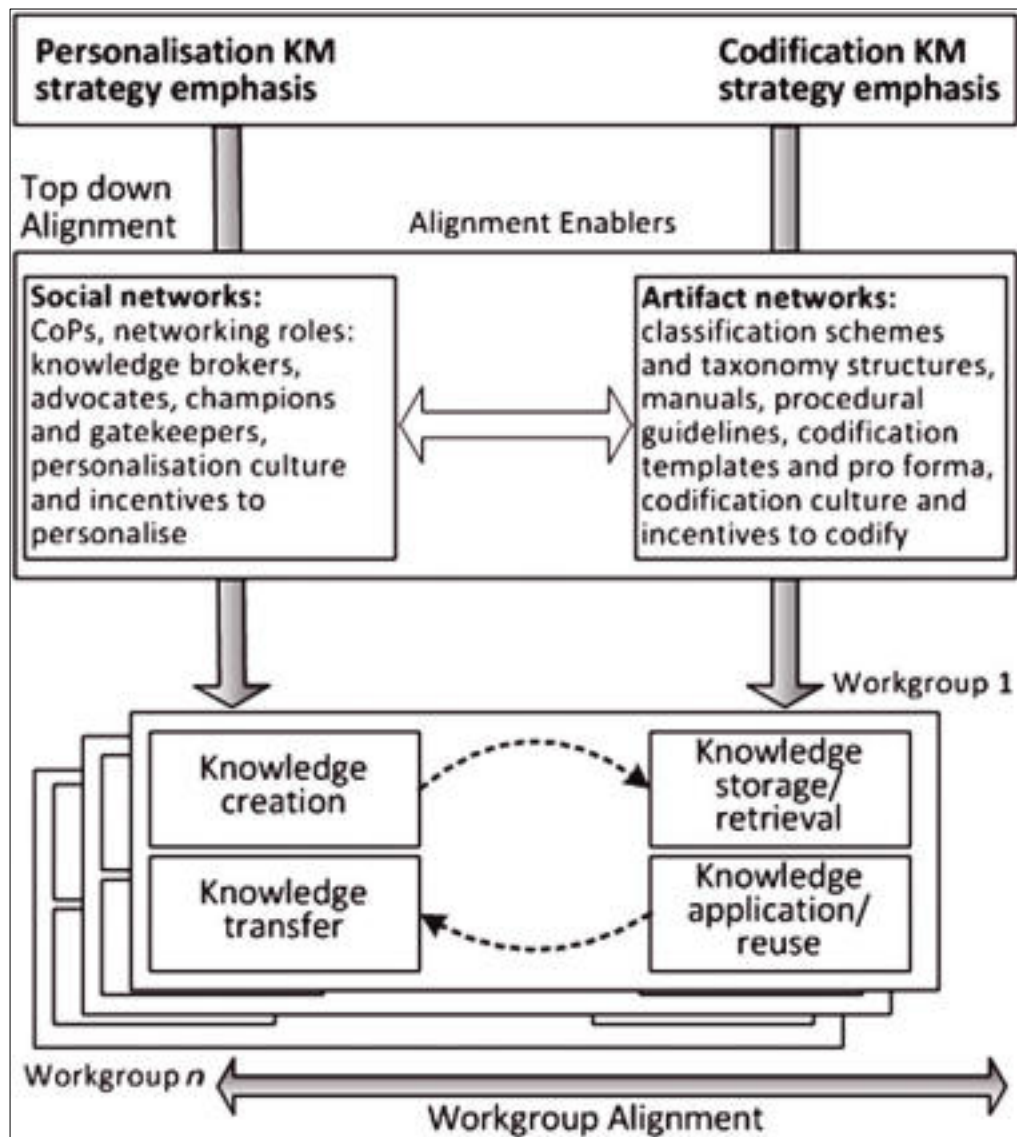
Source: Newell et al. (2009:92)

Newell et.al (2009:79-88) describe knowledge creation as typically being the outcome of bringing together individuals from different professional and disciplinary backgrounds in collaborative efforts of some kind. As highlighted in Table 2.1, collaboration can be problematic if individuals conform to an authority figure, because they may then refrain from questioning decisions or from sharing their own knowledge to avoid conflict with their leader. It can thus be assumed that a positive outcome from a collaborative team would be when each member does not conform to a senior figure, but has a say that is valued and considered regardless of their work title or their position in the organisational hierarchy. Team members should also be given responsibility for their work contribution.

The next section looks at KM approaches from a codification standpoint, thereby shedding light on the subject that is in essence the fulcrum of this research.

### **2.3 KM approaches: The codification perspective**

Bosua and Venkitachalam (2013:332) discuss the lack of clarity regarding alignment enablers that often prevails when organisations are planning to focus their efforts on KM. Their framework (cf. Figure 2.2) illustrates the alignment between KM strategy and workgroup KM processes through alignment enablers, the link between alignment enablers and KM processes, and, lastly, alignment between workgroups. Organisations can thus choose personalisation or codification or both. The approach chosen determines the key workgroup alignment enabler category; as well as one or more alignment enablers within that category, which align the chosen KM strategy emphasis with workgroup KM processes. The context of this framework will be limited to the codification aspect. According to the framework, codification enablers focus on aligning a codification KM strategy emphasis with workgroup KM processes. More specifically, codification alignment and the accompanying enablers seek to strengthen knowledge codification/storage and reuse/application processes in workgroups. Some examples of codification enablers are codification templates, knowledge classification schemes, codification culture, and semantic tagging (Bosua and Venkitachalam 2013:340-341).



**Figure 2.2: The Strategic-Workgroup Alignment Framework**

Source: Bosua and Venkitachalam (2013:332)

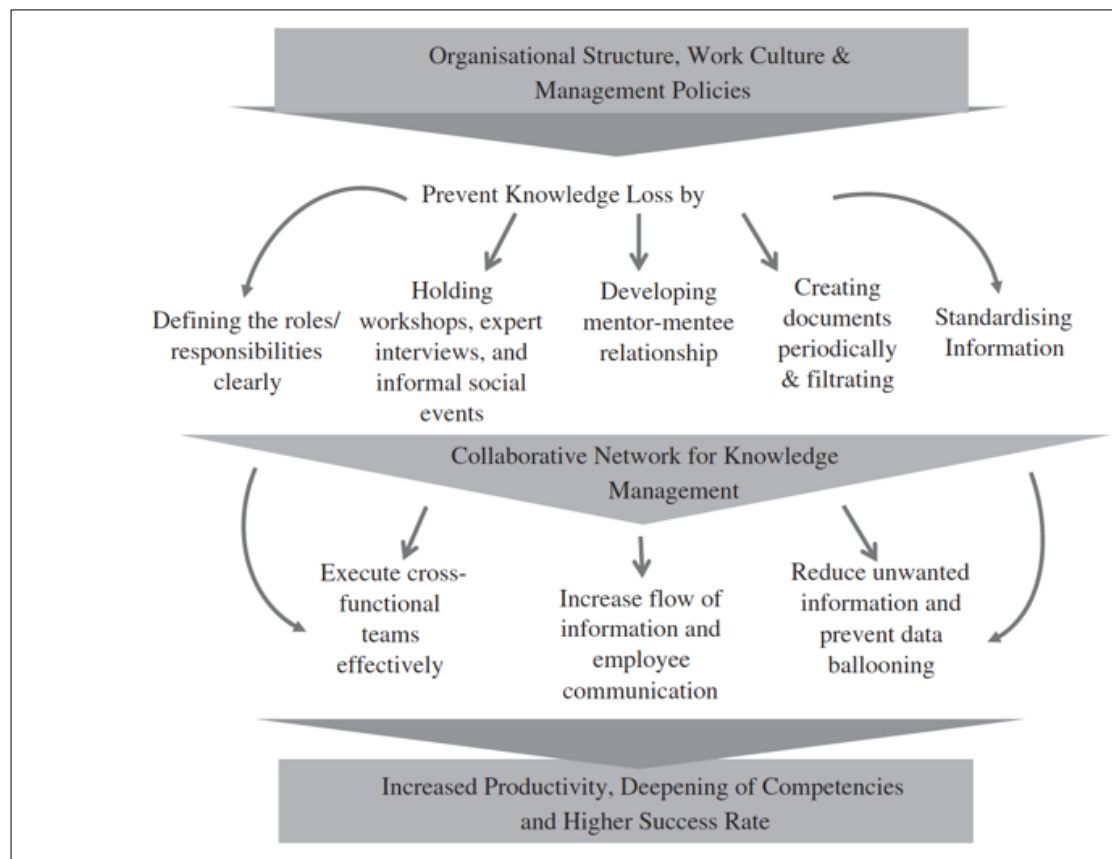
Managing knowledge is a process that requires careful consideration of the link between KM strategy and processes in organisations. This is a position taken by Bosua and Venkitachalam (2013:343). It affirms the emphasis of Newell et al.'s (2009:230-232) emphasis on aligning strategy to KM processes. The limitation of the Strategic-Workgroup Alignment Framework is that it does not provide a measure for assessment of the framework's effectiveness. It does however provide a reference for comparison when analysing the findings of this research.

The framework shows knowledge storage/retrieval and reuse as key outcomes to which codification contributes. The personalisation and codification outcomes contribute to the complete cycle of knowledge creation, transfer, storage, and



application. It can be argued that the idea behind the workgroup alignment is to avoid knowledge loss. This is supported by codification, which contributes immensely towards exploiting that knowledge. What is apparent is that in the larger context of KM, codification cannot be carried out in isolation.

Following up on the ideas in Figure 2.2, Figure 2.3 relates to minimising knowledge loss in new product development. It indicates that the ability to minimise this knowledge loss is to a large extent driven by an organisation's ability to utilise KM skills.



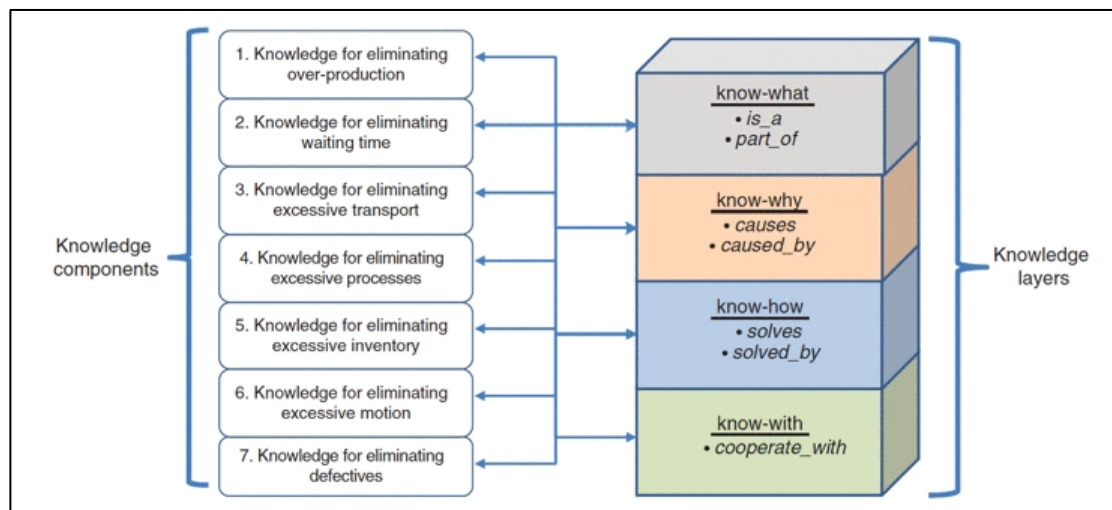
**Figure 2.3: Framework for minimising knowledge loss**

Source: Shankar, Mittal, Rabinowitz, Baveja, and Acharia (2013:2058)

It is worth noting that this framework focuses mainly on knowledge creation tied to innovation. Knowledge creation is one of four aspects of knowledge processes discussed earlier. Shankar, Mittal, Rabinowitz, Baveja, and Acharia (2013:2050) cite lack of communication, lack of proper planning, and failure to identify vital information for codification as sources of knowledge loss. They highlight knowledge losses at the knowledge processing stage owing to the organisation's work culture,

information rework, the transfer or departure of a knowledgeable worker, and the organisation's maturity level. Having identified the non-conformity of systems and redundancy in data as common causes of significant losses, they recommend using consistent formats and electronic data entry for transferring data effectively (Shankar et al. 2013:2055). Their framework highlights the importance of codification in ensuring that knowledge is contained. It can be argued that the framework promotes the need for effective codification processes such as continuously creating; filtering and communication to facilitate cross-skilling; the eradication of unwanted information; and promoting a self-managed process. Shankar et al. (2013:2058) maintain that the collaborative network feeds into the base of the framework, enabling increased productivity, the deepening of competencies, and improved success rates. In addition, they posit that as competency increases over time, imitation by competitors becomes difficult; thus implying that the organisation benefits from a sustained competitive advantage.

The reduction of unwanted information and prevention of data ballooning relates to the waste elimination knowledge model described by Liu, Leat, Moizer, Megicks, and Kasturiratne (2013:2127). This model is shown below.



**Figure 2.4: Waste elimination knowledge model**

Source: Liu et al. (2013:2127)

The model above was developed in the context of supply chain management, but it is relevant to the targeted study area and the frameworks considered thus far. It consists of four knowledge layers, which detect and eliminate the possible waste areas. These are referred to as knowledge components. The 'know-what' looks at problems or

solutions. These are stored in a knowledge base, making it possible to fire off rules or programmes. The ‘know-how’ uses tacit knowledge embodied in steps or procedures regarding how to reach a solution to a given problem. The ‘know-how’ justifies the decision from the ‘know-what’ and ‘know-why’, but may require domain expertise to improve on speed, accuracy, consistency, and the ability to justify certain decisions. The ‘know-with’ looks at the decision network to understand multi-directional impacts while resolving conflicting interests and decision preferences and improving decision-making (Liu et al. 2013:2126-2127).

What seems to be consistent in the secondary research discussed in this section is the importance of understanding the nature of the existing knowledge in order to understand its relevance, when to eliminate waste, and ways of continuously improving the process. The KM challenges have to be mitigated to ensure success, and codification is no exception.

As much as the approaches discussed lean towards codification, the KM initiative discussed in this research has a set time period, because the team consists of people who have been temporarily pulled out from various teams. It is therefore vital to consider the approaches adopted in a project setup and which elements drive success in such a context.

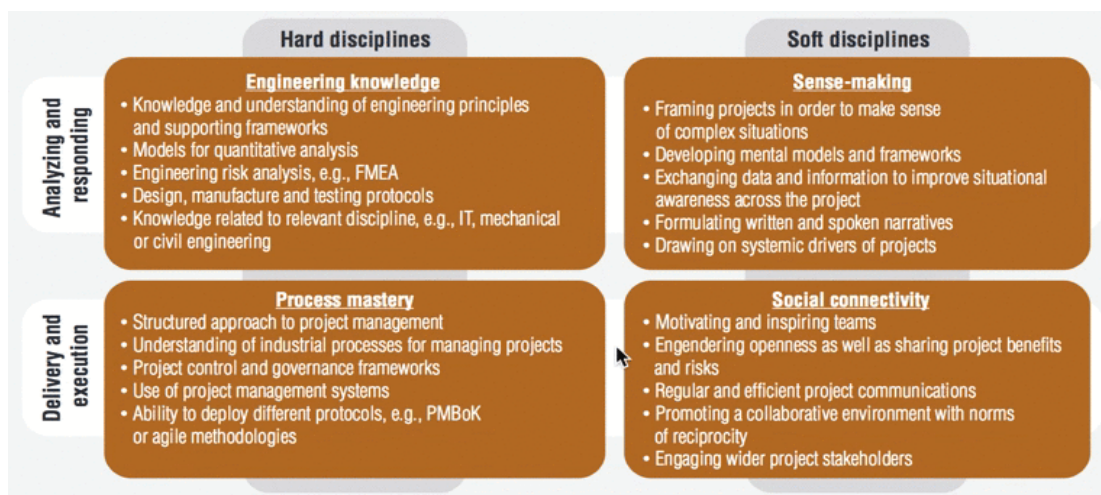
## **2.4 Approach to projects**

For a task where a team is compiled to work on a project, an approach is taken to ensure delivery. It can be argued that success is largely dependent on the approach adopted, as this impacts the progress and quality of the outcome. This section considers various approaches in a project setup. This has relevance to the study’s second objective, which looks at the approach that the KM initiative team adopted.

According to Augustine, Payne, Sencindiver, and Woodcock (2005:86), projects that employ methodologies are complex adaptive systems aimed at achieving success on schedule and within budget while satisfying customers. These authors discuss allowing team members to join and leave the team, as this allows dynamic team composition and supports adaptability to changing external conditions. Augustine et al. (2005:86) reference the agile manifesto’s core set of values and recognise these as useful in realising a vision. They state their understanding in terms of simple rules: free and open access to information, a light-touch management style, and adaptive

leadership. The simple rules are accepted and followed by the participants, with the flexibility of changing or adding new practices where necessary. Throughout the project, the manager identifies practices that are not being followed and seeks to understand the reasons for non-compliance. The team's creativity should not be affected. Augustine et al. (2005:86-87) encourage free and open access to information about plans, progress, and objectives. Accordingly, they state further that for an agile team to adapt, information must be free-flowing. They also mention the light-touch management style, in which managers realise that increased control does not yield increased order (Augustine et al. 2005:87). The argument is that skilled professionals do not adapt to micromanagement, and tools and techniques quickly reach their limits when not used appropriately. Augustine et al. (2005: 87) highlight an interesting perspective on adaptive leadership, where systems thinking is used as a means to understand a project's internal forces.

Philbin and Kennedy (2016:41) advocate a project management toolset consisting of four pillars or capabilities which underpin a project manager's ability to deliver goods. This toolset was developed in the context of engineering projects, but some learning points may still be extracted for present purposes, considering that it is meant for highly skilled individuals. The figure below is a schematic view of the proposed four professional capabilities.



**Figure 2.5: Project management toolset**

Source: Philbin and Kennedy (2016:, 41)

Philbin and Kennedy (2016:40) explain 'engineering knowledge' as the core technical knowledge related to a particular discipline. This falls into the 'hard disciplines' quadrant within the 'analysing and responding' layer. The leader is proficient enough

to understand the underlying principles, but is not necessarily a specialist. ‘Process mastery’ is explained as a hard discipline for delivery and execution, involving proficiency in project management processes such as those described in the Project Management Institute’s Project Management Body of Knowledge (PMBok) or in the use of agile methodologies. The ‘analysing and responding’ layer also has ‘sense-making’ as a soft discipline. This relates to the ability to derive mental models which are used to provide a compelling narrative of situations that are difficult to understand. This skill can be augmented by the development of frameworks (such as graphical or schematic illustrations) or verbal descriptions that allow confusing matters to be interpreted and explained to stakeholders. It also compels one to see the wider system of interest by taking a holistic perspective. The last discipline is ‘social connectivity’; a soft discipline for delivery and execution. Social connectivity is about the manager’s ability to motivate and inspire people. This is facilitated by an open and collaborative environment that allows the exchange of data and information across the project with stakeholders. This resonates with Augustine et al.’s (2005:86) learning points about free and open access to information.

Derby and Zwikael (2012:12) discuss the secrets of success in projects. The one point that stands out and has relevance to this study is the following quote:

There is always the classic division of doing things right and doing the right things. The true success of a project depends on whether the main objectives are met, which can only occur if the right objectives and deliverables were specified.

Furthermore, Derby and Zwikael (2012:22) state the importance of clearly defining objectives in a measurable way, as this builds metrics into the project definition. They give the following example: “Widget X is designed, tested, and built by date Y”.

As far as scoping is concerned, Derby and Zwikael (2012:21) posit the need for input from the people affected by the project or those who will be using whatever is being produced. The aim of this is to extract information from these individuals and elaborate on the context of the project to make sure it is scoped correctly.

As much as the focus of this research is on codification improvement, this process is being carried out by a team, which will adopt an approach or strategy to get the work done. The next section provides some insights into project strategy.

## 2.5 Project strategy

Silbiger (2007:324) states that strategy is a company's plan to achieve its goals. Silbiger (2007:324-327) refers to strategy as actions that a company plans in response to or in anticipation of changes in its external environment, its customers, and its competitors. Most importantly is the fact that it is not a separate process but is connected to other elements that influence an organisation's ability to change. From the previous discussions, one can argue that knowledge plays a part in influencing the organisation's ability to change.

From a project perspective, Patanakul and Shenhar (2012:6) posit that "strategy is about winning", and a project's outcome must have competitive advantage. Furthermore, Patanakul and Shenhar (2012:7) argue that a project strategy must have 'perspective' (the background, reason, and general idea), a 'position' (what do we want to achieve and how), and a 'plan' (guidelines for what is needed to achieve the outcomes). The perspective, position, and plan are elaborated upon below with reference to Patanakul and Shenhar (2012:6-7).

### **Perspective**

Perspective is about the reason for initiating the project and defines the concept that will initiate the project's experience. It includes three elements, which are business background, business objective, and strategic concept. The business background is the business case for the project. The business objective is expressed as the long-term business status that will be achieved when the project is completed. The strategic concept describes how the business idea is aligned with the company's business strategy.

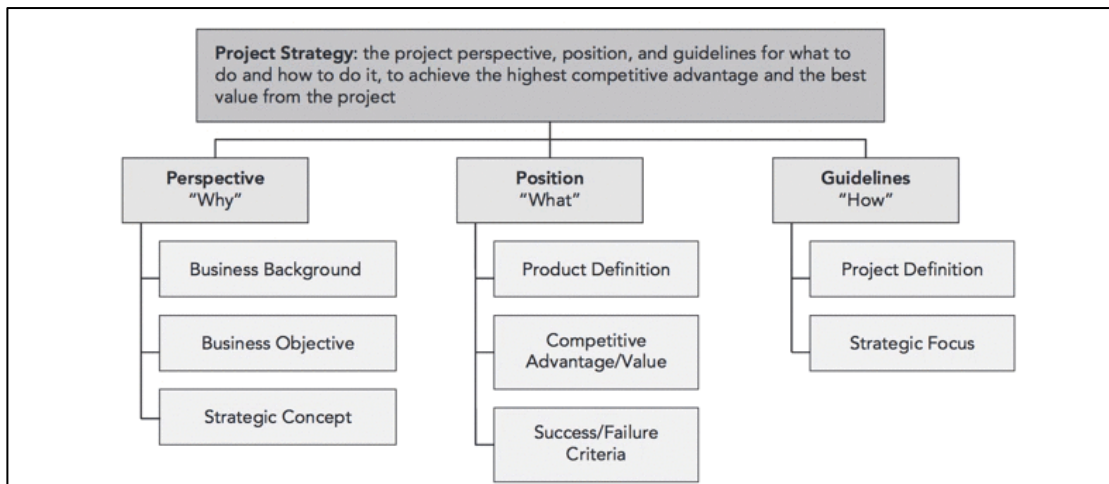
### **Position**

This is achieved after the project is completed and is the position that the company will attain in the business environment. It also considers the competitive advantage or value created by the project.

## Plan

The plan stipulates the ‘how’ and the action required to attain the desired outcome. Emphasis is placed on continuous team learning. The guidelines include the product definition and strategic focus.

Figure 2.6 summarises the concepts entailed by the ‘3 P’s’ (perspective, position, and plan (Guidelines)).



**Figure 2.6: Project strategy and its components**

[Source: Patanakul and Shenhar (2012: 8)]

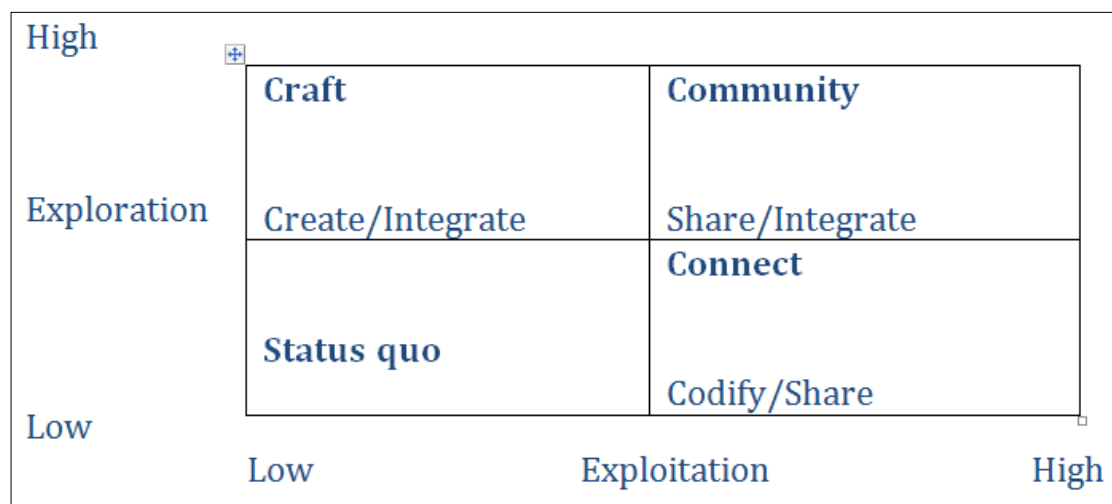
What is unclear is the kind of environment best suited to this approach. Would it thrive in a knowledge-intensive environment? Does it suit a strategic focus on knowledge exploitation or exploration or both? It is also unclear regarding the kind of leadership required to deliver the approach and the level of control that a manager should have. Augustine et al. (2005:87) state that highly skilled individuals do not produce the best results when micromanaged. Could this approach be self-managed in a knowledge-intensive environment? In hindsight, it does highlight key elements in project strategy and asks the right questions to ensure that the objectives are met. It can be assumed that this confirms the importance of the free and open access to information about plans, progress, and objectives promoted by Augustine et al. (2005:86-87).

The next section provides a perspective on codification challenges, limited to a small selection from the plethora of research in this area.



## 2.6 Codification challenges

The prevalence of tacit knowledge in knowledge-intensive environments makes it difficult to enunciate, transfer or share knowledge. This research examines codification aligned to KM processes. Newell et al. (2009:234-240) posit that the process adopted depends on whether emphasis is placed on exploring or exploiting knowledge, as shown in Figure 2.7. According to Bierly, Damanpour, and Santoro (2009:484), “the essence of exploration is experimentation with new ideas; it is associated with divergent thinking and flexibility. The essence of exploitation is the refinement of existing ideas; it is associated with convergent thinking and focus”.



**Figure 2.7: Purposes and processes for managing knowledge**

Source: Newell et al. (2009: 231)

The above figure can be a strategic guide identifying what should be focused on in a given environment. For example, a consultancy firm will most likely target the exploration of knowledge in order to build requisite expertise and would therefore be in the ‘craft’ quadrant. On the other hand, a government department processing visa applications would be in a low exploration and exploitation quadrant (‘status quo’). Figure 2.7 confirms what was highlighted in Figure 2.1 about personalisation and codification. It can be argued that exploration relates to personalisation, whereas exploitation relates to codification. Mention was made of the 80/20 split with regards to personalisation and codification strategies; the greater chunk going to the preferred strategy of the two. The same division can exist in relation to knowledge exploitation



and exploration: not necessarily an 80/20 split, but a balance between the two with more emphasis on the direction of the organisation and depending on which quadrant in Figure 2.7 suits the KM direction.

What seems to be of great importance is Newell et al.'s (2009:230-243) account of the relationship between knowledge purposes, processes, and an enabling context. It is paramount to review this aspect of the literature, as it takes into account the broader approach that could be pursued when introducing, reviewing, and addressing problems or improving a KM process such as codification.

The approach to improving codification in the case study will be reviewed in relation to the existing literature. This will indicate whether knowledge-intensive organisations are taking any cues from the academic literature in their approach to KM.

The question of how the codification process is being reviewed or improved in a knowledge-intensive organisation will be revisited in the recommendations based on the outcome of this research. Bosua and Venkitachalam (2013:336) argue that problems in KM manifest as inadequate knowledge storage and retrieval mechanisms, knowledge duplication through “reinvention of the wheel”, poor knowledge capture and transfer practices, and unsuccessful attempts to integrate distributed knowledge sources in the organisation.

There is limited literature that focuses specifically on the problem at hand, where various tools are already used for codification; but there is a need to review and improve the process. According to Bettiol, Di Maria, and Grandinetti (2012:552), codification suffers from many disadvantages connected to the difficulties of applying the same codified knowledge to a wide variety of situations. In the same context, Bettiol et al. (2012:552) postulate that when the when the level of stickiness is high, firms can find alternative solutions to transfer knowledge; reverting to the strategy of socialisation or personalisation. It can be argued that “stickiness” in this context refers to the coordination of organisational functions, similar to what was stated in section 2.2 regarding addressing KM in conjunction with other functions.

Personalisation has been raised as a strategy that might impede efforts towards codification. This is discussed in detail in the following section.

## **2.7 The personalisation strategy**

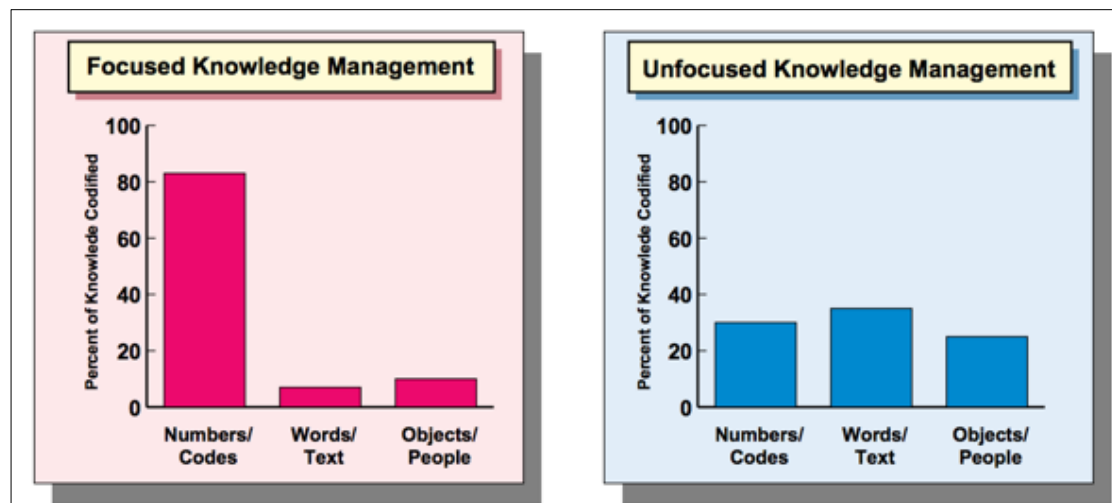
Newell et al. (2009:134) define “personalisation” as knowledge that is closely tied to the person who developed it and is shared mainly through direct person-to-person contact. It is said to require an employee who is able to creatively develop and apply knowledge to unique business problems. In contrast, they posit that “codification” refers to knowledge that is carefully codified and stored in databases where it is accessible and used readily. It demands well-trained people who are able to exploit databases and communications systems. Schulz and Jobe (2001:7) base their analysis on focused and unfocused knowledge, while highlighting the considerable costs associated with codification when expert systems are produced or knowledge is encoded in new procedures or processes. They further that the costs are impossible to recover when knowledge changes, needs updating, or becomes obsolete.

Kumar and Ganesh (2011:119) posit that the primary concern for the personalisation strategy is that the knowledge is considered as being closely tied to its owners. However, conditions can be created to ensure knowledge dissemination between people. As much as personalisation is associated with creativity and innovation, Kumar and Ganesh (2011:120) raise concerns about the knowledge producer’s possible reluctance to share knowledge and the untimely knowledge loss when an employee leaves the organisation. It can be argued that there has to be an enabling context within the organisation to ensure minimal knowledge loss when the personalisation strategy is pursued, especially in cases where people leave the organisation for other opportunities. There has been mention thus far of the importance of finding the right balance between personalisation and codification. The following section considers the codification strategy.

## **2.8 The codification strategy**

According to Schulz and Jobe (2001:5-6), the adoption of the codification strategy can derive competitive advantage from pursuing multiple and non-bureaucratic forms of codification such as intranets, shared databases, and expert systems. There is increasing demand for knowledge between geographically dispersed organisational subunits. Accordingly, the authors state that the strategic response to this is to encode

large portions of organisational knowledge in multiple forms of codification. The codification strategy can also be considered in conjunction with focused and unfocused KM strategies.



**Figure 2.8: Focused and unfocused KM strategies**

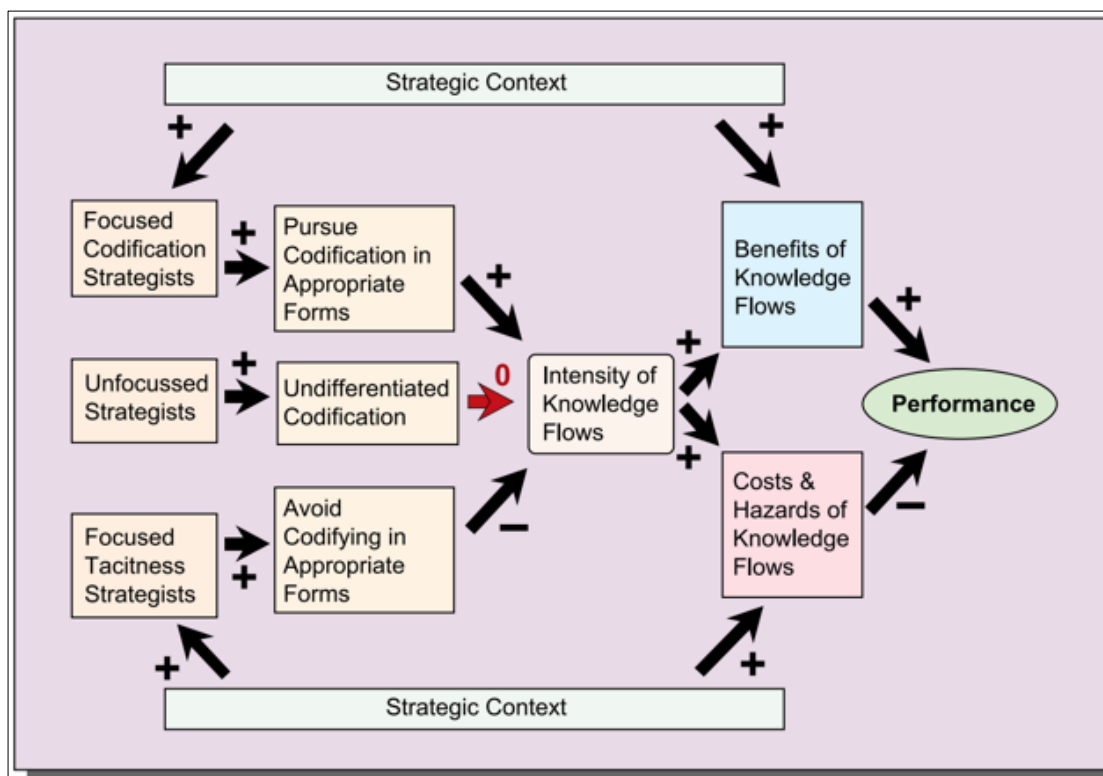
Source: Schultz and Jobe (2001:9)

Figure 2.8 shows the difference between focused and unfocused knowledge. Unfocused KM strategies regulate knowledge flows by controlling the overall level of codification, but lack decisiveness and the conceptual apparatus to distinguish between different forms of codification. Focused KM strategies attempt to regulate knowledge flows by controlling the degree to which knowledge is encoded in forms that, which match the information intensity and ambiguity of the knowledge.

In conjunction with the unfocused strategy, the codification strategy is used to increase the absolute level of codification across all dimensions of codification and organisational knowledge. As for the focussed strategy, the codification strategy aims to increase the level of codification on those dimensions of codification which transfer knowledge faster and more accurately.

In the above figure, Schulz and Jobe (2001:21-22) indicate the strategic context that determines whether flows of a given form of knowledge are beneficial or hazardous to a firm. Figure 2.9 explains the context in more detail reflecting that focussed codification strategies pursue codification in forms that match the information intensity and ambiguity of the knowledge, thereby increasing the intensity of beneficial knowledge flows and performance. Focused tacitness strategies avoid codification in such forms in order to reduce detrimental knowledge flows, thereby

increasing performance. On the other hand, unfocussed strategies lack focus on effective knowledge forms and are thus less effective in controlling the intensity of knowledge forms. As a result they do not promote performance advantages as denoted by the zero (0) on top of the arrow extending from undifferentiated codification in Figure 2.9.



**Figure 2.9: Causal structure of the Nested Contingency Model**

Source: Schulz and Jobe (2001:21)

The premise of the causal structure as stated by Schulz and Jobe (2001:21) is that strategic context determines whether a given form of knowledge is beneficial or hazardous for a given firm. Depending on the strategic context, a focussed or unfocussed strategy is adopted for a given form of knowledge.

In section 2.2, there was mention of one of codification or personalisation strategies being predominant and the other playing a supportive role to a smaller extent (80/20). The next section digs further into the balance between codification and personalisation, looking also at the cost benefit analysis of each of them.

## 2.9 The balance between codification and personalisation

Kumar and Ganesh (2011:130) posit the need for a balance between personalisation and codification. A firm may begin with either a predominantly codification or personalisation strategy and later evolve to a stage where a balance between the two is adopted.

Liu, Chai, and Nebus (2013:755) state that organisations need to consider factors such as the number of reusable knowledge items, reuse patterns, and intra-organisational interest alignment. These factors are critical in determining the optimal combination of codification and personalisation. Companies are encouraged to determine a knowledge strategy based on their knowledge reuse contexts instead of blindly following success cases. The need for balance arises from the situation at hand. Liu et al. (2013:757) list five characteristics that summarise the literature on codification and personalisation and motivate the need for balance. Firstly, codification requires investment in electronic repositories and involves knowledge producers codifying their knowledge for reuse. In contrast, personalisation costs are incurred at the time the reuse happens, with the cost being proportional to the number of users. Secondly, extrinsic incentives (for example monetary rewards and recognition/promotion) are more applicable to codification, whereas intrinsic incentives (such as enjoying helping others and the gratification of developing professional relationships) are more effective for personalisation from a relationship-building perspective. Thirdly, codification can reach a wide audience – all those accessing the repository – whereas the number of people who can be reached by personalisation is limited. However, rich information can be conveyed through personalisation. This ties in with the definitions provided in section 2.2 because personalisation involves person-to-person communication, clarity is likely to be gained from the interaction. The fourth is that codification transfers explicit knowledge, while personalisation transfers implicit (tacit) knowledge. There is a cost to codification when tacitness increases. Finally, codified knowledge can be retrieved whenever needed; whereas with personalisation, this is dependent on the availability of the knowledge producer. These characteristics are further clarified by the cost-benefit analysis in Tables 2.2 and 2.3 below.

Under codification strategy	Knowledge producer		Knowledge user		Organization	
	Benefits	Costs	Benefits	Costs	Benefits	Costs
Awareness	Recognition, signal of competence	Time to codify necessary knowledge, evaluation apprehension	Potential of increasing competence	Time and effort	Potential of improving performance	Infrastructure cost (repository, etc.), motivation cost, opportunity cost from producers, management cost
Interest	-	-	Inspiration, increased knowledge	Time and effort	Increased knowledge	Opportunity cost from knowledge users, management cost
Evaluation	-	-	Increased knowledge	Time and effort	Increased knowledge	Opportunity cost from knowledge users, management cost
Trial	-	-	Increased knowledge	Time and effort	Increased knowledge	Opportunity cost from knowledge users, management cost
Adoption	-	-	Increased competence	Time and effort	Increased performance	Management cost

**Table 2.2: Codification strategy cost-benefit analysis**

Source: Liu et al. (2013:760)

Under personalization	Knowledge producer		Knowledge user		Organization	
	Benefits	Costs	Benefits	Costs	Benefits	Costs
Awareness	Recognition, signal of competence	Time and effort to report their success	Potential of increasing competence	Time and effort	Potential of improving performance	Infrastructure cost for communication, management cost, opportunity cost from knowledge producers and users
Interest	Perceived reciprocity, enjoyment	Time and effort to answer questions from potential users	Inspiration, increased knowledge	Time and effort, future obligation	Increased knowledge	Opportunity cost from knowledge producers and users, management cost
Evaluation	Perceived reciprocity, increased knowledge via interaction with users	Time and effort to answer questions from potential users	Increased knowledge	Time and effort, future obligation	Increased knowledge	Opportunity cost from knowledge producers and users, management cost
Trial	Perceived reciprocity, increased knowledge via interaction with users	Time and effort to address problems from potential users	Increased knowledge	Time and effort, future obligation	Increased knowledge	Opportunity cost from knowledge producers and users, management cost
Adoption	Perceived reciprocity, increased knowledge via interaction with users	Time and effort to address problems from potential users	Increased competence	Time and effort, future obligation	Increased performance	Opportunity cost from knowledge producers, management cost

**Table 2.3: Personalisation strategy cost-benefit analysis**

Source: Liu et al. (2013:761)

There is evidence of the benefits stimulated by the adoption of either a personalisation or a codification strategy. As such, a case can be made for finding the right balance between the two depending on the strategic knowledge purpose. The two tables above suggest that the knowledge producer can benefit from personalisation in terms of awareness, interest, evaluation, trial, and adoption; whereas the major benefit of codification is awareness. What seems evident is that the knowledge user does benefit. It can thus be argued that the two approaches can be adopted to increase the adoption of valuable knowledge.

The existence of KM tools for the targeted case study is evident from the problem statement. Taking this background into account, it is appropriate to consider what the literature says about the role played by IT in the KM domain. This will summarise the findings of the discussion of personalisation and codification.

## 2.10 The role of IT

The role of IT was mentioned in section 2.2, where reference was made to Hansen et al. (1999:10) in relation to getting the most out of KM through coordination with other functions such as IT. In the words of Kankanhalli, Tanudidjaja, Sutanto, and Tan (2003:69), executives must confront the challenging task of deciding which type of IT to deploy in support of their KM initiatives. Kankanhalli et al. (2003:69) portray IT as a facilitator for acquiring, storing, retrieving, and disseminating knowledge. From the previous discussions, it appears that the application of IT is easier said than done. The challenge lies in the complexities attributed to the variety of IT solutions that are available, some of which may not address the problems at hand. It is also evident from Table 2.4 below that an IT solution will not resolve KM challenges unless adequate analysis is performed in order to determine which quadrant requires attention for the intended KM initiatives. Table 2.4 below is described as a guide to the focus areas of an organisation, depending on whether the nature of work is product- or service-based.

	Low-volatility context	High-volatility context
Product-based	<ul style="list-style-type: none"> <li>• Identify and promote strategic communities of practice</li> <li>• Provide expert directories and collaborative tools</li> <li>• Reward participation in strategic communities of practice</li> </ul>	<ul style="list-style-type: none"> <li>• Provide expert directories and collaborative tools for product development teams</li> <li>• Provide knowledge repositories for product sales teams</li> <li>• Review of contents in knowledge repositories by experts</li> <li>• Reward team sharing of knowledge</li> </ul>
Service-based	<ul style="list-style-type: none"> <li>• Create and maintain high-quality knowledge repositories</li> <li>• Provide effective search capabilities for repositories</li> <li>• Reward quality contributions to knowledge repositories</li> <li>• Reward effective reuse of knowledge from repositories</li> </ul>	<ul style="list-style-type: none"> <li>• Build a culture of mutual support and interaction</li> <li>• Provide communication support for one-to-one interaction via multiple media</li> </ul>

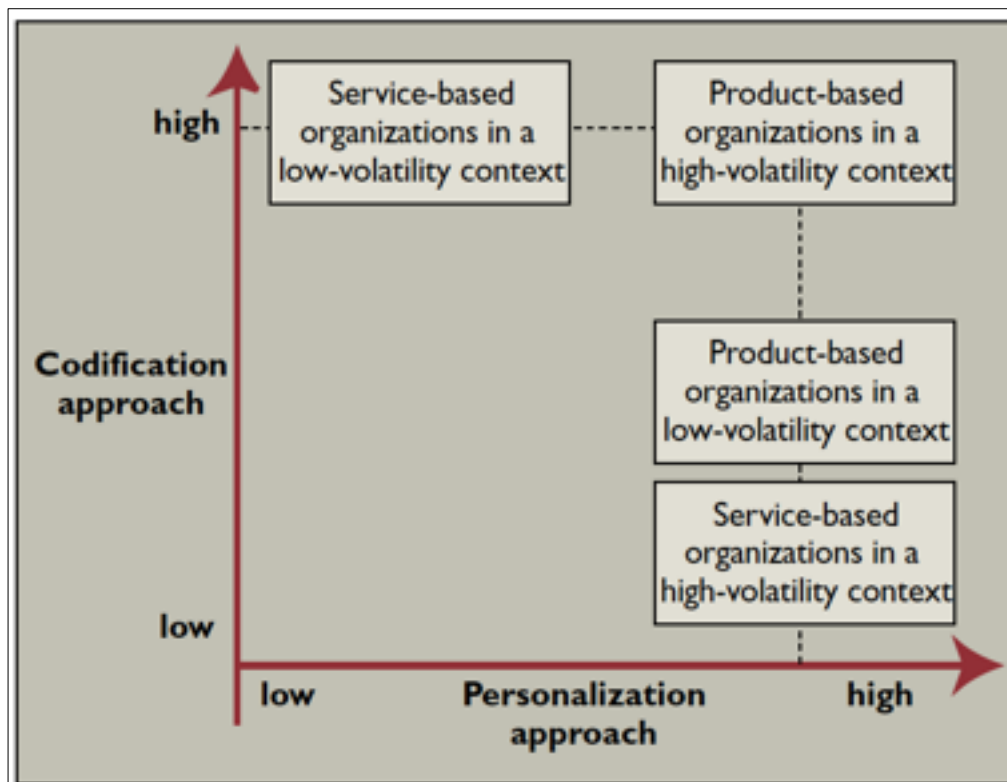
**Table 2.4: Volatility context of product and service based organisations.**

Source: Kankanhalli et al. (2003:72)



The above table can be used to determine the role of IT depending on whether an organisation is service- or product-based and whether the operational context is high- or low-volatility. It provides executives with insight regarding the KM approach to adopt depending on the business' focus or the organisation's strategic direction.

With regards to the codification approach, Kankanhalli et al. (2003:69) posit two basic approaches to KM for which IT can provide support: codification and personalisation (Figure 2.10 below).



**Figure 2.10 KM Approaches across industry contexts.**

**Figure 2.11: KM approaches across industry contexts**

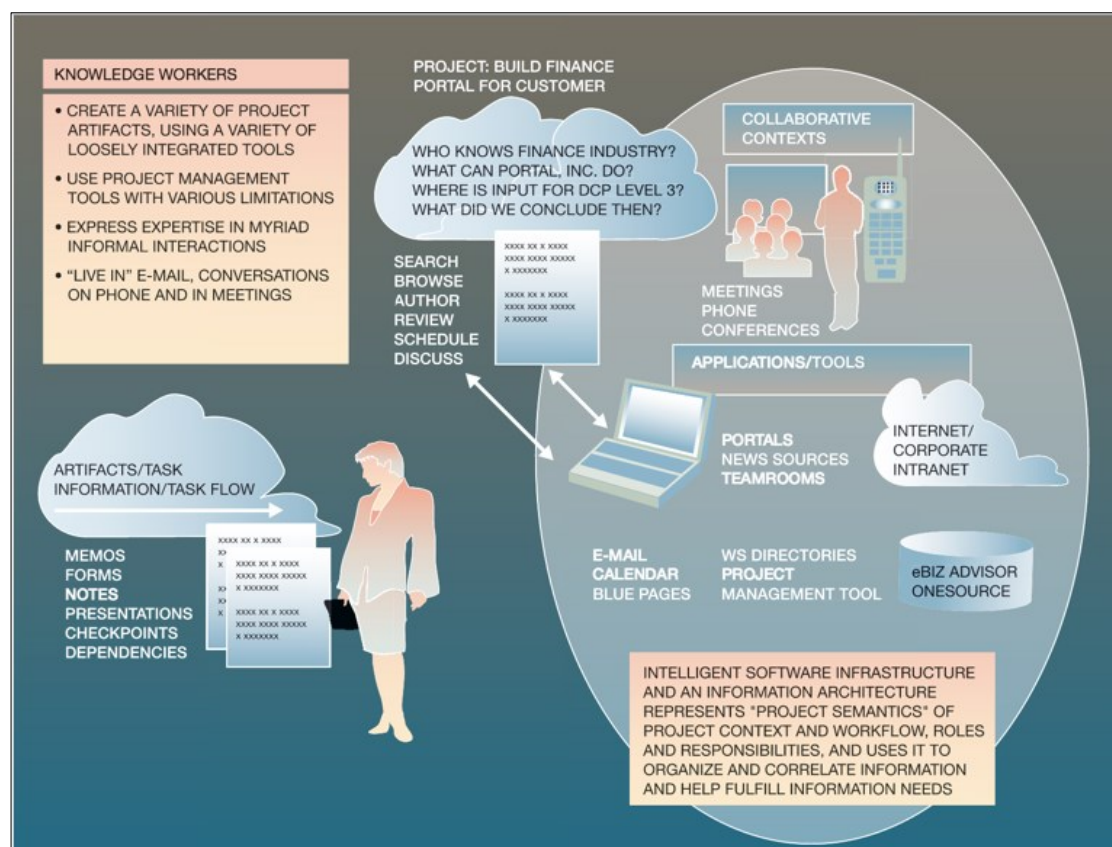
[Source: Kankanhalli et al. (2003:73)]

Explicit and structured knowledge is codified and stored in knowledge bases. The role of IT is to help people share knowledge through common storage so as to achieve economic reuse of knowledge. The personalisation approach targets tacit and unstructured knowledge shared largely through direct personal communication. The main role of IT here is to help people locate one another and communicate to facilitate and achieve complex knowledge transfer. Examples of such IT tools are knowledge expert directories and video conferencing tools.



Figure 2.11, adopted from Mack, Ravin, and Byrd (2001:948), supports the arguments presented about the roles of IT. It depicts in schematic form the variety of tools and collaboration contexts in which knowledge workers (KWs) operate (right side of Figure 2.11). This stands in contrast to the tasks, artifacts, and information needs that KWs have as they carry out project tasks (left side). Mack et al. (2001:948) are of the view that the digital knowledge workplace of the future will be driven by a more intelligent and task-oriented infrastructure than the one enabled by current KM technology. This emerging knowledge workplace will support targeted knowledge work tasks more directly and integrally, with reference to specific project roles and responsibilities in a collaborative work environment.

The increase in remote work means that IT solutions have to provide flexibility, including mobile phones and tablets, to make knowledge accessible to KWs.



**Figure 2.12: Expanding the knowledge workplace**

Source: Mack et al. (2001:948)

Based on Figures 2.1, 2.3, and 2.7, codification does not exist in isolation, but in the broader context of KM. The term “best practice” is often used within organisations to

refer to enterprise systems or KM systems, and vendors often use this term when marketing systems. The next section considers these two words that professionals often want to hear, namely “best practice”.

### 2.11 The fallacy of “best practice”

Newell et al. (2009:149) raise the following limitations regarding the rhetoric of “best practice”:

- The way users enact (rather than simply adopt) technologies;
- The myth that “best practice” can be defined independently of the specific context;
- The restrictions on flexibility; and
- The creation of competitive value.

The argument raised is that individuals always find ways to work around the restrictions imposed by enterprise systems. Users are said to enact a technology rather than to adopt it. In this regard, users may record content selectively because they might not want their knowledge exposed for wider consumption. Newell et al. (2009:150) state that there is considerable debate and criticism of the very notion of ‘best practice’, given the unique history and culture of each organisation. The “best practice” myth is believed to ignore the importance of context while disregarding the processes through which knowledge is negotiated.

Newell et al. (2009:150) highlight that questions have been raised about how, in attempting to manage knowledge work, enterprise systems may restrict the very organisational flexibility that such work requires; thus becoming the legacy systems of the future. This implies that organisations should have the ability to determine the difference between what is standard and their unique value added. These systems constrict the way in which KWs go about their daily work, but potentially assist in decision-making by disseminating information about what is happening across the organisation. Newell et al. (2009:151) conclude that these systems are information systems, but the individual uses knowledge of the context and processes to make sense of the information provided by the system.

A KM system (KMS) will not in itself improve the capture, storage, and sharing of knowledge. It depends on how the KMS is perceived and used as part of individuals' everyday work practices (Newell et al. 2009:153).

The relevance of this discussion is its provision of insight into assumptions that could be made about best practices, considering that the organisation under study already has enterprise systems and KMSs. This also underlines the need to ensure that the management of knowledge adds value to the organisation and creates a competitive edge for it to be effective and useful. This discussion raises a valuable point about processes being important in ensuring that the information provided by the system is useful to the organisation's business case and value. The notion of 'best practice' should not be a limiting factor to knowledge work, but an enabler of the contribution towards business competitiveness. From the discussions thus far, it can be argued that KM in the context of organisational strategy plays a part in overall competitiveness. In this regard, the next section examines purposes, processes, and enabling contexts.

## **2.12 Knowledge purposes, processes, and enabling contexts**

Newell et al. (2009:230-243) emphasise an approach to KM that recognises the strategic significance of knowledge for sustained competitive advantage. In summary, a strategic purpose is chosen from knowledge exploration, exploitation, or both. On the basis of this choice, one or more appropriate knowledge processes are pursued (cf. Figure 2.7). Most importantly, this is all made possible through the fostering of an enabling context to achieve the overall strategic aims of managing knowledge. It can thus be argued that taking such an approach provides direction and limits the scope of what an organisation intends to do with knowledge and what is expected from KMs.

This is relevant to this research because, as noted in the problem statement, a team was set up to address the existing KM issues. This discussion will challenge the approach that is pursued in the case study.

Taking this background into account, it can be assumed that an initiative started to improve a KM process such as codification should be aligned to the organisation's strategic intent and agnostic to existing KM tools. The assumption is that the codification should be clearly defined based on strategic intent. Subsequently, the right tool with the best fit is selected, because the existing tools might not provide the

best fit. In order to verify this hypothesis, the present research will analyse and review the process followed by the KM initiative team.

This research was conducted in a knowledge-intensive environment, hence the focus of the next section.

### **2.13 Knowledge-intensive organisations**

The relevance of this section is in relation to the study topic, which focuses on a knowledge-intensive organisational environment.

Newell et al. (2009:30) analyse various researchers' understandings of the types of knowledge-intensive firms. One school of thought identifies three types: client-based, problem-solving, and output-based firms. For each of these, the strategic focus and resources approach differs. Client-based firms focus on client relations, and resources are individually controlled. Problem-solving firms are team-based and focus on innovation or creative problem-solving.

The case study for this research can be classified in the problem-solving category. The business unit on which the KM team focuses works in teams on key initiatives to facilitate innovation and solve challenges that heighten the overall competitiveness of the business. These initiatives are supported by solid IT systems solutions that they develop.

Finally, output-based firms focus on the adaptation of ready solutions, and resources are controlled by the organisation.

Another approach that Newell et al. (2009) consider examines two major types of knowledge-intensive firms: professional services and research and development (R&D); where the distinction is that the former type deals largely with intangibles and employees deal directly with clients. The latter type typically produces tangible products and employees have less direct contact with the customer.

The approaches discussed above concur; the only difference being that one considers the business' strategic focus and the other looks at whether the output is tangible or intangible.

Despite the amount of research that has been conducted in this area, a definition of a "knowledge-intensive organisation" is elusive. Nonetheless, Newell et al. (2009:32) posit that the term is a useful one with which to encapsulate a broad range of firms operating across sectors in knowledge-based, post-industrial economies. These firms

are believed to have emerged in the late twentieth- and twenty-first centuries and now constitute important industry sectors within a post-industrial economy.

Nunes, Annansingh, Eaglestone, and Wakefield (2006:107) cite Alvesson (1995:6) in their identification of the characteristics of knowledge-intensive organisations:

- Significant incidents of problem-solving and non-standardised production;
- Creativity on the part of the practitioner and the organisational environment;
- Heavy reliance on individuals (and less dependence on capital) and a high degree of independence on the part of the practitioners;
- High educational levels and a high degree of professionalisation on the part of most employees;
- Traditional concrete (material) assets are not a central factor. The critical elements are in the minds of employees, networks, and customer relationships;
- Manuals and systems for supplying services; and
- Heavy dependence on the loyalty of key personnel, which entails considerable vulnerability when personnel leave the company.

Arguably, these characteristics indicate a high level of autonomy and limited supervision on the part of the KWs in such firms or organisations. It can be assumed that teams in such environments are self-managed due to the autonomy over work processes. The downside in such organisations could be the neglect of the codification process due to a focus on project/task delivery, which can be directly tied to a company's income.

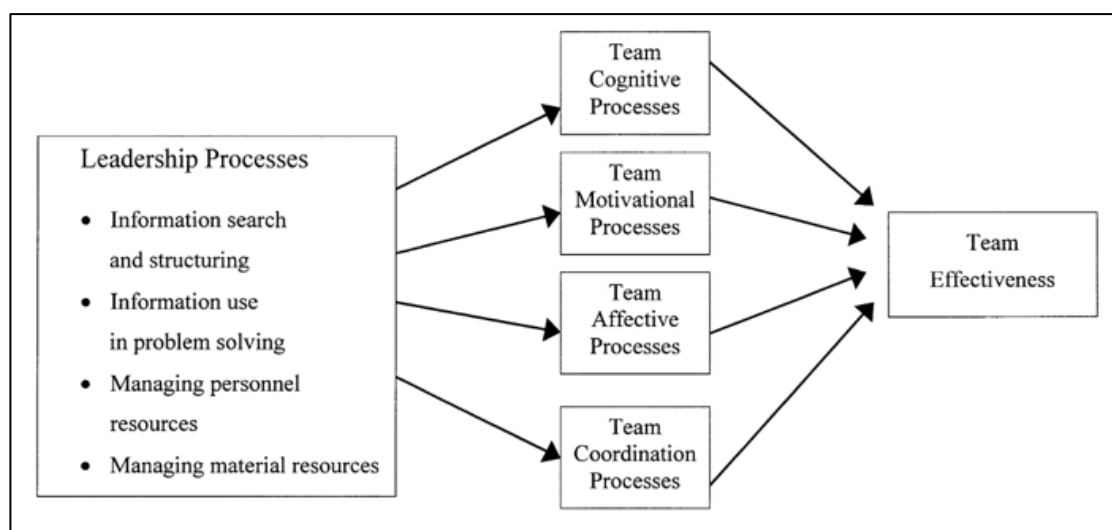
The characteristics of knowledge-intensive environments at team level do not eliminate the need for leadership to maintain cohesion in the unit and hold teams to a strategic direction. To this effect, the aspect of leadership is considered in the following section. The KM team, like any other team, requires leadership in carrying out their mandate and ensuring that the team works effectively.

#### **2.14 Leadership for team effectiveness**

This section draws primarily on Zaccaro, Rittman, and Marks (2002:451-483), because these authors focus on how leaders create and handle effective teams. This

resonates with the present research, where the team operates within a knowledge-intensive firm and the hope is that the team will be effective in changing the dynamics of KM codification. This is said to also be true in self-managed teams, though leadership roles in such teams are said to differ from those in traditional teams.

Zaccaro et al. (2002:455) adopt a perspective of leadership as functional social problem-solving and suggest a core of basic requisite leadership functions that are linked to the effective generation, selection, and implementation of solutions to problems. They make reference to a taxonomy of leadership performance functions with four superordinate dimensions. These are information search and structuring, information use in problem-solving, managing personnel resources, and managing material resources. These drive or promote team effectiveness through team cognitive, motivational, affective, and coordination processes. These elements are summarised diagrammatically in Figure 2.12.

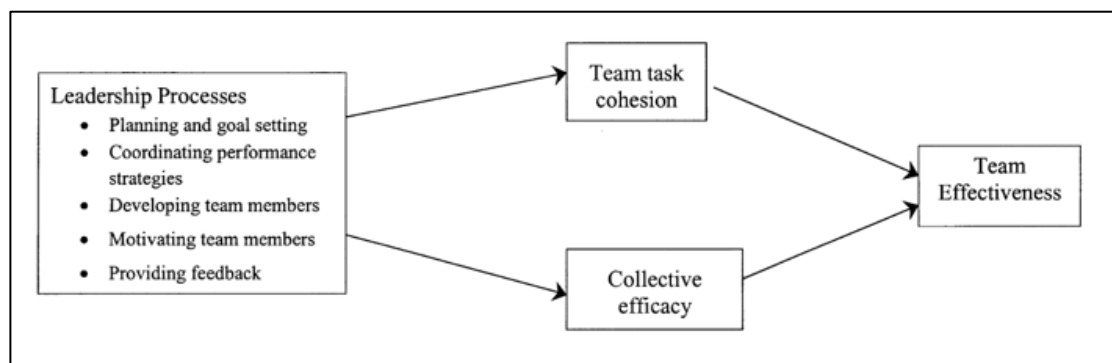


**Figure 2.13: Model of leadership performance functions**

Source: Zaccaro et al. (2002:, 458)

Zaccaro et al. (2002:458) propose that leadership influences on team effectiveness occur in part through their effects on the four processes on the left of the above figure. The researcher cannot do more justice to the detailed account given by Zaccaro et al. (2002:451-477), but acknowledges the emergence of accurately shared mental models to help team members anticipate one another's actions and reduce the amount of processing and communication required during team performance. The result is better coordination and more efficient collective responses to task requirements (Zaccaro et al. 2002:458).

The work of Shankar et al. (2013:2055), discussed earlier, emphasises the importance of communication by stating that a lack thereof can result in knowledge loss. In the context of codification, knowledge loss must be avoided, so communication is crucial. Project management literature lists communication as one of the knowledge areas. According to Metcalfe (2004:59), communication has the potential to prevent and minimise problems as well as to raise awareness. Metcalfe (2004:59) also touches on the motivation of the team, which resonates with Zaccaro et al. (2002:465) in their discussion of team motivational processes. They state that motivation derives in part from cohesion and a sense of collective efficacy, and this contributes to team effectiveness.



**Figure 2.14: Leadership performance functions on motivation**

Source: Zaccaro et al. (2002:, 468)

Returning to the discussion of communication: a plan for team problem-solving, according to Zaccaro et al. (2002:465), is not adequate without effective communication, because the team's response is likely to be inadequate. Based on the KM strategies literature discussed thus far, team effectiveness plays an important role, because application and implementation is not done at an individual level but at team level.

The point of research is to build on prior research and to learn from what has been done previously. The following section considers research that can provide direction to the study topic.



## **2.15 Reference paper**

Hall (2006:117-118) published a paper on the limits of knowledge codification in which the participant observation methodology was used. The principal findings were that the process of knowledge codification involves defining the codes needed to codify knowledge and ensuring that the people participating in the code construction are able to interpret and use the codes similarly. This paper has relevance to the current study as a learning point regarding the methodological approach, and in light of the fact that it is a case study of a single organisation looking at codification. A key outcome from Hall (2006:124) is that knowledge should not just be codified in the hope that someone might find it useful someday. The recommendation is rather to question what knowledge can be captured; thus directing the attention to what knowledge people have, rather than what knowledge people need. There is an inclination towards encouraging benefits from other people's knowledge in practice and devoting further research to how people seek knowledge. It is worth noting the emphasis on decodification that Hall (2006:122-125) highlights. Decodification is said to be successful if there is end-use context or an awareness of who the knowledge is codified for. The aspect of sharing is raised as a platform to ensure that the decodification of codes is interpreted and used similarly. This paper is referenced mainly in so far as the research methodology is concerned.

## **2.16 Relevance to the current study**

The approach to the research in question differs slightly to that mentioned in section 2.15 above. There is already a codification process in place, which has been deemed ineffective in some respects; and there is a management-driven attempt to improve on it. Hall's paper, summarised in section 2.15, gives a basic indication of what the industry is doing and whether the rich academic literature is influencing the professional environment. It would be unfortunate if there were little or no appreciation of the relevant academic research when solving problems such as that identified in the present study's problem statement. The case studies that have been conducted can provide useful input or key guidelines when an organisation is presented with a similar problem. This is arguably the important premise of KM. Table 2.5 below, taken from Ragab and Arisha (2013:879), indicates the various



attributes that a comprehensive IT tool is meant to cover. This table makes a strong case for codification, but warns against expecting a software application to cater for all aspects expected in a KM tool, as well as against assuming that codification is the only possible approach when storing, capturing, or exploiting knowledge. The argument made in Table 2.5 is that no comprehensive KM package addresses the wide variety of KM attributes. This table illustrates some features of KM tools and the approach that should be taken to address them.

<i>Software type</i>	<i>Main features</i>	<i>KMS approach</i>
Document and content management	Storing/uploading of documents Retrieval based on indexing techniques and advanced searching mechanisms Access from any internet connected workstation	Codification
Organisational taxonomy	Organisation of unstructured knowledge into structured categorised maps based on taxonomies	Codification
Collaborative services	Instant Messaging White-board collaboration Co-authoring of documents	Personalisation
Knowledge discovery	Generation of knowledge from existing raw data using data mining and visualisation	Codification
Expert networks	Providing a forum for problem solving through peer-to-peer support Expertise brokerage Expert identification	People-Finder
Knowledge portals	Integration of several information sources to make them accessible from one interface Personalisation of the presentation of content and data sources	(Depends on the services integrated in the portal)
Customer relationship management	Customer support tools (self-help) Customer support personnel tools (help-desk) Automatic direction of customer requests to representatives based on customer profiles and representative expertise Recording of customer behaviour	Codification
Competence management	Creation of profiles for organisational members based on their knowledge and competencies Expert Search	People-Finder
Intellectual property management	Management of patents, copyrights and trademarks Tracking of approval processes	Codification
E-learning management systems	Reusable learning object libraries Adaptive web-based course delivery Component based authoring Scheduling and reporting tools Student evaluation and progress tracking	Personalisation

**Table 2.5: Software tools for KM**

Source: Ragab and Arisha (2013:879)

The problem statement indicates that various tools are currently being used in the organisation under study. Table 2.5 allows for the researcher to determine how these tools are currently used and whether the features of these tools align with those identified in Table 2.5.

## 2.17 Conclusion

The literature review provides a foundation of secondary data by reviewing the body of knowledge relevant to the study topic. It provides a reference point for assessing the findings and providing recommendations as to how the codification process can be improved or redesigned. The reference paper discussed is evidence of the need to consult existing research and build on key learning outcomes. Notwithstanding the deep understanding of the codification process and the nature of knowledge-intensive organisations, the approach to improving the codification process remains a challenge. As highlighted in the problem statement, the organisation in question has made several attempts to address the problem, with limited success. This has had the consequence that people have found comfort in the existing process by doing what works at an individual level. The competitive nature of businesses in this day and age challenges organisations to manage knowledge in a manner that presents a competitive edge, as well as opportunities for growth and quick and quality delivery to internal and external customers.

The following chapter explains the research approach and considerations that ensure that the research conforms to expected levels that meet the set objectives.

## **3 Research methodology**

### **3.1 Introduction**

The following sections explain how the study was conducted with regards to sample size, design, and target respondents. The study involved a qualitative case study complemented by face-to-face interviews. This approach was deemed appropriate considering that the targeted knowledge-intensive division was on a journey to improve some aspects of KM by engaging a team of cross-skilled individuals. This section describes the case study approach supplemented by participant observation and face-to-face interviews. In the absence of a pre-defined theoretical model, the aim was to make provision for greater lucidity and deeper understanding of the subject matter. The previous chapter details strategies, frameworks, and approaches that can add value or guidance to KM initiatives. The research design was geared towards examining the work done by the KM team working on the initiative aimed at improving the codification process. It made possible the discussion of the study's findings in the next chapter.

### **3.2 Research design**

To contextualise the research design, this section first considers the definitions from various sources in the literature and then builds a case for the approach adopted for this research.

A case study research methodology was adopted as a means of understanding and gaining valuable knowledge regarding the research topic. The case study methodology suited the research, as the company in question had put in place an initiative to address KM concerns that would run for a defined period of time.

The unit of analysis or case is the actual process of identification of the current KM state and improving an identified process.

The research proposal and data collection methods, including the questionnaire design, were submitted to the ethics committee for review and clarification of expectations. The data collection ensued over a period of 12 months, starting with an extensive review of existing literature in order to gain an understanding of previously conducted research aligned to the study objectives and, most importantly, to gauge

whether it was worth pursuing the intended research topic. The literature review also involved a consideration of papers that used the same data collection methods in order to gain an appreciation of what such methods entail. A reasonable amount of time was spent in the elicitation sessions, done prior to the commencement of the KM initiative, from which the problem statement was deduced. This partly addressed the first objective of understanding: the existing gaps in the KM codification process. The sessions were open to anyone who felt that they had something to contribute to KM or was passionate about it. The researcher was a data collection instrument in a participant-observer capacity, aiming to understand how the KM process transpired in such an environment while being closer to the subject under research. The participants were made aware of the research and embraced the fact that as it was purely academic it would not affect the way they would work during the allocated time period. The KM team leader was particularly excited by the research because she wanted to get an academic viewpoint on the process. Seven participants were interviewed when the initiative was completed. The questions focused on what they initially perceived as gaps, the approach they took as a team, and how they perceived the outcome to have been embraced by the initiative's intended beneficiaries. It was paramount to obtain the input of those meant to benefit from the initiative's outcome. In this respect, three non-participants were interviewed so that their perceptions could be compared to those of the initiative's participants. The researcher was involved in all activities involving the KM team, from the elicitation stage to the implementation of the initiative and the review process carried out immediately after the initiative was completed.

The data collection methods and ethical considerations are addressed later in this chapter.

### **3.3 Population**

The study population comprised 70 respondents; 10 of which were chosen for the in-depth interviews. The selected groups of the KM initiative were observed while they performed their designated KM duties.

### **3.4 Sampling design**

Non-probability sampling was used for this study because it falls into the qualitative paradigm. It concentrates on specific cases and in-depth analysis.

The research employed non-probability sampling in the form of self-selection in a bid to attract individuals who had a desire to contribute. The participants in the KM initiative were briefed about the research and permission was granted to collect data through observation and interviews. Seven participants from different backgrounds were interviewed. Three respondents came from those meant to benefit from the initiative. Of these three, one respondent was approached by virtue of having contributed to previous KM issues, but was also an intended beneficiary of the KM initiative.

### **3.5 Data collection instruments**

The data collection methods used in this research were overt participant observation and in-depth interviews. This was the case as there was a need to monitor and understand the thinking behind the process and the activities undertaken to resolve the gaps identified within the business. Dawson (2007:39) describes overt participant observation as a method where everyone knows who the researcher is and what he or she is doing. The researcher was part of the initiative for the duration of the time allocated for the initiative to formulate the plan and approach, as well as for the process of unpacking the existing problems. It was communicated to the initial team that they would be observed as part of this research, and the team members had no problems or concerns regarding this arrangement.

Seven of the team members and three of the intended beneficiaries (target audience) were interviewed for data collection. The investigation considered the state of the codification process before and after the initiative was undertaken. It opened up areas for further investigation while reflecting on the study's relevance to the broader academic knowledge base.

The interviews conducted were guided by semi-structured questions (see Appendix 1 and Appendix 2). They attempted to obtain a broad view of the KM shortcomings and the approach taken to improve the situation.

The following section explains the rationale behind the structure of the interview questions. It explains why these questions were asked and their relevance to the study.

### **3.6 Interview questions**

The question sets were split into two sections; one focusing on the participants in the KM team and the other on the intended beneficiaries of the process. This was done to obtain an appreciation of the process' outcome and identify any learning points for similar future processes. It can be argued that such an approach adds value academically, as a framework can be deduced to ensure that a KM review or improvement process is well-constituted.

#### **3.6.1 Structure of the interview questions**

The first set of questions (see Appendix 1) aimed to understand the case study and related to the study's three objectives. The second set of questions (see Appendix 2) targeted the intended beneficiaries of the KM initiative, focusing mainly on the last two objectives. The following sections provide details of the rationale behind the questions' structure.

#### **3.6.2 Understanding the KM initiative**

This was meant to obtain any valuable information regarding why the initiative was established and the participants' perceptions. This would help understand whether the participants had a shared understanding regarding the necessity of the initiative to which they had committed. The expectation was that the thinking would be the same, but this could not be assumed.

The literature review mentioned starting with a strategic knowledge purpose before shifting attention to either knowledge exploration or exploitation. What seemed important was the need for a clear strategic direction fitting the appropriate quadrant in Figure 2.7.

The other question aimed to gain an understanding of the KM tools that were currently in use to aid the codification process.

### **3.6.3 Objective 1: The existing gaps**

The questions for this objective aimed to obtain a better understanding of the perceived pain points of the current process, as this would reflect some of the existing gaps. The questions about the tools that were widely used and those that were preferred were critical in understanding whether there were any issues with the existing tools. It was also paramount to understand the reasons for the preference of a given tool. There was a question on ideas for improving the current process which contributed to identifying any gaps. By identifying the areas for improvements, it can be assumed that one would be stating the current problems that need attention. In the literature review, IT was said to provide support to codification by storing more explicit and structured knowledge. The questions in the interview helped to assess the impact of IT tools in supporting or derailing the codification process and helped to determine whether there was economic reuse of knowledge. Following the pilot interviews, some questions had to be changed to ensure that they were aligned with the objectives and guided respondents towards responses that met the research objectives.

### **3.6.4 Objective 2: The approach adopted**

The section on KM approaches in the literature review provided guidelines regarding what should be considered when addressing or establishing an approach to tackle codification. Some of the questions were intended to obtain feedback from participants, which would either reinforce or contradict what the literature suggests. In the event that the answers did not match the existing literature, it would have been interesting to note whether the initiative succeeds or fails as a result of diverging from what the literature suggests. Reference is made to collaboration and its benefits as well as its setbacks: the question on collaboration extracts the participants' views on working as a cross-functional team. Questions about the learning points were included; for example, what the team did well and what one would do differently if presented with the same task in future. The literature review also presents frameworks that could be used for the initiative under study, and the question on the frameworks or guidelines followed aimed to identify whether there was any reuse of the academic knowledge base in a professional setup. The outcome of the KM initiative is expected

to result in significant benefits, so it had to be asked whether the outcome at least met expectations.

### **3.6.5 Objective 3: Views on the outcome of the initiative**

Was the outcome of the KM initiative embraced by the target audience?

This question was presented to the KM team members to obtain their perceptions regarding the outcome of their efforts. It was also important to gauge their confidence in their work effort. This would also indicate whether they felt they had succeeded with their approach.

### **3.6.6 Appendix 2**

The second set of questions (Appendix 2) considered the second and third objectives. The question on what could have been done differently related to the second objective and indirectly highlighted the flaws of the process implemented by the KM team or possible improvements that could be made. It was paramount to obtain feedback from the KM initiative's target audience and then to relate this to responses from the participants, who were also asked about the outcome.

The questions targeted the intended beneficiaries of the KM codification improvement process and can be argued to be the feedback loop of the initiative.

The intention was to extract what the interviewees felt could have been done differently or had been missed. There was a need to gauge the level of confidence in the work done by the KM team. The questions also attempted to confirm the literature on codification and personalisation by assessing the circumstances that would prompt one to choose either of the two. The last question was a measure of the interest that there was in participating in a similar initiative to address the existing problems. The responses from this section contributed to the recommendations drawn from the research.

## **3.7 Data analysis**

Zikmund (2003:73) defines "analysis" as the application of reasoning to understand and interpret the data that have been collected.



The analysis employed in this research concentrated on meanings expressed through words and analysis conducted through the use of conceptualisation. Saunders et al. (2009:381) state that the nature of qualitative data has implications for both its collection and analysis.

The research findings were formulated based on interpretations of the data from the interviews. The study followed a repetitive process in order to ensure the clarification of any ambiguities and to be able to probe further where it was deemed necessary.

The research adopts ideas from Saunders et al. (2007:479), who suggest organising the mass of qualitative data collected into meaningful and related parts or categories. This is said to allow systematic and rigorous exploration and analysis of data; thereby allowing one to comprehend and manage data, integrate related data drawn from different transcripts and notes, identify key themes or patterns for further exploration, develop and/or test theories based on these apparent patterns and relationships, and lastly draw and verify conclusions.

### **3.8 Content analysis**

Patton (2002:453) defines “content analysis” as “any qualitative data reduction and sense-making effort that takes a volume of qualitative material and attempts to identify core consistencies and meanings”. Hsieh and Shannon (2005:1278) observe its relevance in subjective interpretation through the systematic classification of identifying themes. Cooper and Schindler (2014:384) highlight it as a technique to measure semantic content or ‘the what’ aspect of a message.

These definitions reflect that there is a scientific process of deducing results where patterns are identified and results are coded accordingly. In this study, the interview responses were matched and analysed in relation to the objectives. Similar responses were grouped together and all responses were coded under the related objective in an effort to compile results per objective. The content analysis of this study was inductive in nature, as themes and categories emerged from the data through careful examination and constant comparison. This study referenced guidelines from Zhang and Wildemuth (2009:2-5), which are preparing the data, defining the unit of analysis, developing categories and a coding scheme, assessing coding consistency, and drawing up conclusions.

### **3.9 Ethical considerations**

The researcher was responsible for an accurate account of the research. The intention was not to discredit the targeted organisation or the KM initiative, but to provide a valuable contribution to the research aims. The approval from the university's ethics committee before commencing the data collection serves as confirmation that the research process was above board.

The respondents were made aware of the intentions of the research. Saunders et al. (2003:139) emphasise the level of care that has to be exercised in making sure that the anonymity of individuals is maintained. Permission was sought from the targeted company to conduct the research. The researcher was given the green light via email, and this was communicated to the team that was observed during the research period. Each respondent was forewarned about the intention to conduct the interview and given a brief overview of what the research entailed. Respondents were sent an agenda for the interview, highlighting the reasons for the interview and an overview of the discussion so that they would be prepared. They were also given the option to withdraw their participation if they had a change of heart.

### **3.10 Validity and reliability**

Saunders et al. (2003:252-254) warn that the validity of findings can be compromised by the interviewer's interpretation, which may differ from the interviewee's intended meaning. The value of using the non-standardised approach to research is derived from the flexibility that may be used to explore the complexity of the topic. It is therefore unrealistic and infeasible to attempt to ensure that other researchers could replicate qualitative, non-standardised research without undermining the strength of this type of research. The use of this form of research should not however lead to a lack of rigour in relation to the research process.

The subject of this study is an initiative to assist in addressing some evident issues in KM. It helped to identify factors driving the lack of trust in the KM space. The findings, which were arrived at by means of qualitative research methods, are not necessarily intended to be repeatable, since they reflect the reality at the time they

were collected. In this regard, bias has to be eliminated to ensure validity and reliability. The tone or non-verbal behaviour of the interviewer can create bias in the way that interviewees respond to questions. Bias may also come from the nature of the individuals who agree to be interviewed.

In this research, bias attributed to interviews was mitigated by following the guidelines provided by Saunders et al. (2003:254), where the key measures to overcome bias in qualitative interviews are:

### **Preparation and readiness for the interview**

The researcher worked at the organisation in question, so there was a high level of understanding of the organisational and situational context in which the interviews had to take place. The literature review and prior studies in KM helped immensely in providing a deeper understanding of the research topic.

### **The amount of information supplied to the interviewee**

An email was sent to the prospective respondent briefly explaining what the research was about and the intention to conduct an interview and asking for participation. Upon receiving a favourable response, a 30-minute meeting request was sent based on availability in the Microsoft Outlook calendar. Fortunately for the researcher, none of the invitations were declined. The interviewees were given an overview of what the interview was about to enhance their understanding of the research context. They were encouraged to express themselves fully without holding back their opinions, as anything they contributed would add to the quality of the research output.

### **Appropriateness of the researcher's appearance**

The researcher found it necessary to look presentable. In this respect, a formal dressing approach was adopted; though the researcher knew the interviewees by virtue of working with them.

### **Nature of opening interview comments**

The interviewees were thanked for agreeing to participate and reminded of what the research was about and why they had been chosen to participate, and they were assured that their views would be used for research purposes only. The respondents were encouraged to answer questions truthfully and to ask for clarity wherever they

felt a question was ambiguous or unclear. They were also reminded that they were free to stop the interview or refuse to answer a question at any point if they found anything controversial, against their beliefs, or uncomfortable to discuss.

### **Approach to questioning**

The questions were drafted to ensure clarity, and a neutral tone of voice was used throughout the interview process. The researcher limited himself to questioning and recording responses without voicing or discussing personal opinions.

### **Nature and impact of the interviewer's behaviour**

Comments or non-verbal behaviour such as gestures were avoided so as not to create any form of bias. The interviewer showed interest in the interview process in a bid to encourage interest in the interviewee and to encourage dialogue and openness.

### **Demonstration of attentive listening**

The interviewees were given time to develop their responses. The researcher listened attentively without interruption to encourage the interviewee's contributions and to avoid disturbing his/her line of thought.

### **Scope to test understanding**

To ensure understanding, long responses were summarised and the interviewee was asked to acknowledge that the interviewer's understanding or interpretation was correct. If that was not the case, clarification was sought or the question was probed further.

### **Approach to recording information**

Notes were taken during interviews. On completion of the interview, the researcher took 10 minutes to reflect on what had been said and to expand on the notes taken while his memory was still fresh.

## **3.11 Pilot study**

It can be assumed that the initial set of questions prepared for an interview in qualitative research will not be perfect from the onset; hence the need to test them on

a small sample. The pilot study used two interviews to test the set of prepared interview questions so as to gauge the time required and to detect any ambiguity in the questions that could otherwise have been overlooked. This revealed flaws in some questions, which were rephrased for clarity and to improve the flow of the interview.

The pilot study gave an initial indication of the amount of time required per interview and the need for additional questions to extract information relevant to the study. Upon completing the pilot study, an initial analysis was done to determine whether the interviews were appropriate to the study's objectives and could yield results for the study.

### **3.12 Conclusion**

This chapter presented specific details about the qualitative aspects of this study. The study focused on a KM initiative team working on improving the codification process. The research looked at the work done by the KM team. The methodology provides details of how data regarding the work done by the KM team was gathered and analysed. The sampling strategy was explained and an overview was given of the data collection methods. The data analysis process was detailed, touching on how the interviews were analysed. Amongst the most important aspects discussed was the fact that the research was conducted in an ethical manner whilst ensuring the validity of the data. In science, experiments are conducted to test hypotheses. Similarly, the interview questions were tested in a pilot study, after which an initial analysis was done to gauge the questions' ability to address the research objectives. This was necessary to increase the validity of the findings and to address any ambiguity or lack of clarity in the questions. The following chapter presents the findings from the participative observation and interviews.

## 4 Discussion of findings

### 4.1 Introduction

The empirical research took place within the business technology division of one of Australia's leading insurance companies. The research period encompassed elicitation, participation in the KM initiative, and assessment of the work carried out. The research findings were obtained from participant observation and in-depth interviews and aimed to provide an understanding of the existing codification gaps guided by the work from the KM initiative. This section presents the findings and analysis with reference to the existing KM literature.

To recap, this research was driven by three objectives:

- What are the gaps in the current codification process?
- What approach did the KM initiative team adopt?
- Was the outcome of the KM initiative embraced by the participants and target audience?

The initial discussions involved people who were interested in the subject matter and those who had participated in past KM initiatives. A member of the management team gave a broad overview of the organisation's perspective. The elicitation done before the commencement of the KM initiative highlighted the gaps within the business unit. These initial discussions contributed to addressing the first research objective and defined the problem statement.

The second objective was met through participant observation and in-depth interviews with participants of the KM initiative and the programme's intended beneficiaries. The approach was analysed with reference to how the project progressed and how it was managed. The approach taken was measured against the secondary research on KM approaches and strategies employed. Those interested parties who were not part of the team were interviewed regarding their impressions of the approach that was adopted and whether they saw room for change or improvement.

The final objective was to review the outcome of the process undertaken to address the codification shortcomings. It was necessary to investigate the perceptions of

participants and those meant to benefit from the process. This was done using in-depth interviews. The intention was to compare the participants' perceptions to those of the intended beneficiaries.

Before going into detail about the findings, the following section explains what was expected from the team.

## **4.2 The team's mandate**

The organisation had a strategic goal of improving the state of KM to enable it to add business value and improve the ways of working. For the business unit in question, a root cause analysis was conducted on the majority of system issues. This analysis uncovered mistakes that made evident the existence of a gap in the utilisation of existing knowledge.

The team identified their mandate as the consolidation of existing knowledge and improvement of the existing structure of codified knowledge. The team would also recommend an approach to knowledge codification going forward that would simplify the addition and management of knowledge while eliminating existing problems such as duplication and an undefined structure for knowledge codification. A brief from a senior manager asked the team to ensure that knowledge stayed relevant and changes could be traced; similar to what happens with software source code, where one can easily view the last change(s) made. The team was able to approach the initiative with no pre-conditions or guidelines on how to do the work and had to report back to the business unit at the end of the allocated time period. The team's desired output was to create an empowered culture of users who understand where, when, and how to contribute, utilise, update, and remove knowledge content as required.

With this background, the following section examines the demographics of the research. Subsequently, the research findings are presented.

## **4.3 Demographics**

The following table shows the composition of the participants of the KM initiative, bearing in mind that members were rotated on a weekly basis to maintain a small-sized team and to allow others to return to their teams for other project commitments.

The position titles reflect the participants' jobs outside of the initiative. The Lean Agent was the initiative's team leader. Seven of the participants were male and 10 were female. There were no criteria for gender selection.

<b>Position Title</b>	<b>Number of Participants</b>
Software Engineer	2
Business Analyst	5
Senior Business Analyst	1
Senior Test Analyst	2
Test Analyst	3
Management	1
Lean Agent	1
Release Co-ordinator	1
Iteration Manager	1

**Table 4.1: KM team participants**

The following table shows the demographics of those who were interviewed. The respondents were not limited to the participants of the initiative. Six respondents were female and four were male.



<b>Position Title</b>	<b>Number of Participants</b>
Software Engineer	1
Business Analyst	3
Senior Business Analyst	1
Senior Test Analyst	1
Test Analyst	2
Iteration Manager	1
Lean Agent	1

**Table 4.2: Interview respondents**

This chapter reports on the findings and provides analysis and references to existing literature. The following section explains how the research findings are reported.

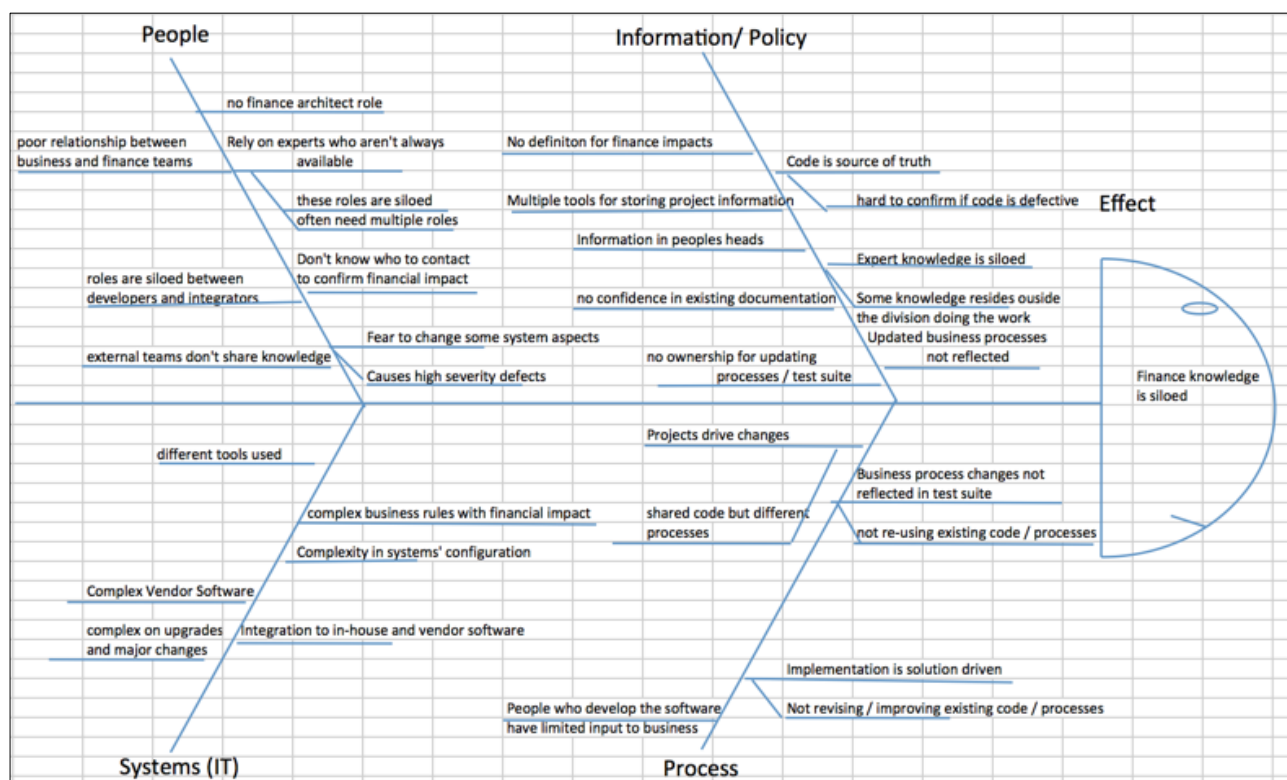
#### **4.4 Approach to the discussion of findings**

The findings are discussed in relation to the research objectives. The main methods used to gather data were participant observation and interviews. These two methods are reported on separately. The first part reports on the findings aligned to an objective from either the observation or interview perspective. The second part gives an analysis of the findings for the particular research method. The last part summarises the findings for the objective being discussed. It is worth noting that these findings are a reflection of what the researcher found regarding the work done by the KM initiative team. The analysis in this section is therefore that of the researcher and not of the KM team. It is based on what was observed and what came out of the in-depth interviews.

#### **4.5 Objective 1: Existing gaps: An observation perspective**

All of the initiative's participants and the stakeholders internal to the business unit realised the need to address KM issues. The team carried out elicitation to enhance their understanding of the current state of KM processes and the intricacies at hand. The discussions were open to anyone interested in or passionate about improving KM in the division. The level of participation in the discussions showed high levels of interest, frustration regarding the current state of affairs, and a desire to rectify the

situation. A page was created on the Confluence intranet site to facilitate the sharing of ideas and to keep a record of what was being discussed. The idea was to keep the process transparent, promote open communication, and encourage brainstorming. The site benefited those who could not attend the scheduled meetings, as they could still air their views electronically. The page opened up ideas on how to address the bottlenecks; supported by suggestions regarding new processes that could be adopted. The feedback and contributions on the site were brought up in the subsequent meetings and discussed further. This work was done prior to the commencement of the KM initiative, and formulated the KM team’s structure in terms of how members would be rotated to increase participation. It was also decided to limit the team size at any given point to seven members. The team was to be cross-functional at any given stage, containing at least a software engineer, a business analyst, a software tester, and the team leader. The challenges in the business unit at that time were examined from four perspectives: people, information policy, IT, and processes, as shown below.

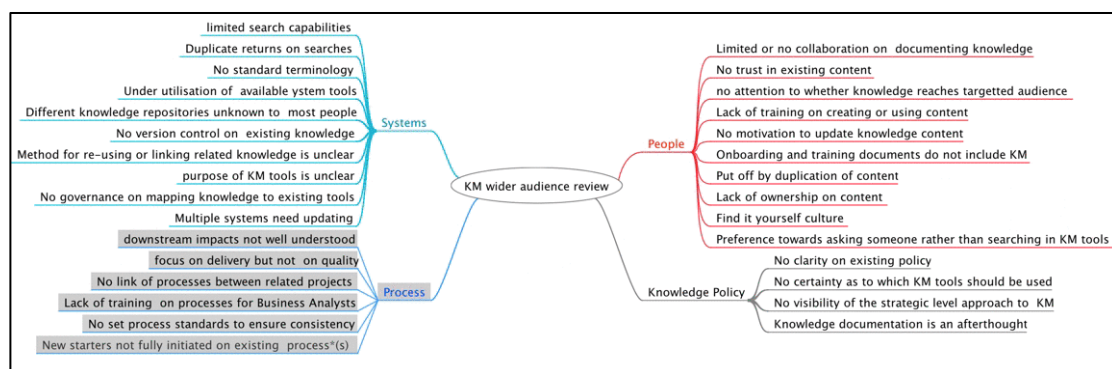


**Figure 4.1: Perceived knowledge gaps**

The above figure illustrates the results of discussions regarding issues attributed to knowledge gaps that prompted the need to address the codification process. The discussions involved the core initiative team and other concerned parties from

different business units. It was highlighted that the complexity of the business was exacerbated by the lack of knowledge dissemination and knowledge application, the inability to share knowledge, the lack of clarity regarding who to contact for finance-related matters, finance knowledge being ‘siloe’d’, and non-standardisation of KM tools. Other noted problems were attributed to the inefficient codification process resulting from the poor relationship between software engineers and the business they serve, valuable knowledge being confined within certain teams, systems’ code not being well-documented, projects being solution-driven at the expense of quality, and lack of ownership for processes and documentation. One surprising concern was about knowledge residing outside of the business unit doing the work. It should be noted that this is an isolated case; but it is concerning nonetheless, because expertise would be expected to reside in the domain that utilises it. One of the most prominent points was the hesitation to survey the existing body of knowledge, out of concern that it would contain outdated information or conflicting sources due to the prevalent duplication of content.

Aspects raised in Figure 4.1 were refined in follow-up meetings. The meeting invitations were kept open to a wider audience and there were focus group sessions, not limited to participants of the KM initiative, aimed at enhancing the level of understanding and appreciation of the proposed initiative’s importance. This was perceived as a way of raising awareness and interest to in the business unit. What came out of the discussions is summarised in Figure 4.2 below:



**Figure 4.2: Existing gaps identified from wider audience**

It is evident from the above figure that frustration was expressed regarding the state of knowledge in various tools and its implications for employees’ confidence in using the existing codified knowledge. As much as this provides an understanding and an indication of the extent of the problems, it would have been interesting to see whether

the audience perceived anything as being done well. This was not asked in the meetings. It may be asked whether this could be an indication that everything is problematic and nothing is being done well in this regard. Arguably, positive elements are often ignored or overlooked, to the extent of being changed unnecessarily or affected negatively because they are not considered from the outset.

The KM team's focus was on ensuring quick and accurate transfer of knowledge. From the team's first meeting, it was evident that a number of tools were adopted over the years as part of encouraging and enforcing the codification process. This raises the question of why there were so many tools to support codification, which were at the time adding to the existing gaps in the knowledge aspects of the organisation. The gap here was the inability to access related knowledge in one location; as knowledge was dispersed in various tools, leading to time wastage when consulting various sources. This also introduced a potential gap in knowledge re-use, while potentially presenting a problem of 'reinventing the wheel'. By virtue of not knowing upfront whether certain knowledge about a process or project existed, the same work could be done, potentially missing key elements already noted or recreating a solution that already existed. Some members were of the opinion that KM is considered effective when there is effective capturing and storage of knowledge; a notion that contradicts the secondary data in Chapter 2. The literature does indicate that effectively capturing and storing knowledge contributes to an effective KM standpoint, but posits that knowledge must fit into the bigger picture of the strategic knowledge purposes and take into account whether the approach is biased towards exploration, exploitation, or both (Newell et al. 2009:232).

The disconnect between the academic literature and the professional environment was evident in the fact that the approach was focused on resolving existing challenges without considering related research, which could highlight the pitfalls or benefits of certain approaches. It can be argued that some academic references to similar cases could make the implementation of similar initiatives easier.

As stated in the literature review, the gist of the codification strategy is "people-to-documents", where knowledge is extracted from people. A case could be made for combining the codification and personalisation strategies to establish a competitive strategy in a knowledge-intensive environment. Hansen et al. (1999:1-2) support this position; placing emphasis on the need for both "people-to-documents" and "person-to-person".

Newell et al. (2009:31) propose looking at KM from a strategic level, and indicate that codification is not done in isolation from the broader scope of KM. The KM team's analysis focused on the codification strategy due to time limitations and the belief that this was where the bulk of the existing gaps emanated from. There was no clarity on what management expected from the initiative. This disregards what was stated in the literature review about defining the strategic knowledge purpose. There is however an enabling context to address some aspects of KM, and those involved do realise that knowledge is a valuable asset.

The following section presents an analysis of the data collected through participant observation for the first objective.

#### **4.6 Objective 1: Participant observation analysis**

An immense effort was made to understand and increase appreciation of the gaps created by ineffective codification processes. Credit should be given to the team leader of the KM initiative, who extended invitations to a wider audience to ensure that there was common ground, buy-in, clarity, and visibility of why the initiative was necessary. It also brought great minds together to champion the impending initiative.

It can be argued that an outcome is likely to be well received when there is involvement and contributions from stakeholders; a notion in line with Augustine et al.'s (2005:86-87) views on free-flowing communication. The discussions arranged by the team leader helped the participants to break the early tensions that come with setting up new teams and to get everyone on board with what lay ahead. It also opened up communication within the KM team, extending to the initiative's intended beneficiaries.

There was however focus on existing problems without noting what was currently being done well. It would have been worthwhile to ensure that the good elements were noted and encouraged or improved where necessary. There could also be learning points that could prove valuable and an understanding that the proposed changes do not fix what is not broken. It also seemed unclear what the initiative's outcome should address or be measured against in terms of the value it brings. For instance, was the objective to improve knowledge content quality and usage so that there is improved delivery and open or free-flowing information? Is the objective to ensure that there is a base for promoting innovation due to the visibility of the existing

knowledge? Is the objective to ensure that the organisation maintains a competitive edge over other insurers based on how they manage knowledge, or is it simply to improve knowledge sharing to address prevalent system issues? It can be argued that such questions would drive the scope of the KM initiative and act as a basis for measurement to determine success, failure or opportunities for future programmes. Figure 2.6 encourages the definition of perspective as part of project strategy. As much as the focus was on KM, the initiative was run in a project setup. According to Patanakul and Shenhar (2012:6-7), defining the perspective clarifies the reason for initiating the project, the business case, and the long-term business objective to be addressed on the initiative's completion. It also presents the strategic concept describing how the business idea aligns with the company's business strategy. This relates to Newell et al.'s (2009:231) recommended approach, where the approach to managing knowledge recognises the strategic significance of knowledge for sustained competitive advantage. This is said to be applicable in a knowledge-intensive environment, where organisations tend to have one of two purposes – knowledge exploration or knowledge exploitation – in mind to help guide the overarching purposes, of which codification is one.

The desire to improve the current situation and the recognition that knowledge plays a big role within the institution regardless of the highly skilled nature of the personnel was evident.

The following section looks at the same objective, but relates the findings of the in-depth interviews.

#### **4.7 Objective 1: Existing gaps: An interview perspective**

There was a feeling that a number of KM tools had been introduced over the years to the extent of creating confusion regarding which tool(s) to use and when. The most widely used tools in the technology division were Confluence, JIRA, Stash, Aris, Specification By Example (SBE), and SharePoint. As one interviewee put it, "The group realised that there were lots of tools but no-one knew where to go, and even when you do find what you are looking for, you don't know if it is up to date". This is a clear indication of the lack of confidence in the existing knowledge. It confirms the concerns from earlier contributions made during the elicitation stage.

The source code for all systems is stored in a repository called “Stash”. In some cases, this is used to confirm business rules when there are doubts or a lack of clarity. It was reported that software engineers were often asked to examine the source code to confirm or explain certain system behaviours or to determine whether a new requirement was plausible. Stash was said to be the only repository that was up to date, as it was visible when code was changed, who changed it, what changed, and how it was done. Stash in the context of the organisation under study was used to measure quality and adherence to standards, because other software engineers reviewed source code before it was accepted into the common pool of storage. One of the respondents stated that “It is the best repository in terms of accuracy and measurement but the downside was that only software engineers understand the source code”. It can be argued that this is expected in a knowledge-intensive environment that has different skill sets. It can also be assumed that Stash in this case meets Liu et al.’s (2013:2127) waste elimination model, because the knowledge components are known and visible to software engineers. In hindsight, Stash supports decodification, the success of which Hall (2006:122-125) claims is based on end-use context or who the knowledge is codified for and the similarity in the interpretation of codes. It is worth noting that Stash as a tool had not been mentioned as a knowledge repository during the data collection from participative observation, but source code was mentioned as a “source of truth”. One respondent indicated that Stash was useful in tracking project details that required new source code or changes to existing source code. Software engineers checking in code to Stash used a label containing the JIRA card number that had details of the business requirements that prompted the change. An example given was that JIRA card number 123 would contain details of a requirement to change the finance calculation for insurance excess. A software engineer making the changes would test the functionality, then add the code to Stash with the JIRA card reference number, 123. In future, individuals can look at the change in Stash and revisit JIRA by searching for the reference number in order to understand the business requirements that prompted the code changes.

It was frequently mentioned that there was no standardisation of or clarity on how the codification process should be managed. As one respondent put it,

“There is no time spent on understanding who the target audience is, who would want which bits of information, when, why and how. There tends to be the approach of collecting information and dumping it somewhere hoping that



someone will use it.”

If Hall (2006:124) is followed, it can be inferred that this approach is likely to fail.

There was consensus on the close association of JIRA and Confluence. A gap was identified regarding the point at which things should be shifted from JIRA to Confluence, because JIRA is only used during the project life cycle. This gap created knowledge loss, because when a new project started, there was no reference to the closed JIRA cards in previous projects. Thus, key knowledge or background could be missed in creating new JIRA cards that may be impacted by the previous projects' work. From a testing perspective, there was a gap in the failure to re-use or build on existing test cases; because an old JIRA card may have good test cases, but these are missed when new ones are created for new requirements. There was however awareness of the commonality and need to share and reuse relevant JIRA content across projects. The gap attributed to the inability to share or re-use JIRA cards was the duplication of content and effort while missing important aspects that would ideally have been picked up had there been linkages of related content. Three interviewees suggested moving the JIRA project content to Confluence upon completion of a project to keep the content visible. To quote one respondent, “Confluence could be a point of reference, the source of truth that can be referenced by future projects or anyone seeking knowledge about an area impacted by previous projects' work”. Another respondent stated that “There is no re-use of existing knowledge. As a result we cannot measure improvement or quality of our work”. It was also raised that “there was a lot of knowledge duplication because people didn't trust what was already stored in the system and reluctantly reinvented the wheel”. This confirms what was discussed in the literature review about poor knowledge storage and retrieval mechanisms, duplication, and other problems or gaps that arise when processes are ineffective. Again, it can be questioned why, if there is evidence in academia about these problems in professional environments, no references are made to academic research. The data from the interviews did not bring up anything additional to what was raised in the academic reference material. One interviewee strongly believed that most gaps could be eliminated by simply spending time thinking about what the knowledge they want to capture is intended for, who will use it, and whether it is necessary. Contrary to that, another interviewee believed the process of capturing knowledge is perceived to be time-consuming because there is no time allocated for it when project timelines are set. The focus is on delivering



projects, and employee performance was perceived as based more on the ability to deliver projects and less on value addition to KM. It can thus be argued that there is a perception that value is derived from delivering a project, with little importance placed on furthering KM objectives. Five of the interviewees raised the subject of challenges in searching for knowledge related to their line of work. They found the searching process time-consuming and disheartening, to say the least; such that they usually look for someone to ask or send an email to the wider group looking for anyone with the requisite knowledge. What is currently stored in the various knowledge repositories is not visible, nor is there a measurement tool to gauge what is most widely used, what people search for, and how long it takes to find something. The gap resulting from this could be a lack of understanding of knowledge usage, tools, and demands, leading to the lack of visibility.

Regarding measurement or metrics, there was no way to gauge the usefulness of new or existing knowledge or whether it reached the intended audience. As one respondent put it, “It is hard to measure the success of knowledge captured because so much has been accumulated without paying attention to whether it is relevant”. It was mentioned that there seemed to be no cultural intent to embrace KM, and this was attributed to a lack of drive and incentives from management.

The existing work structure, ranging from project commencement to elaboration of information to project delivery, was believed to be unsupportive of a distributed knowledge codification process.

Figure 2.3 in the literature review, taken from Shankar et al. (2013:2058), highlights most of the problems mentioned by the interviewees, with a focus on knowledge loss prevention. It highlights defining the roles/responsibilities clearly, creating documents periodically and filtering content, standardising information, executing functional teams effectively, increasing information flow and communication, reducing unwanted information, and preventing data ballooning. Interviewees commonly viewed the documentation process as a problem, because this was usually done at the project’s end and many things would be overlooked because of the difficulty of remembering the important elements that arose while working on the project. The documentation is mostly ignored because it is not considered a deliverable, so there is no incentive or motivation for documentation. Figure 2.4 in the literature review (Liu et al. 2013:2127) is a guide of how to eliminate knowledge waste through continuous interrogation and understanding of knowledge components. Had this approach been

used by this organisation, the ‘know-what’ would consider the problems (gaps, in this case) and store them in a knowledge base. This would allow specific programmes such as this initiative to focus on an identified problem guided by the ‘know-how’, which would detail the procedures of reaching a solution.

All respondents mentioned Confluence as the preferred KM tool for the following reasons:

“It is easy to use.”

“It is easy to search for content if the content has the right labels and tags.”

“It is a great collaboration tool.”

“It is easy to attach images, documents, and screenshots for knowledge sharing purposes.”

“Pages can be shared and the individuals notified of any changes on pages they are watching.”

From a business perspective, one respondent, a business analyst, mentioned SBE as a tool that is being underutilised. To the respondent’s understanding, the tool was used by a few teams, yet the biggest benefit it resulted in was the linking of business requirements to source code. This implied that scenarios or specifications (“specs”) could be tested against code; and, in the event of any changes, the spec is ‘broken’, thus highlighting the effects of such a change and identifying potential bugs earlier rather than later. To some extent, this confirms Kankanhalli et al.’s contention (2003:69) that the role of IT is facilitating the acquisition, storage, retrieval, and dissemination of knowledge. In this case, SBE as a software product was facilitating the acquisition of existing knowledge related to new business specs and highlighting possible areas of concern in cases where the proposed change broke the spec. Based on the feedback received, it appears that with SBE one acquires the business knowledge, stores it, and retrieves it whenever one wishes to review or access the business domain knowledge. This knowledge is distributed to any interested party with access to it. The examples in SBE were said to be realistic and to describe the business requirements. The functional tests confirm the fulfilment of the given requirements.

The findings at this stage highlight some gaps in and frustrations with the existing state of the KM codification process. The findings give credence to academic research, which has identified most of the issues that have been raised. All the

respondents alluded to sifting through existing knowledge being a time-consuming exercise because of the lack of structure and standardisation. One respondent was adamant that spending time understanding what knowledge existed before adding new content and the beneficiaries of the knowledge that one intended to add would be a major step towards a cleaner repository containing valuable knowledge. Only the team leader was aware of a tracking tool called “Piwik”, but this was not being used within the business unit under research, although it was available for usage. Piwik was said to record on a dashboard sources of page visits, the actions taken, the time of the visit, the average time spent on a page, the number of page visits, browser information, a list of keywords used in searches, the visitor’s location, and, above all, some reporting graphs on the statistics of a KM tool. Considering the number of tools that were in use, Piwik was said to have the ability to provide the statistics on links to pages, where pages are referenced from, keywords that are widely used, and automated reports on a daily, weekly, or monthly basis. This could arguably shed some light on actual usage metrics and could provide statistical evidence of whether there is merit in having numerous knowledge tools.

From management’s side, it was felt that there was an opportunity to encourage KM processes, as this would potentially make work easier while opening up opportunities for innovation once there is a clear understanding of business aspects recorded accurately.

#### **4.8 Objective 1: Interview analysis on the existing gaps**

Amongst all the interviewees, when asked which tools were most widely used, Confluence and JIRA were consistently the first two mentioned. Amongst the software engineers, the use of Stash seemed to be working well, and was apparently ideal for what the organisation expects in terms of having a source of truth: an up-to-date record of source code and a history of the changes that have transpired over the years. In case of a bug picked up in a production (live) environment, code changes can be traced and current versions can be compared to previous versions. The software engineer who put in the change is also identified; not necessarily to allow them to be blamed or reprimanded, but to make it possible to discuss or question the change for clarity’s sake.

The gap identified was the disconnect between JIRA and Confluence upon completion of tasks or projects. There was an opportunity to link the two so that Confluence would be the knowledge base not limited to project work or tasks. Once a project is completed, a JIRA card is closed. However, there is a need for that work to be well-documented for future reference, and the knowledge base can grow from there when the same business functionality is changed or extended. This arguably presents an opportunity to build innovative ideas that complement the clearly defined business functionality recorded in the knowledge base. The collaboration of JIRA and Confluence was perceived as useful in increasing knowledge visibility and grouping related knowledge together.

What is apparent from the responses is that the issues raised are not new to the academic field. It is thus puzzling that the failure to reference academic research costs an organisation money and resources that could otherwise be channelled to other areas. The KM initiative's exercise is likely to be repeated at some point, and in all likelihood the academic literature will again be ignored and the same problems will remain prevalent.

It is evident that the organisation views KM as critical to their operations, judging by the tools in which they have invested over the years and the appointment of a team to address the existing issues.

Figure 2.1 discussed earlier relates to providing high-quality, reliable, and fast information systems implementation by reusing codified knowledge. There is also mention of rewarding people for use of and contribution to the knowledge base. Figure 2.3 provides a framework for avoiding knowledge loss and, if adopted, it could presumably eliminate most if not all of the existing gaps highlighted in the interviews.

#### **4.9 Objective 1: Summary**

There were similarities in what came out from the two data collection methods. The findings can be classified as organisational and KM codification gaps. The organisational gaps relate to culture, focus on delivery, and the collective relationships between the business-facing personnel in business technology and the business that they serve. The main codification gaps are a result of the numerous tools available; the focus on tools rather than processes; and knowledge leakage due to a lack of accountability for keeping knowledge relevant; leading to mistrust of the

existing knowledge. There is no visibility; nor are there metrics to monitor knowledge usage and relevance. Schulz and Jobe (2001:7) state that the costs are impossible to recover when knowledge needs updating or becomes obsolete.

There was some positive feedback about the current state of affairs. The SBE approach was acknowledged as helpful in providing visibility regarding the impact of changes and the testability of business processes. Stash was reported to be in a very good state. Management's interest in pulling out resources from different teams so that they can work on this initiative deserves credit, as this shows intent to address KM-related issues.

The next section presents findings related to the second research objective. The aim is to report on and evaluate the approach that was adopted by the KM team. The findings from two perspectives, namely participant observation and interviews, are reported on.

#### **4.10 Objective 2: Participant observation perspective on the approach adopted**

This section highlights what transpired on a week-by-week basis upon the commencement of the KM initiative. Considering that the identified gaps reported under the first objective are not new to the research field, the approach for addressing them could have benefited from the approaches proposed in the academic research, such as the one in Figure 2.3. Academic studies are potential candidates for providing guidance in the professional environment; especially those conducted as case studies in industries of a similar nature or in knowledge-intensive environments. The observation was complemented by interviews, which will be reviewed separately. To reiterate, the discussion and analysis that follow below are those of the researcher and not the KM team.

##### **4.10.1 Week 1: Learning the ropes**

The initiative's team leader had worked on previous KM projects and had been driving the initiative's structure and coordination. The team was raring to go, and had a lot of zeal and energy based on the last meeting they had with the initiative's team leader confirming when the programme was officially due to start. To give some

background, in the meeting participants were asked why they wanted to participate in this initiative. Three common words that came out amongst many were “passionate”, “motivation” and “inspiration”. There was talk of passion for KM, motivation to resolve KM issues, and being inspired by the idea of contributing to the knowledge domain that is known to not fully functional.

At the initiative’s beginning, the team leader was unavailable due to unforeseen circumstances, and this created confusion and uncertainty within the group. There was no plan of action or clearly defined path regarding what had to be done at the start. There was however someone from management who assumed the role of leading the team. The main focus was on the existing problems and the existing KM tools. The team adopted an agile methodology, which had proved successful in rolling out the business unit’s software products. There were stand-up meetings to clarify and make visible what everyone was doing and to identify issues as early as possible. Although the work was done collaboratively (mostly on the whiteboard), there was dominance from the management team member, who already seemed to have a plan of how things should work and what the end game was. He basically drove the discussions and roadmap while assigning tasks to other KM team members. As much as leadership is required in projects of this nature, the literature emphasises the importance of collaboration (refer to the advantages highlighted in Table 2.1). The discussions in the first week were to a large extent prescriptive. In these discussions, one member was vocal about there being limited participation from other members due to the way in which things were being imposed on the team. He was alluding to the presumption that there was already a prescribed outcome, despite the fact that they had assumed that the process would be investigative, leading to the recommendation of a codification approach. In working through the existing knowledge, a team member came across pages containing previous KM work and material resembling the current initiative. This raised uncertainty, with some members questioning why they had not taken the time to understand the work related to the focus of the current initiative that had been done previously. After a few discussions and tasks, one member expressed concern about the direction the team was taking. As part of the group, I presented an academic reference to highlight the approach that should be followed and was dismissed outright as being too academic for what the initiative was trying to achieve. I strongly felt that the team direction was incorrect and was doomed to fail. As shown in the secondary data review, the academic input is based on

research into business processes and contexts from which theories are deduced to solve real business challenges. To that effect, it can be argued that the notion of labelling someone as “too academic” for stating what academic research posits is unfounded and a false dichotomy. In the context of this research, the data collected from the case study will be available in the public domain and might present an opportunity to do things differently in another organisation. It might also be challenged by another scholar. Ultimately, its benefit would be to identify causal designs or structures as in Figure 2.9 and to promote creative thinking in the business domain. Two participants questioned why the start of the initiative was not postponed upon realisation that the team leader was not going to be available for the first two weeks. The reason, according to one, was that the team leader had spent lots of time on KM issues and had ideas on how to approach projects of this nature, judging by her success as a facilitator of initiatives targeting technological advancements.

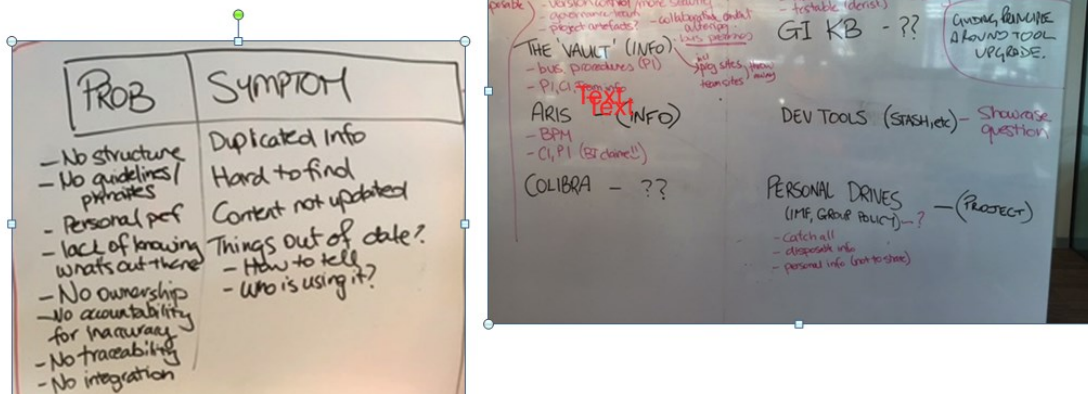
The team felt that the investigation and initial work had to be tools-agnostic and that once there was a clear direction, the right tool for the chosen process would be selected.

There were regular meetings to keep track of the tasks at hand and to identify where the bottlenecks were. The dominance of one member who directed the team by virtue of his position confirms what was raised in the collaboration section in the literature review, where individuals conform to an authority figure, thus stifling their own contributions. Surprisingly enough, one of the participants found a page in one of the knowledge repositories that had details of most of the problems that were being rediscovered. A prior team had investigated the existing gaps and problems regarding KM that were being faced, so this was evidently duplication of effort.

Figure 4.3 is an image of the whiteboard sessions, with the left side stating that the team had to understand the current state and purposes of the existing tools and mapping content appropriately. It shows the symptoms of the existing problems. The right hand side describes the existing tools and what they are used for. It was evident that many tools were used and some were unknown to some employees. Much time was spent trying to understand what the different tools were being used for and who was using them.



- Understand current state
  - Problems and Symptoms
  - Tools' purpose
- Mapped content classification to tools
  - Info, Team and Project



**Figure 4.3: Week 1 brainstorming**

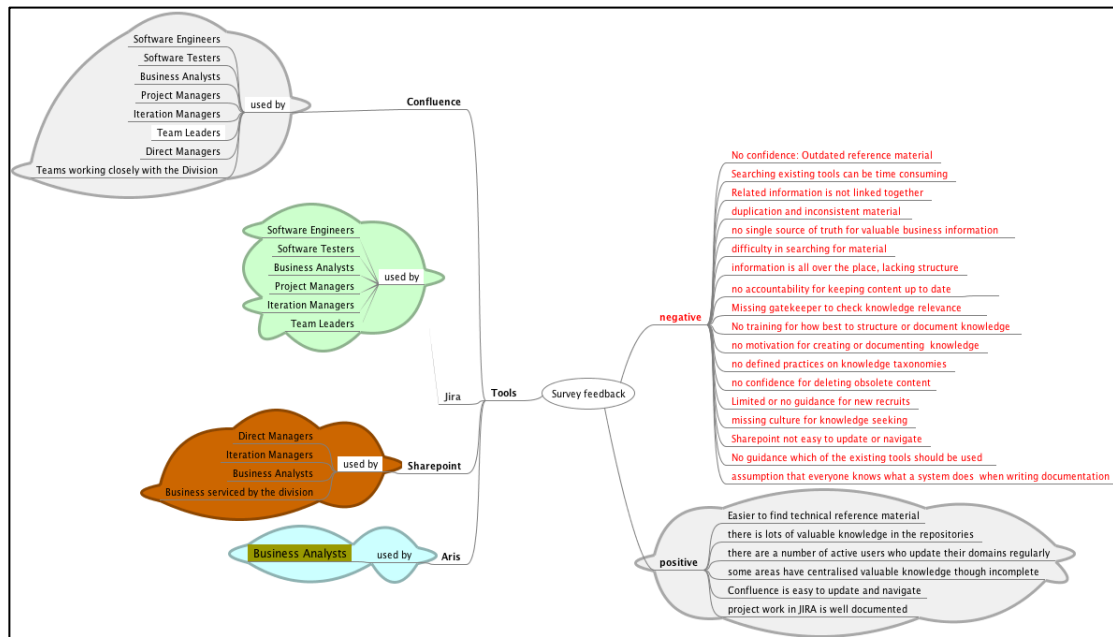
To quote one participant, “We are not after all the knowledge in one place but knowledge in the right place. It is important to know where to search and find the right knowledge when needed.”

A survey was sent out to obtain people’s perceptions of KM. The survey was short and simple. It asked what KM tools were in use and what problems and benefits could be attributed to those tools. The survey was sent via email, responses were collated, and similar answers were grouped together. This exercise was limited to the business technology division. The main issue that was prevalent from the survey was the lack of trust in the existing knowledge sources. It was perceived as preferable to ask someone rather than to consult a knowledge source, and in some cases software engineers were asked to look at the source code to get an appreciation of a particular knowledge domain. There was some optimism amongst the software engineers, as most of their work was kept relevant, based on making everyone a custodian of the knowledge repository. To quote one respondent who identified JIRA and Confluence as the main tools: “JIRA is an excellent tool for scrum management. However, teams do not document their work as they go (the state of play). Secondly, useful long-term knowledge is not extracted from JIRA cards and stored in Confluence”.

For Confluence, “It is an excellent store with reasonable search criteria. However, users do not do adequate wiki gardening and do not add enough labels or indexing”.

Figure 4.4 summarises the responses from the survey.





**Figure 4.4: Week 1 survey outcome**

The survey complemented Objective 1 in identifying the gaps. It was part of the KM team's initiative; unrelated to the participant observation and the interviews carried out as part of the research. The interview questions asked which tools were widely used, meaning that one could mention tools used by other teams; whereas the survey asked specifically for the tools that the individual used directly in their work. The survey confirmed what came out of the interviews and what was observed with regards to the existing gaps. However, the survey also provided clarity and allowed for responses to be categorised based on the participants' position title. The survey was not anonymous, so the responses based on tool could be mapped to the titles of people using that tool. The interviews went further in determining whether knowledge could be tracked to take note of validity and changes, amongst other aspects. The interviews also considered the role played by management with regards to KM; something that was not pertinent in the survey. From a participant observation perspective, various teams and individuals were observed and similarities were sought. This resonated with the survey approach, where individuals responded in their own capacity, but there was comparison to other similar responses to deduce common or varying behaviour. The participant observation and interview approaches disregarded the title of the person being interviewed, as this was not a necessary consideration for the research objectives.

The outcome from the first week was to introduce three knowledge categories: Info, Project, and Team:

- The ‘source of truth’ (Info) stored in Confluence and SharePoint for sensitive content.
- Knowledge specific to a project (Project) stored in JIRA.
- Knowledge specific to a team (Team) stored in Confluence but could also stored in SharePoint.

Consultations were conducted that extended to those outside of the KM team. These were conducted in open workshops that the KM team. The outcome was presented to a wider community and suggestions were put on a whiteboard for further brainstorming. The focus was on the knowledge structure to facilitate effective storage and the searchability of relevant knowledge. The supposed rationale was that explicit knowledge should be easy to find if grouped accordingly.

There was overwhelming input and excitement from the wider community in the workshops, so Week 2 was dedicated to working on this feedback.

#### **4.10.2 Week 1 analysis**

This was a new initiative for the business unit that required research on best approaches and collaborative effort. The members of the team were clearly passionate about KM. A team requires guidance, but the whole point of a cross-functional team is to collaborate and leverage different skillsets. It can be argued that this can contribute to a positive outcome, so there was no need for a management team member to impose an approach and hand it over to team members for implementation. Newell et al. (2009:92) discuss the increased pool of knowledge resulting from collaborative work.

Arguably, the team should have assessed the previous investigative work on the state of KM that a team member discovered while going through one of the knowledge repositories. Its relevance and applicability to the work that the team was busy with should have been gauged. Duplication was raised as a problem during elicitation. The fact that there was documented evidence on the existing gaps that was not known about exposes a problem with the codification process. The team could have assessed

what had been done previously instead of starting from scratch and possibly missing some valuable learning points.

To the team's credit, the whiteboard sessions made visible what was going on and provided clarity regarding the tasks at hand. The survey provided allowed for the current state to be compared to what had been discussed prior to the commencement of the KM team's work. It is surprising that the interaction was more open outside of the team than it was within the team.

According to Philbin and Kennedy's (2016:40-41) project approach matrix, with regards to analysing and responding as well as delivery and execution, soft disciplines talk about sense-making and social connectivity in a project strategy approach. Using this matrix, the things the team did well were the formulation of written and spoken narratives; developing a framework with which to work (the Info, Project, and Team plan); and regular communication, though this could have been better within the team. The team failed on motivation and inspiration, as one member felt his opinions were suppressed. The lack of motivation could also be attributed to the absence of the team leader, who had briefed and met the team on numerous occasions to the extent that she had respect and support from all participants. The team also felt like they were not doing anything new, as there seemed to be a pre-defined outcome and this was not what they thought was their mandate was, based on earlier discussions with the team leader who was unavailable at this stage. The team contributions and openness were also stifled, based on how the team was steered into a pre-defined route.

#### **4.10.3 Week 2: Building on feedback**

The feedback suggested that there was no clear understanding of the knowledge classification, so time was taken to clarify this by providing definitions and presenting them to the business unit. The following were the definitions discussed but not formalised in Week 1:

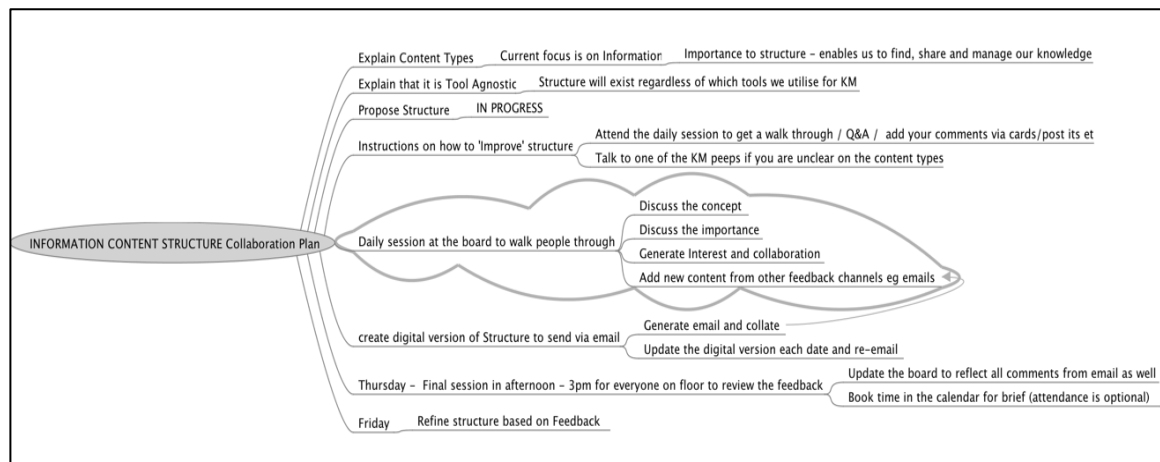
Info – Information about processes and practices; the reasons we are in business. This is the source of truth about what we do.

Project – A project aims to change our processes and practices. A lot of content is created during the process. As changes are implemented, the source of truth should be

updated. At the end of the project, this content has no on-going purpose and should be archived.

Team / communities – Groups of people come together and need to manage their ways of working, collaborate, share, and socialise. If the team were to be dispersed, any content here would have no on-going purpose.

The following was compiled as a plan for the second week:



**Figure 4.5: Plan for Week 2**

The plan was aimed at promoting collaboration and getting people on board with the proposed structure that was being developed. Two sessions (morning and afternoon) were held on a daily basis to take people through the proposed structure as it was being developed in order to dispel any misunderstandings or resistance. The team stuck cards on a whiteboard detailing how they wanted knowledge to be structured. This would lead to the creation of templates based on the type of knowledge and which area it serves; eventually leading to the standardisation of the codification process.

The outcome from this week would build into the following week, where the proposed structure would be in a state that could be documented in Confluence and shared for confirmation. The focus was mainly on collaborative engagements.

#### 4.10.4 Week 2 analysis

The team realised that a cloud had been created over the proposed structure. This led to time being devoted to socialising the terms and making people understand the “Info, Project, and Team” proposal. The team should be credited for stakeholders’ involvement, which highlighted the level of interest in improving KM. A plan was also drafted indicating the direction to be taken during week 2.

#### 4.10.5 Week 3: Proposed direction

A more detailed document was drafted and sent to the wider community. This document aimed to provide clarity on the existing tools from a group level so as to align tool usage to what the group proposed.

Tool	Content source	Proposed to hold	Notes
Confluence	Main knowledge base (Main KB) (Info)	<ul style="list-style-type: none"> <li>Any information about the solutions we create (specifications, diagrams, descriptions, etc.)</li> <li>Information about the processes around building and managing solutions (tools we use, how-to, work instructions, references, etc.)</li> </ul>	Needs a major re-structuring to encompass all current needs? There are likely to be many types of content in this space; much of it is probably currently in project and team sites.
	Team and project pages (Team)	<ul style="list-style-type: none"> <li>Specific team- and project-based information</li> </ul>	The suggestion is to eliminate these in favour of using SharePoint as the group solution. This needs much

			further investigation.
SharePoint	Department and team sites (Team)	<ul style="list-style-type: none"> <li>All team and department information (leave calendars, news, updates, location and event info, message boards, social sharing, link to relevant Yammer groups)</li> </ul>	Suggest using SharePoint in line with group direction. This will support the One Intranet strategy from group internal communications.
	The vault (Info)	<ul style="list-style-type: none"> <li>All information regarding how end-users use the system, business rules and limits, context and rationale for steps, reference information such as codes, descriptions, and contacts</li> </ul>	
	Document library (Info)	<ul style="list-style-type: none"> <li>This is not a source per se but more of an acknowledgement that sometimes the documents behind Confluence will need greater versioning and permission, so there is a requirement for some documents to live in SharePoint.</li> </ul>	It would be expected that these documents would be linked to and mainly accessed from Confluence.
	Project sites	<ul style="list-style-type: none"> <li>All projects will have a SharePoint site to store all of the project artefacts and support the</li> </ul>	Potential duplication with the vault, potential to link to mitigate this.

		collaboration of a project team.	
JIRA	Projects (Proj)	<ul style="list-style-type: none"> <li>Tasks related to projects. These are the records of work to be done for the purpose of managing tasks. If this creates new aspects of or substantially changes an existing solution, then the related 'info' in the main KB should be amended. Post-project, these should only be relevant for tracing issues and should not need to be relied upon to understand the current state.</li> </ul>	These would link to Confluence pages, project content, and SBE.
SpeckSaver	SBE (Info)	<ul style="list-style-type: none"> <li>Key value-adding business processes are described, along with the inputs and outputs expected to support testing.</li> </ul>	A lot of attention is needed to ensure that this can be easily and appropriately linked to Confluence, JIRA, and the vault to avoid duplication
ARIS	Models (Info)	<ul style="list-style-type: none"> <li>A business process model that supports visualisation of processes, key artefacts of value, and articulating and allowing reporting on the relationships between them.</li> </ul>	Contains very little content. There is no current plan to start putting procedural information into the models.

Collibra	Group data dictionary (Info)	<ul style="list-style-type: none"> <li>Definitions of key terms, metrics, etc. A log of all the reports available and the parts of the business process that they relate to.</li> </ul>	Potential crossover with any glossaries created and possibly also with some of the ARIS content
Personal drives	Files stored in personal drives (n/a)	<ul style="list-style-type: none"> <li>Have no place other than for personal information and extremely early drafts of content. No copies of information should be stored here and as soon as there is a sharable draft content should be moved into the KBs.</li> </ul>	Part of the group's strategy
Email	Email content (n/a)	<ul style="list-style-type: none"> <li>Email will continue to play a role, but with the ability to comment and collaborate on content and tag it to Yammer (when that content is stored correctly), we should avoid content being stored in email wherever possible. The conversation should happen around the content so that this conversation is accessible in future.</li> </ul>	Long-term journey

**Table 4.3: Proposed direction for existing tools**



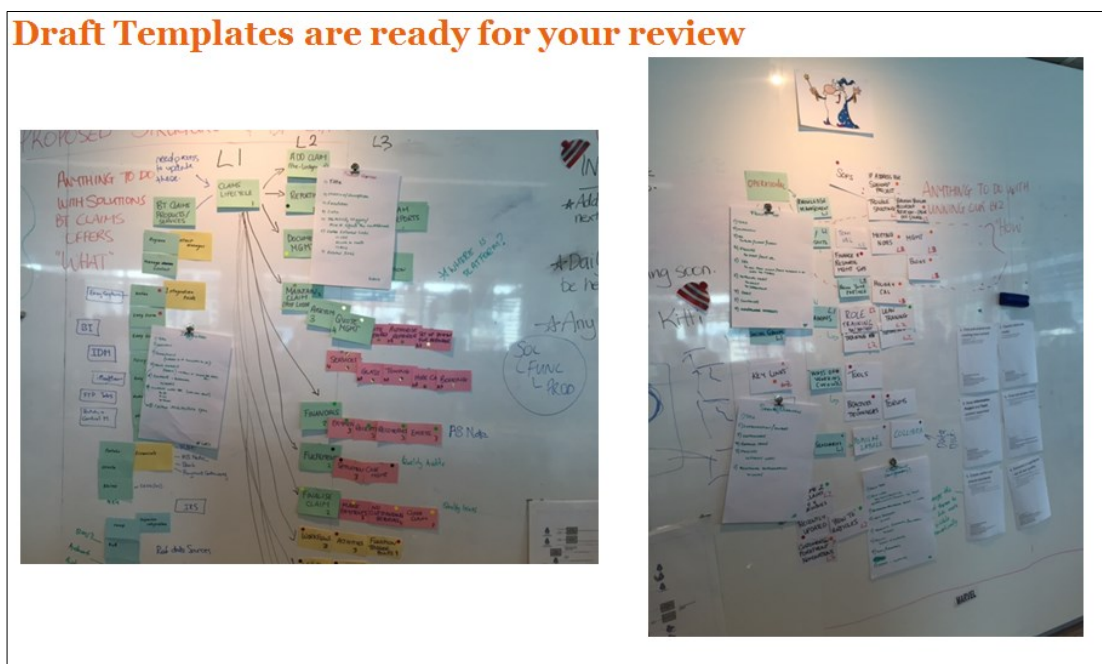
In the context of the research, it is paramount to isolate the tools that were of concern to the KM team. As shown in Table 4.4, the tools used by the business unit were Confluence, JIRA, Aris, personal drives, and email. Sharepoint was used to a limited extent, but it was not the focus of the initiative. Personal drives and email were also not in the scope of what the team was looking at. The tools that were of major interest to the team were JIRA and Confluence, as these are the main tools used in the project setup and the tracking of work. Confluence was described as the “source of truth”, while JIRA is used to track project tasks, to plan, and for work estimation. It is the reference point for the agile approach to projects. Aris is used by some business analysts, but this seems to be an issue of preference and is not enforced. Based on the current state of affairs, removing JIRA and Confluence would affect work quality and progression, whereas the removal of ARIS and Sharepoint would have minimal or no impact on the business unit.

The KM team members spent time on creating templates for adding new content and defining the structure for codification. Shankar et al. (2013:2058) encourage standardisation of information, and templates are one approach to this. Bosua and Venkitachalam (2013:340-341), in their discussion about artificial networks, also mention codification templates as an example of codification enablers. They provide the additional examples of models and structures to store codified content, semantic tagging, and a knowledge codification culture.

There was one team member dedicated to what was termed “gardening”; i.e. going through duplicated, unstructured content for one domain and cleaning it up. The idea was to present the ‘before and after’ state, so that people could appreciate the importance of taking responsibility to structure things properly and updating regularly to keep content relevant and useful. The results from the gardening were alarming, showing for instance 20 different pages talking about the same thing. This cannot be attributed to the tool: it is a result of the codification process. Based on Bosua and Venkitachalam (2013:341), it can be assumed that this is an element that could be addressed by the right codification culture.

The template structure was brainstormed on the whiteboard in order to ensure visibility while getting valuable feedback before the structure was presented to a wider audience. The team set a maximum of three clicks when navigating through menus before getting to the content required. The templates had to provide a structure

that would contribute to the codification reference. Figure 4.6 is a snapshot of the work effort that went into preparing the template structures. This involved numerous meetings and interactions to assess how the templates would work and whether this was feasible. The whiteboard was open to anyone interested, and the KM team members made themselves available for consultation if anyone wanted a walkthrough or had questions or suggestions.



**Figure 4.6: Template design brainstorming**

Meetings about the project's progress and what was expected of it were held behind the scenes with one of the executives within the division. One team member felt that the whole team should have been involved in order to have clarity regarding what was going on, as opposed to one member being isolated for updates. In some cases, the team's approach would change upon receipt of the feedback, because the person meeting the executive member would return and report on the meeting outcomes, which in some cases swayed the team towards a different path.

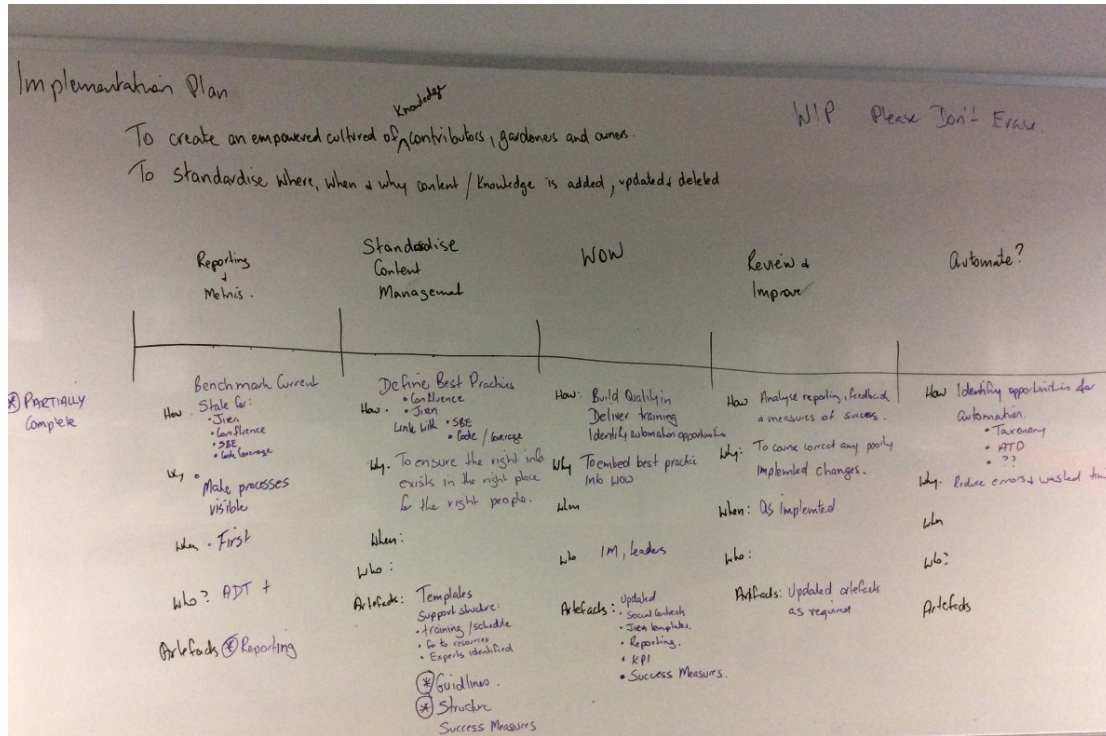
#### **4.10.6 Week 3 analysis**

The document detailing the tools used within the organisation and what purpose each tool was proposed to serve clarified the concern raised earlier by some of the participants about there being a prescribed outcome. The “Info, Project, Team” proposal was nothing new, but something already in place to which the management team member had access. This worked against the team’s mandate, as the perception was that the team was meant to identify, rectify, or propose a new way forward by determining how things could be done differently without being guided by a predefined structure. The management team member providing the team with guidance led the team into adopting this approach. The confusion within the team about the proposed structure was apparent, as participants failed to comprehend how the “Info, Project, Team” approach could be applied in a real work scenario and how it would address the existing codification issues.

#### **4.10.7 Week 4: The team leader returns – implementation plan**

Week 4 marked the return of the team leader. Two members from the team were deployed back to their respective teams and three new members from different backgrounds and disciplines joined the team. For continuity purposes, they were partnered with those who had already been part of the KM team. Their mandate was to help with the implementation plan for the current week. Three members were due to leave the week after and were to be replaced by another three coming in to help with what was planned for that period. There was obvious surprise and dismay from the team leader regarding the path that the team had taken. The “Info, Project, Team” approach was set aside; indicating that the team leader had a different opinion on how to take things forward. It was not clear whether the management team member stopped coming this week because the team leader had returned or due to other commitments. There was however some relief for the participants, as the team leader’s approach was more interactive, more involving, and allowed the challenging of ideas. The team’s ideas were recorded during discussions without dismissing those deemed inferior. Once all ideas had been recorded, they were discussed and an agreement was reached as to which ideas aligned with where the initiative was going

or added value to the cause. Many more ideas were generated in this week and participants opened up to air their views more than they had in previous weeks. The plan was subdivided into themes, namely reporting and metrics, standardisation of content, ways of working (WOW), review and improve, and automation.



**Figure 4.7: Implementation plan brainstorming**

The discussions held about the implementation plan resulted in Figure 4.7 above. These were seen as inputs for the implementation plan. Prior to this, there was a whiteboard session where everyone had a whiteboard marker and had to put down their ideas on how they would address the issue of avoiding duplication and improving the quality of content. This approach was adopted for brainstorming. In some cases, cards were used on which people wrote their ideas. The cards would then be put on the table and discussed one by one.

The team was split to ensure that all the themes were addressed. Team members were assigned to themes in pairs. The feedback on the topics was put on the whiteboard and discussed by the whole team. Figure 4.7 above is a picture of the whiteboard taken at the time when the team was putting down their ideas. The plan's main emphasis was on creating an empowered culture of contributors to the knowledge base: a culture of

“gardeners” and owners. The term “gardener” was chosen as a reference to how one maintains a garden to keep it healthy.

The details of each theme are discussed in the next section.

#### ***4.10.7.1 Reporting and metrics***

The team wanted constant reports from the systems (Confluence and JIRA) on pages that were stale or not being used. This would help to clean up the content and keep it up to date. There was a need for the visibility of the most widely referenced pages and to keep track of new pages being created so as to ascertain whether they were relevant and not duplicates. For new pages, the plan was to check whether the page was not creating a duplicate entry and whether it had been created in the right place. There were cases where new pages were created, yet the content could have been added to an existing one. Other useful metrics considered were time spent on a page, search time, updates on pages, main contributors, and deleted pages. For the system engineers, code coverage was mentioned as a way to promote the testability of code. There was a push for creating ‘technical debt’ tasks to implement tests on code that was not currently testable. This was raised as a way of increasing the quality of existing software applications.

#### ***4.10.7.2 Standardise content***

This was raised to ensure standardisation of where, when, and why knowledge is added, updated, and deleted. As stated by one contributor who had previously documented one of the past major projects, “People are quick to add pages without checking if there is one that already exists and are not bold enough to delete irrelevant material”. The main driver for this process was the establishment of best practices to ensure adherence to a recommended way of doing things, including how pages are added, deleted, or kept current.

The standardisation process was to be supported by the creation of templates, guidelines and training, identifying experts in different areas, and setting success measures. This being done, the expected outcome was to ensure that the right knowledge existed in the right place for the right people. One team member said that “instead of just adding a new page, questions should be asked about its relevance and whom it is targeted for?”

The team mentioned listing questions for consideration when creating new content. These were to be drawn up and discussed once the templates were ready.

#### ***4.10.7.3 Ways of working***

The plan behind this was to ensure an increase in the output quality of the software that the business unit develops, maintains, and manages. The aim was to have best practices embedded into how people do their work. The best practices were to be kept prominent by ensuring that the knowledge was readily visible and easy to find. The best practices would be enforced through social contracts, templates, key performance indicators, identifying automation opportunities, and success measures. As stated by one contributor, “there already is a social contract on ways of working so let’s incorporate knowledge management into it”. Reporting would also come into play by showing metrics on improved or reduced quality over time. The responsibility for this would lie with delivery managers. The management team was to be approached regarding incentivising and acknowledging KM contributors.

#### ***4.10.7.4 Review and improve***

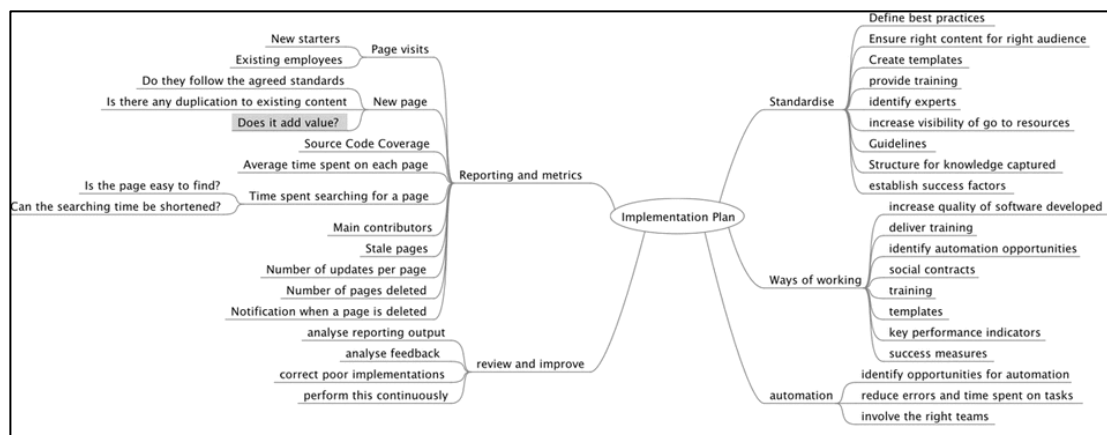
This was raised as a feedback loop to keep track of where the problems are and to improve where necessary. The review would also be done by looking at the measures of success.

#### ***4.10.7.5 Automation***

The team realised that there were opportunities for automation. There were tasks that were done repeatedly that would save a lot of time if automated. It was thought that monitoring would be easier if the reporting metrics were automated. Automation would cut across various areas, such as reporting, usage and contribution metrics, and maintenance; through for instance notifications on stale pages that may need attention or updating and pop up messages when someone tries to add content that already exists. An example given was that, when someone wished to add something new, an automated script would run in the background searching for that title or content, so that the user would be notified if something along those lines already existed.

The implementation plan discussions are summarised in Figure 4.8 below.





**Figure 4.8: Implementation plan discussions**

The approach followed in this process resembles the framework in Figure 2.3 in the literature review, which reflects on collaborative networks for KM intended to minimise knowledge loss. It includes some of the aspects witnessed in drawing up the implementation plan in this study, such as the standardisation of information, workshops, increasing the flow of information, and communication. Communication has been raised in previous literature as a pathway to cross-skilling. What seems to be lacking is a determination of what knowledge is to be captured and for whom it is intended. Following Hall (2006:124), knowledge should not be codified in the hope that someone might find it useful someday. It can thus be assumed that a better approach is to determine the knowledge's intended audience and what knowledge people already possess so as to determine the value derived from the codification.

#### 4.10.8 Week 4 analysis

The return of the team leader certainly changed the mood within the team and raised the level of motivation. Participants felt involved and appreciated for their contributions. They were given a platform to contribute. The number and quality of ideas that came from previously reserved participants was especially evident. Although not necessarily a manager, the team leader was in charge of the team. The leadership style employed conforms to Augustine et al. (2005:86-87), where leadership involves the promotion of free and open access to information, relinquishing control, and avoiding micromanagement; while appreciating that the team consists of highly skilled individuals. The implementation plan had clear themes, which were discussed in detail to ensure that everyone was on the same page.

Figure 4.8 shows that there is no ambiguity regarding the content of each of the themes. What seemed to be lacking from the plan was what was learnt from Shankar et al. (2013:2058) about clearly defined roles and responsibilities, which allow for clarity within the team as to who will ensure that a theme has been addressed. This absence is probably due to the difficulty of the team looking at all issues collectively. In a bid to change the culture towards KM, the ways of working address the research question of “How do we improve the codification process so that people can trust the existing knowledge?”

The process following the team leader’s return showed no continuity with what had been done in the previous weeks, which clearly indicates a lack of appreciation of how the team had progressed.

#### **4.10.9 Week 5: Focus on automation and structure**

The work on automation and structure changes was carried over from the previous week. Automation was discussed, but nothing concrete was done. The work on structure had begun, but there was a lot to go through.

This week was dedicated to further research and analysis regarding what could be automated and how it would be done on the most widely used KM tool in the business unit, namely Confluence. A resource from the automation team was asked to spend time with the team and give guidance and input into the process. For a start, reporting was the target area; beginning with a weekly report of the new content that had been added and publicising the most-accessed pages on Confluence. The outcome of this was seen as increased awareness, appreciation, and value of what is in the knowledge repository. A few examples on automated reporting were shown to the team and assessed on whether they would add value. In the end, the automation team member issued an open invitation for further consultation and assistance once there was a defined list of what needed automation. One of the technical team members (a software engineer) was tasked to sit with the automation resource to learn and understand how automation is done. Upon understanding the automation process, the software engineer would attempt some of the automation work. Having taken a closer look at the automation requirements, the team agreed that they needed more time for consultation to prepare a list. The team also agreed that automation would come at the end once the knowledge structure and other issues had been resolved. The other team



members began looking at how to structure the existing knowledge base into something that provides a clearer indication of what already exists. They had a new environment (called a “Space”) created for them in Confluence where they could start trying out some ideas without affecting the existing knowledge base. They copied across what they saw as relevant whilst adhering to the structure they were trying to adopt. Not much progress was made during this week, as this involved a new approach and the testing of ideas. There was great collaboration, and team members were assigned sections to work on once a structure was agreed upon. The work was done collectively on the whiteboard and on desks to ensure a common understanding and to obtain as much input as possible. The team wanted to have classification themes, templates, and examples of how to handle the process going forward. They wanted to change the culture by encouraging people to contribute and to be custodians of the knowledge, such that one would not be afraid to delete irrelevant or stale content. They also wanted to promote a culture of interaction within and across teams, as this would promote knowledge sharing and ensure that the knowledge recorded would benefit a wider audience. The involvement of stakeholders was necessary to initiate the cultural change and the belief that existing knowledge can be trusted if there is commitment. The team encouraged everyone to ask themselves three questions, namely, What value is created by the knowledge content I am creating?; Who does it benefit?; and, Is there existing knowledge related to this? If so, it should be linked or added to that body of knowledge without duplicating.

The presentation to the whole business unit for this week concentrated on highlighting the current state and how it could be improved using the work that the team had done as examples. One particular example showed a business process that appeared in seven different places with conflicting content, as some had become obsolete; along with the proposed state showing all the relevant knowledge in one place, which was easily searched for and easy to navigate.

#### **4.10.10 Week 5 analysis**

The push for this week was to put ideas into practice so that the KM team's message and ideas could be visible in a knowledge repository showing the current state and where things were going. The feedback was perceived as productive when stakeholders could raise concerns or questions if they were given the opportunity to browse through the new structure. This week could be summed up as "selling the team's ideas". The team presentation showed how things could be improved and what it would take to get the codification process to a level that is easy to maintain, with great visibility of what is available supported by easy navigation and searchability. The searchability enhancements were due to the use of meaningful and appropriate labels or tags. It also indicated what automation could bring to the process and the intention to let automation handle the mundane tasks such as keeping track of new content, deleted pages, the most referenced knowledge sources over a given time period, and the biggest contributors to the knowledge base.

The next section finalises the progression of the KM initiative.

#### **4.10.11 Week 6 and 7: Proof of concept on new structure**

A few topics were identified and pursued as trial candidates for the codification process. New pages were created on Confluence and structured using templates that had been created earlier. People with great knowledge of various subjects were engaged in designing new templates and populating the new pages guided by the structure that the KM team was pushing for adoption. Unlike the previous work done on a separate space, this was done on the active knowledge source content. Obsolete knowledge sources were deleted. Related material was updated to show the dependencies or merged to a common location. This was done to avoid unnecessary duplication and to ensure that there was a single source of truth (referred to as "Info" in the proposed taxonomy). The team leader was not too concerned about the naming, but focused on getting the work done and ensuring that the structure and process made sense. All she wanted was a solution that was easy and understandable; avoiding the prevalent confusion about what 'Info', 'Project', or 'Team' were. Again, this was an indication of differences in approach. It was therefore clear that the outcome of the initiative would have been different had it started with the current

team leader. A new structure was tested on a smaller scale, with the intention of using it as a guideline for future content.

#### **4.10.12 Week 6 and 7 analysis**

This was the ultimate stage of the KM initiative and the commencement of knowledge migration from the current state to the new approach. A proposed structure had been defined and assistance was sought from subject matter experts on how to design templates and test them against actual data so that improvements or changes could be made if necessary. It also involved the clean-up of existing knowledge and a demonstration of how the current codification could be improved by standardisation, the use of templates, taking responsibility, and having the right culture towards knowledge. What seemed unclear was the strategic direction of the work being done. It is good to have these tools, but it was not apparent how the momentum would be maintained, who would have the responsibility of overseeing what was being done, and what the long-term goal for the work being done was. In the context of a knowledge-intensive environment, some questions come to mind, including whether this would be a platform for promoting coordination leading to innovation; and whether it would be a reference for best practices, or a way to improve quality of work, thus creating an edge over competitors.

These questions were not asked or addressed in this research, but are relevant based on the wisdom gathered from the secondary data. It can be argued that the process would carry weight if its benefits and short- and long-term goals were defined to stakeholders.

The continued collaborative and open-minded approach taken by the team leader, where ideas were discussed and shared, drew a lot of value and input. In some cases the quiet participants were asked to give their opinions, because the team leader wanted everyone to feel that their input was important. This approach relates to Augustine et al. (2005:86-87), who encourage free and open access to information that has an impact on or relation to work being done.

#### **4.10.13 The team leader resigns**

The time allocated for the initiative came to an end, and participants went back to their respective teams. In the eyes of management, the project was complete at this stage. The team leader was not assigned to any team, so she carried on with the implementation tasks with the focus on getting teams to start changing their approach to knowledge codification. She wanted to keep the momentum going and draw as much value as possible from the KM team's work. A follow-up meeting was held to which interested parties were invited, and the team leader gave a presentation on Piwik, a tool that she thought was useful for usage metrics and could also be used by management for reporting purposes. The tool, although already licensed to the organisation, was underutilised. A number of teams had started restructuring their knowledge areas and there was a mindset change regarding the approach to KM. The team leader was the sole driver of the overall direction; although she had support from the original team's participants, who promoted good practices in their respective teams.

A few weeks later, just when there seemed to be momentum in driving the initiative's proposals, it was announced that the KM team leader had resigned. Her leaving created a large gap, as no one took over the direction of where KM was going or the responsibility of coordinating teams and ensuring continued improvement of the codification process. This raises a question which, although it cannot be answered, is worth noting: Was the resignation linked in any way to the KM initiative?

#### **4.11 Objective 2: Participant observation analysis**

The team meeting held prior to the commencement of the initiative reflected a lot of energy and eagerness to start. It is evident that energy levels and the desire to contribute can be affected by the nature of leadership. Because this was a cross-skilled team, collaboration was key to draw as much input as possible from different angles, all aimed at addressing the initiative's targeted objectives. In the initial absence of the team leader, the programme kicked off without a defined strategy or a common understanding of where things were going. The idea was to improve the codification process, but it was not clear which aspects were relevant or what was in scope, considering the limited time allocated to the team. There were no set goals that

could be used to measure progress or gauge the level of success at the end. Patanakul and Shenhar (2012:6-7) discuss the business objective of the project expressed as a long-term business status that is achieved when the project is completed. They also mention the action required to obtain the desired outcome. The basic questions they propose asking are “Why?”, “What?”, and “How?”; representing the perspective, position, and guidelines. The team leader’s approach worked well for the team and resonates with what Zaccaro et al. (2002:468) propose for a team to function effectively. Figure 2.13 provides a good overview of how a team leader contributes to team effectiveness through planning and goal setting, motivating members, providing feedback, and promoting team cohesion.

#### **4.12 Objective 2: Approach adopted – Interviews perspective**

According to one respondent who was privy to management’s intent,

“At strategic level, the group’s intention for starting the KM initiative was to consolidate, collaborate, and contribute knowledge within the division. KM kept coming up from the root cause analysis of other group-wide problems. This prompted the KM initiative to be carried out and was confirmation that the efforts were aligned to the group’s strategic thinking.”

However, three respondents felt that there was no alignment to the group’s strategic thinking for the following reasons: the strategic thinking was not communicated to the team, no one from senior management shared the thinking behind the initiative with the group, and contact with senior management was limited to one or two people. There was a sense of a lack of visibility of what was discussed or shared with management during the course of the KM initiative, to the extent that members felt that there was no platform to question what was passed down to the team from higher up. It was however evident that knowledge was viewed as an important aspect; hence the move to appoint people mandated to address the existing problems.

Three interviewees were convinced that the rotation of some members of the team did not help, as this slowed down progress every time new members joined. They had to be brought up to speed on what had been done previously and where things were going. The remaining interviewees found this useful, and held the belief that it brought in new ideas and suggestions as well as questions or challenges regarding what was being done. With reference to Augustine et al. (2005:86), the benefit of

allowing team members to join and leave the team lies in dynamic team composition and adaptability to changing external conditions. Arguably, this can be a potential feedback loop, as someone new comes in and gives their opinion or contribution regarding the current state of affairs, which could potentially increase the team's success provided that communication channels are open and transparent.

There were different perspectives and ideas on how to address the issues at hand. As one put it, "A software engineer would have a different approach to a business analyst or tester, as they mainly look at knowledge restricted to their domain". It can be argued that although the job role differentiates the kind of knowledge targeted, there is common knowledge to do with processes; for instance, the claims process cuts across domains. Two people felt that there were setbacks in the team as a result of very opinionated individuals, and this caused some issues within the team and affected productivity. Four of those interviewed felt that the inclusion of someone from the management team stifled the contributions of the other members because there was a strong push towards his agenda; yet the initiative had been set to investigate and improve the codification process. Two interviewees were convinced that a solution had already been prescribed by management, so having a KM task team was irrelevant in so far as a solution was concerned. It should be noted that this was a view of those who left the team before the team leader returned from leave, so they did not have a comprehensive perspective on whether there were any changes for better or worse. It should also be noted that they did not leave the team due to unhappiness; rather, they left as part of the rotation of members to bring in new members. Some participants could not be present for the full duration of the initiative due to their respective teams' reliance on them for the delivery of other projects. The same respondents believed that the presence of someone from management discouraged members from stepping up to assume responsibility in what they were doing. The drive towards a prescribed management solution also meant that the group focused on what they believed would be acceptable to management. It was unanimous amongst respondents who had the experience of working with both the management team member and the assigned team leader that the team morale and the course of the team's work changed significantly for the better under the team leader's direction. One respondent had a strong appreciation of what the management team member brought to the team; especially in relation to the knowledge structure proposed and

how it was to be applied. One interviewee mentioned that the moment the team leader went on leave, the programme should have been postponed until she was back. This was attributed to the fact that she had done research prior to this programme's commencement, up to the point of getting budget approval for the initiative to take place. Two interviewees believed that the team direction and output could have been better had the initiative been started by the team leader who initiated the idea. One person was adamant that in the absence of the team leader, the management team member pursued a different agenda to that set for the initiative, as there had been no handover of what needed to be done. Furthermore, the belief was that the direction could not be questioned, as this was assumed to be what management wanted. The learning point in this is how a different leadership style motivates people towards delivery. That the team leader engendered motivation, openness, and collaboration was evident from the interview responses. This relates to social connectivity in Figure 2.5 (taken from Philbin and Kennedy (2016:41)) as an approach for delivery and execution.

Table 2.1 in the literature review (taken from Newell et al. (2009:92)) confirms some of the negative and positive things mentioned during the interviews. These are, amongst others, the potential for synergistic solutions that integrate knowledge in new ways, an increased pool of knowledge to draw upon, the diffusion of responsibility for individuals to avoid feeling responsible, and satisficing so that the decision is acceptable rather than optimal.

One point that kept coming up in the interviews from participants involved in the initial weeks was the belief that management had already prescribed the outcome of the KM initiative and that the team had been set up to facilitate this outcome.

Lessons can be drawn from Bosua and Venkitachalam (2013:340-341) on the aspect of codification enablers, which focus on aligning a codification KM strategy with workgroup KM processes. They state further that the codification alignment and accompanying enablers seek to strengthen knowledge codification/storage and reuse/application processes in workgroups. Some of the examples of codification enablers are codification templates, knowledge classification schemes, codification culture, and semantic tagging (Bosua and Venkitachalam 2013:340-341).

Based on Hansen et al. (1999:1-2), it can be assumed that with management support, the KM team could have assessed their work from various perspectives, such as competitive strategy, reuse economics, KM strategy, IT, and human resources.

One person felt that management pushed through the programme when it was not ready to move forward and that more time could have been spent getting people to understand why this was being done and how it could be approached. For those who stayed on for the full duration of the initiative or joined towards the end, they believed that given additional time, the team could have achieved greatness; judging by the participants' commitment and the collaborative nature of how things were done under their team leader.

It should be noted that only four interviews were conducted after the team leader resigned. Those interviewed expressed despair about the loss of a talented resource committed to KM. In terms of the perception of what the team did well, the most frequent response was collaboration, open communication, embracing new team members, and dedication to improving KM processes.

In terms of what the team members felt they could have done differently, the following themes arose: devoting time to research to enhance understanding, requesting to delay the project due to the unavailability of a key resource, having increased time for implementation, having an overall strategy before beginning, devoting time to planning and being clear from the onset, placing emphasis on people rather than tools to ensure change in culture, requesting clarity from management on the mandate of the work, and assigning responsibilities to people doing the work. As one respondent put it, "The planning was rushed as a requirement to start the initiative so it was done for administrative purposes".

Three respondents felt that different people coming in slowed down progress as they were brought up to speed and thus felt that there was a need for a more stable team. As one of them put it, "We were rediscovering the same things every week. Every time we got a new set of people they wanted to do a new set of things so it ended up being hard to manage delivery". All other respondents felt that new members were good for the team in terms of bringing in new ideas.

There were problems within the KM team regarding very opinionated people, whose presence was thought to make it difficult to get people on the same page. Two respondents raised this as a factor that slowed down progress.

The team at any given point was cross-functional. All respondents found value in having such a team. To quote one respondent, "Having a cross-functional team created a group with different perspectives on things. A developer and business analyst approach knowledge differently".



As for the outcome, one person felt that “this was just one of the many great ideas that didn’t go anywhere”. It is disturbing for a team member to make such a comment. This can arguably be attributed to missing leadership elements, which were raised in reviewing Zaccaro et al.’s (2002:458) work. The level of leadership influences team effectiveness, communication, coordination, and collective responses to task requirements.

In assessing the approach taken, a senior test analyst felt that the two leaders had different views of where things were going. Similarly, the stakeholders had their own expectations of the initiative. In hindsight, one respondent expressed that “it would have been good to have those three big elements [the two leaders and the stakeholders] aligned at the start”.

The team leader, when asked about her opinions on the approach taken, acknowledged not having done enough to impart knowledge on what they were trying to achieve. To quote, “Without me there, things went in a completely different direction. My opinion needed to be injected continuously. I didn’t do enough to really get... across [to people] what it was we were trying to solve”.

As a follow-up to this question, she was asked what she would do differently next time. She responded that she would ensure that there were tangible data to measure changes against; for example, starting with 12,000 Confluence pages and ending with 6,000. She also mentioned spending more time understanding the existing culture in order to figure out which behaviours, templates, or structure would have the greatest impact.

The following section analyses the interview data collected under this objective.

#### **4.13 Objective 2: Interviews analysis**

The prominent factor that arose during the interviews was the appreciation of the approach the team adopted after the return of the initiative’s team leader. One could argue that the team leader could have invested more time in giving direction and sharing her views and approach before the initiative commenced. This could have raised flags or questions when things were done differently in her absence.

The time allocated for the initiative seems to have been a limiting factor. All the participants interviewed believed that the team could have reached levels of greatness had they carried on. In the analysis of the secondary data in Chapter 2, there was no

mention of codification having a defined start and end date. The KM initiative was run as a project with a defined start and end date, yet codification and other related KM processes need continuous input and a culture of responsibility to avoid the burden of corrective action. It can be argued that management should enforce KM processes and provide incentives that encourage a culture of self-managing and accountability. Muras and Hovell (2014:52) highlight the importance of KM as an intangible asset against which a company is now measured, which is seen to raise the company's value and competitiveness. There is merit in getting the codification process right in order to position the company's competitiveness.

#### **4.14 Objective 2: Summary**

There were uncertainties at the beginning of the KM initiative, especially as the team leader was reported as being unavailable for the first three weeks. There was no defined plan of action and there was evidence of miscommunication regarding the team's mandate. The team decisions about what to work on seemed to be made on a weekly basis. This is an example of what Bosua and Venkitachalam (2013:332) present as the lack of clarity on alignment enablers. This is prevalent when organisations are planning to focus their efforts on KM. The worrying aspect is the disgruntlement that was evident in the interviews and the lack of confidence regarding some aspects of the approach that was followed. The differences between the approaches of the management team member and the team leader who was meant to be in charge of the programme were apparent from the interviews. Some participants were unhappy with the rediscovery of problems, as this work had already been done prior to the commencement of the initiative and was well documented. There was enthusiasm and a sense of ownership when the team set up the implementation plan. This can be attributed to increased collaboration, idea generation and sharing, flow of information, open communication, and respect for opinions. It is concerning nonetheless that there were participants who felt that the KM team's efforts were not aligned to the group's strategic thinking. As much as a more definitive direction was expected by stakeholders outside of the KM team, the initiative created a positive culture around KM and an appreciation of its importance in the greater scheme of things. It made people think about how they can add value, and teams started adopting some of the proposed changes to avoid knowledge loss. However, the continuity of

the team's work was hampered by the unexpected resignation of the person who had led the codification improvement journey.

Although the initiative focused on codification, lessons should be drawn from Kankanhalli et al. (2003:73). They propose a balance between high codification and personalisation approaches for an organisation that is product-based in a highly volatile context. The initiative had good intentions, but should not be a project-based initiative. Rather, it should be a continuous way of working, as shown by the fact that the momentum derailed when it completed.

#### **4.15 Objective 3: View from the target audience**

To recap, the third objective was to determine whether the target audience embraced the outcome of the KM initiative. To address this objective, the researcher conducted interviews with the initiative's participants and the target audience. Seven of the participants and three members selected from the target audience were interviewed. This was done to establish whether there was a common perspective regarding what the process was intended to achieve and the merits of the outcome. The scope of the thesis ends with the feedback collected after the completion of the initiative, including the time leading up to the departure of the team leader, who was in the process of setting up a prototype with one of the business unit teams. Further research can be pursued to identify how the KM journey has progressed since the initiative's completion and whether the organisation is in a better or worse state judging by the awareness raised by the initiative.

The next section explores the details extracted from the interviews.

#### **4.16 Objective 3: Interviews perspective**

The intention of this objective was to gauge the perceived outcome of the KM codification improvement attempt. The consensus was that the programme got people thinking about how to exploit the existing knowledge and about the need for a clearly defined structure so that it is easier for the next person and so that knowledge stays relevant. One respondent from the target audience indicated how keen they were within their team to try out some suggestions that were proposed. Some respondents' opinion was that momentum was lost after the scheduled time for the programme

elapsed and that the situation worsened when the team leader resigned. It was highlighted that there was a lot more energy and willingness to update stale content and adding valuable knowledge in Confluence, the main tool used as reference. Below are some of the responses that came from the interviewees who were members of the initiative:

“I don’t think the time and effort put into the initiative was enough to give the expected return on investment.”

“The intention was to change the culture within the division and encourage a better approach for storage and retrieval of existing knowledge.”

“I don’t think the initiative impacted the target audience that much, except for those who were directly involved.”

“The biggest goal was to affect the culture within the business technology division and this was somewhat achieved, but the time was not enough to get to the expected level.”

“We were not there to fix the information but to provide guidance on better structure and managing knowledge. It is difficult to get people to not do stuff but sit back and think about better ways of doing things rather than just moving things around.” (This comment was from the team leader.)

“The overall idea about the ‘Info, Project, and Team’ was great but the execution failed.”

“It was a bit adventurous to run the initiative over the allocated time. It needs to be a long-term strategy that we work towards.”

A particular member of the KM team was adamant that the team had failed by virtue of the fact that people still had no idea where to go to look for content, and because none of the templates that had been created were being used, because people did not know what to do with them.

Regarding what would have been done differently, there was consensus that there should be a defined strategy or direction before starting on any work. One respondent who was not happy with the team rotation stated that she would have established a stable team, drawn up a plan of action, and built things incrementally.

Below are some responses from the target audience:

“More time could have been spent on who owns which knowledge space so that there is accountability on certain knowledge domains and people who ensure that it is in a good state.”

“It was good that it got people’s opinions and input because people were engaged in the process.”

“The process was embraced positively because we got to see the value in adopting it, but the problem is there was no continuity after the initiative ended.”

“Personally, the initiative had no impact in my line of work”. (This came from a senior business analyst.)

“This was a waste of time with nothing delivered to help my work as a software engineer.”

“I now think about where to add content and how best to do it so that I avoid recreating the current issues.”

The two software engineers interviewed had distinct opinions of the value derived from the process. For one, all that mattered was developing software and moving to the next project after the current one had been completed. The documentation was perceived to be of less importance than the delivery of a project. For the other, documentation makes software complete, and hence provides a greater appreciation of the initiative.

Regarding what could have been done differently, it was felt that a tangible example supported by a knowledge structure for people to follow would have made a difference.

One person spoke about their team having been engaged by the team leader to promote the thinking behind the KM team’s proposed knowledge structure. The idea was to have a proof of concept on how knowledge could be structured and reused then spread across to other teams. Unfortunately, this came to an abrupt halt when the team leader left the company. The interest did not die down, but the belief was that the team leader added a lot more value working with the teams. It was apparently easier to ask questions and get attention when the team leader was around, as compared to asking the other participants of the initiative who were assigned to running projects and as a result were not readily accessible.

Interestingly, respondents were asked about their willingness to participate in similar initiatives in future, and they were all in favour. This could be argued to be a reflection of the level of appreciation of what KM brings to everyday ways of working and an acknowledgement of the desire for a good knowledge base that can be exploited with confidence.

As for the stakeholders outside of the KM team, one respondent had an expectation that there would be a fully-fledged solution and direction on how the codification process is managed. It can be argued that this was not possible based on the time allocated for the initiative, but a clearly defined structure could hopefully have sufficed. Two members of the target audience commended the team on increasing the level of KM appreciation and the fact that people were starting to see the benefits of doing it properly.

One stated that “The initiative presented better navigation and removed irrelevant sections from the areas worked on”. As a result, people had the confidence to update or delete content to ensure that it was relevant and up to date.

One respondent from outside of the KM team, though not happy with where the initiative ended, had some positive feedback: “We could clearly see a difference in how things were done previously to what the team proposed”.

Amongst the KM team members, it was felt that the initiative did well in getting people’s opinions on what they thought was the best process of managing knowledge. A senior business analyst who was not part of the initiative felt that more emphasis should have been placed on the synchronisation of JIRA and Confluence, as this is one area where knowledge is being lost. This is due to JIRA cards being closed on completion: the documented evidence of the work then goes with the card that no one references in future unless a bug is picked up. A senior test analyst who was part of the KM team used the term “throwaway society” in reference to how JIRA work is ‘thrown away’ when not linked to Confluence, which has been earmarked to be the source of truth.

The same respondent felt that there was still inconsistency in the codification process because there were too many methods of capturing information. This was an expectation of what was to be addressed as part of the initiative.

One respondent mentioned his dismay at the failure to make use of available tools to aid the KM process, despite the fact that the business unit is IT savvy and encourages software reuse. The tool of particular interest that was highlighted was IBM Watson,

which was already being used on a trial basis for text analytics for a different business solution.

A business analyst from the target audience embraced the outcome as positive and a step forward, but was disappointed by the lack of specifics as to how the codification process would mature into a standard or recommended way of working. The process was perceived to be unclear even after the good work that had been done. To quote the respondent, “The outcome was good for knowledge management as a whole but it didn’t provide an effective process for capturing data for delivery aspects. There was nothing distributed afterwards for process guidance”.

There were positive aspects of the work done by the KM team noted by the intended beneficiaries; for example the restructuring of the existing content, improvement of the navigation, and the removal of irrelevant pages.

The KM team’s mandate as perceived by non-participants covered a wide range of issues. These involved addressing a business problem of information that was being captured but not stored and categorised appropriately, minimising knowledge loss, ensuring consistency in capturing information, defining a codification structure to adhere to, synchronising JIRA and Confluence, and providing clarity on relevant knowledge capturing depending on role.

The team leader felt that the initiative was a failure, but attributed this to the programme being rushed when it was not ready. She raised the point that management pushed for the programme’s start when she had argued that more time was needed.

In response to the simple question about whether the initiative had been a success, only two members of the KM team found it to have been successful considering the limited time allocated. From the target audience, two people found it successful to some extent, especially in terms of raising awareness and involving people during the process. Based on this, overall the initiative could be assumed to have failed.

#### **4.17 Objective 3: Interviews analysis**

There were mixed reactions about the outcome. The most important aspect was the appreciation of the change in attitude towards KM and the appreciation of the role that codification plays when effective processes are in place. The initiative realised some quick gains by getting the codification process back on track by cleaning up the

existing knowledge while providing clarity on which tools the business unit should use. It was realised how difficult it is to apply corrective action when the problem becomes too big and limited time is allocated to address issues. There was concern over the resignation of the team leader, who had devoted passion and effort to carrying on improving processes and increasing their visibility. At management level, it is understandable that participants had to return to their teams, but there is a risk of abandoning the good work done and losing traction in improving the state of knowledge exploitation in the organisation. Regardless of the time limitations, the team could have done more to provide clarity on the recommended processes and practices to ensure that everyone was on the same page and that there would be continuity of their work. What is evident is the non-alignment of team objectives with expectations. Had the team set objectives and communicated these to stakeholders, they could at the end have used these as a basis to assess their success (or lack thereof). It is however encouraging that those outside of the KM team perceived the initiative as having added value, though its shortcomings cannot be overlooked. The team leader and her team, except for two individuals, saw the initiative as a failure. The team's mandate was clearly not communicated to the target audience, so the expectations of those interviewed diverged from what the team had envisaged.

There was no one to assume the responsibility of driving the process forward when the team leader left, because the other members did not have this as a deliverable and were already working on other projects. This can be assumed to indicate management's lack of appreciation of what the initiative brought to the division. It could also be assumed that the initiative was perceived to be a completed project; hence, no urgent need to assign responsibility to someone else to carry on with the process was felt. The outcome made visible the nature of the problems and fostered acceptance that the situation could be improved. There was no concrete outcome that could drive a new way of doing things, though there was a mindset shift on issues such as duplication and structure. As much as the initiative improved the culture and appreciation of a good codification process, it seemed that stakeholders wanted a clearly defined path of action to take the knowledge process forward and avoid the uncertainties that had clouded the existing knowledge. It was noted that in project discussions people had started raising questions about how knowledge could be shared, distributed, and stored as a record of what the business processes entailed and the solutions proposed. Despite what the team had tried to do, one respondent



mentioned that there are still individuals who prefer looking for an expert and asking questions instead of spending time looking for content, which more often than not is inaccurate.

The next section summarises the discussion pertinent to the third objective.

#### **4.18 Objective 3: Summary**

Figure 2.3 (taken from Shankar et al. 2013:2058) emphasises the need for defining roles or responsibilities clearly, developing mentor-mentee relationships, holding workshops, and increasing the flow of information. These are some methods for preventing knowledge loss, yet in this case the organisation lacks defined roles and responsibilities, thus rendering their KM attempts ineffective. The KM team leader's resignation should not have stopped the KM process from progressing. The KM team had done well in collaborating until the end, where they did not seek feedback from the target beneficiaries to gauge how far they had gone and whether there were gaps. This would have provided input into future initiatives or have made a case for management to revisit the approach to addressing KM gaps.

#### **4.19 Analysis**

It was surprising that progress after the initiative's completion relied on one person, the team leader. The organisation had attempted in the past to address the KM issues, and one would have hoped that learning points would have been taken from that. There was a positive uptake of what the KM team found, and it would be good to nurture that interest. It could be assumed that the targeted beneficiaries accepted the experience gained by the team to the point of treating them like experts and expecting guidance from them. This is based on the responses from those interviewed, who stated that they expected guidelines of a sort after the KM team had completed its work. Given this mentality, it would have been an excellent opportunity to instil the new thinking and to make sure that the culture develops into the norm. Figure 2.3 highlights clearly defining roles and responsibilities, increasing the flow of information and employee communication, and improving collaboration. Had this been done, the team leader's resignation would probably not have impacted the momentum to the extent that it did.

The following section concludes the discussion of the study's findings.

#### **4.20 Conclusion**

“Failing to plan is planning to fail.” – Alan Lakein

The key learning points taken from the findings are that having a good plan in hand provides clarity and direction when embarking on an initiative such as that described in this study. From the responses, it can be assumed that the process of improving KM codification cannot be handled as a project, but should rather be treated as a continuous process to which individuals are committed, and with time allocated to ensure the smooth running of the process so that the resignation of key people prompts immediate action to keep the programme going. This concludes the discussion chapter, but a comprehensive conclusion based on the research findings must still be provided. This is presented in the following section.

## **5 Conclusions and recommendations**

### **5.1 Introduction**

The expected outcome of this research was not simply to have a report of the findings, but to add value to the academic knowledge base. In this chapter, the researcher presents conclusions drawn from the research, recommendations based on the findings, suggested improvements to KM codification, and recommendations for further research. The first part of the chapter gives an overview of aspects specific to the case study. The last part provides recommendations for approaches to similar problems. These can be challenged or pursued from an academic standpoint.

The recommendations apply to cases where there is a need to review and improve the codification process. They are the result of a reflection on the secondary data presented in the literature review and the findings from this research.

### **5.2 Conclusions**

This section details the research conclusions. These will be dealt with per objective, and at the end everything is tied together to create a broad overview.

#### **5.2.1 Objective 1**

The findings confirmed the challenges encountered in knowledge codification and in reviewing an existing KM process with a view to implement changes that improve the overall experience. The existing gaps were assessed from two angles. The first was during elicitation by the team members and interested parties before the initiative's official commencement. The second angle was during the initiative conducted by the team members with collaboration involving the members of the business unit. This encompassed a survey sent out to the wider team. The elicitation stage discussed under Objective 1 of the findings highlighted the establishment of a Confluence page to keep discussions of ideas in a central place and create a collaborative platform; thereby increasing the pool of knowledge and communication and extending it to those who could not attend the sessions. The discussions during the initiative were

expanded to a wider audience through meetings and sessions arranged by the team. From this, it can be concluded that the common theme drawn from the first objective's findings was collaboration. Table 2.1 lists some advantages of collaboration in the context of KM.

There was a gap in terms of knowledge dissemination and distribution, which codification could arguably address. The research findings could not determine whether this gap resulted from a codification problem or from an unwillingness to share on the part of holders of expert knowledge. Of concern, however, was the fact that the codification process was inefficient; and there was confusion over which tool to use due to lack of standardisation. Standardisation is encouraged by Shankar et al. (2013:2058) and Bosua and Venkitachalam (2013:340-341).

During elicitation, gaps were evaluated from four viewpoints, namely people, knowledge policy, systems, and process. In terms of people, the gaps were associated with cultural change, ownership of content, and training. The knowledge policy gaps were to do with unclear policy, lack of clarity of applicable tools, and awareness of the organisation's strategic approach. The process gaps were associated with shortcomings in ensuring that processes stayed relevant to the extent of being enablers for codification. The technology gaps were due to a lack of clarity regarding applicable tools and the failure to utilise functionalities provided by the tools.

The number of KM tools available leaves more questions than answers regarding why the organisation had so many tools deemed applicable to the business.

The findings confirmed the problems identified by Bosua and Venkitachalam (2013:336), such as knowledge duplication, insignificant knowledge capture and transfer practices, and failure to integrate distributed knowledge sources in the organisation.

A conclusion that can be drawn from this objective is that the business unit was missing the regular creation and filtration of documents, which is encouraged in Figure 2.3 taken from Shankar et al. (2013:2058).

Reference can also be made to Figure 2.4, which highlights a need for an awareness of knowledge components and what knowledge layers they affect. The takeaway from this objective is the collective appreciation of the problems at hand, the desire to address the KM gaps, a confirmation of what the literature posits as problems attributable to knowledge gaps, and the value derived from collaboration.

### 5.2.2 Objective 2

The approach taken and the team direction were affected by the change in leadership. This could be argued to have been detrimental to the outcome, considering the limited time period allocated. There were clear differences in the approaches, with one being more directive or prescriptive and the other being very involving and empowering. In terms of enthusiasm and drive to get things done, a lot more seemed to be done under the initiative's team leader as a result of open communication; whiteboard sessions where everyone was involved; and, most importantly, idea generation, where ideas were not dismissed upfront but discussed once everyone had contributed. Considering that the team operated in a knowledge-intensive environment with highly skilled personnel, the team leader's approach could be argued to have more buy-in, because members felt that their contribution was valued. As the researcher and participant-observer, it was surprising that no reference to academic research was made, when it plainly outlines what can be done to improve the codification process and contains guidelines that could streamline the process. The proposed structure of Info, Project, and Team created confusion amongst peers; as it was not easy to implement or follow, especially regarding the point at which one would switch from Info to Project.

Despite the problems with the leadership approach, the dominant theme for this objective was collaboration, considering the wider audience's involvement in providing feedback and the KM team's brainstorming sessions.

The takeaway from the second objective was the importance of team members' involvement when dealing with highly skilled individuals. There was a need to get people on the same page, based on the team leader's admission that more should have been done in this respect. Of greater importance were the team leader's learning points from the initiative; reflecting that given the same opportunity she would have taken a different approach backed up by data to measure success or failure. From a codification perspective, there was no common opinion of what process to follow, but mere appreciation that knowledge had to be in a repository. The 'gardening' initiative was a good indication of the need for personal responsibility to ensure that knowledge is constantly updated to remain relevant while minimising or eliminating duplication. As much as this is a high-intensity environment, the interest from the intended beneficiaries confirmed the need for codification in scenarios where there is high

exploitation. This was evident in the findings related to Objective 1.

The downside in how the team worked was the vagueness regarding the team's objectives, which made it difficult to assess the initiative's output.

### 5.2.3 Objective 3

There were mixed reactions about the outcome because the objectives were unclear. There was a gap in what the KM team believed they were delivering and what the users expected at the initiative's end.

The collaboration between JIRA and Confluence was perceived as useful in increasing knowledge visibility and grouping related knowledge together. The idea was to ensure more synchronisation between JIRA and Confluence to avoid loss of the knowledge associated with the JIRA card upon completing project work. The limited time was noted as being inadequate for the work required. It can be argued that as time was a setback, it would have been beneficial to have presented a clear roadmap at the end of the initiative to set the foundation for the process going forward and any related future work. A gap that was left unfilled was the clear definition of roles and responsibilities, as suggested by Shankar et al. (2013:2058). The feedback about expecting a defined structure and guidelines confirms what Bosua and Venkitachalam (2013:340-341) refer to as "artificial networks in alignment enablers". The team leader's impact on the initiative was evident from the responses. Her resignation left a large void, and may be a problem for the business unit's KM drive going forward. There were differing opinions on the feedback, and surprisingly the most negative feedback came from the participants of the initiative.

The key takeaways from this objective are that in such a scenario, the team's mandate should be clearly communicated and explained to the targeted beneficiaries in order to manage expectations and clarify misconceptions. At the end of the allocated time period, the team missed the chance to audit their work against the intended users' feedback. This would have served as a learning experience and would have identified areas requiring improvement while maintaining the theme of collaboration. The team leader should have presented the thinking behind the initiative to get the team to the same level before the programme's commencement, so that in the event of her absence, the directions pursued by the individual members would have been aligned.

The initiative was about improving KM codification, but, surprisingly, the team did not provide a clearly defined process as a guideline on one of the most widely used repositories, such as Confluence. The goal was to improve codification, yet there was no record or guide of how to do it. The responses suggest that a guide on process may have changed the feedback from the targeted beneficiaries in a positive manner. In the spirit of collaboration and open communication, it can be assumed that having a process definition in Confluence would have established a common point of reference and adherence as a standard. Although the team members realised that the initiative was not a success, there were positives from a cultural perspective, where the appreciation of knowledge codification increased. The fact that there was more discussion about the process within teams indicates that the initiative succeeded to some extent in improving knowledge codification. The point raised by a respondent about asking the experts supports relates to the personalisation strategy discussed above. Liu, Chai, and Nebus (2013:755) identify factors such as number of reusable knowledge items, reuse patterns, and intra-organisational interest alignment as determinants of the optimal mix between codification and personalisation. As stated by Newell et al. (2009:134), personalisation ties knowledge to the person. Kumar and Ganesh (2011:130) advocate a balance between personalisation and codification.

### **5.3 Integrating the findings**

Having concluded by looking at each objective, this section brings everything together and presents a general conclusion encompassing all the objectives that have been discussed.

Considering that the findings largely confirm what has been discussed in the literature review, it would have been worthwhile for the KM team to review academic literature on codification or KM case studies to increase their understanding of the domain, to learn how to address KM issues, and to learn from previous related work. There is a plethora of literature in the field of KM, but this study provides evidence that this is overlooked in the professional environment. There are frameworks that have been drawn up in the academic field that could work as guidelines or references in addressing the issues highlighted in this case study.

The research validates Hall's (2006:122-125) discussion of having a group of people define codes for codification and the capability of the same people to interpret and use

the codes. The population covered in the research is knowledge-intensive with high technical abilities and a common understanding of the codes used in defining content for their domain.

The main positive was that with the tools available, there was evidence of knowledge codification, sharing, and transfer; although the process required refinement. Confluence was the most widely used and preferred tool in the technical area. The organisation has gone past the decodification problems that Hall (2006:2) sees as restrictive to the transferability of knowledge. Transferability was limited by the inability to keep content up to date, the lack of trust in the knowledge, and the lack of ownership.

The sudden and unexpected departure of the initiative's team leader stifled the impetus for persevering with the KM ideas. This highlights a problem of key person dependency: there is no continuity when a resource dedicated to a particular initiative leaves. It could be assumed that the initiative was perceived as unsuccessful by management, hence there was no need to invest time and effort in further work or to assign someone to continue with the team leader's work. It could be argued that the remaining KM team members had the opportunity to push the agendas of the initiative's outcome from within their work teams to ensure that at least some value was derived from the exercise. The challenge would be to ensure that they adhere to the same approaches to ensure coherent behaviour and consistency in the approach to streamlining KM.

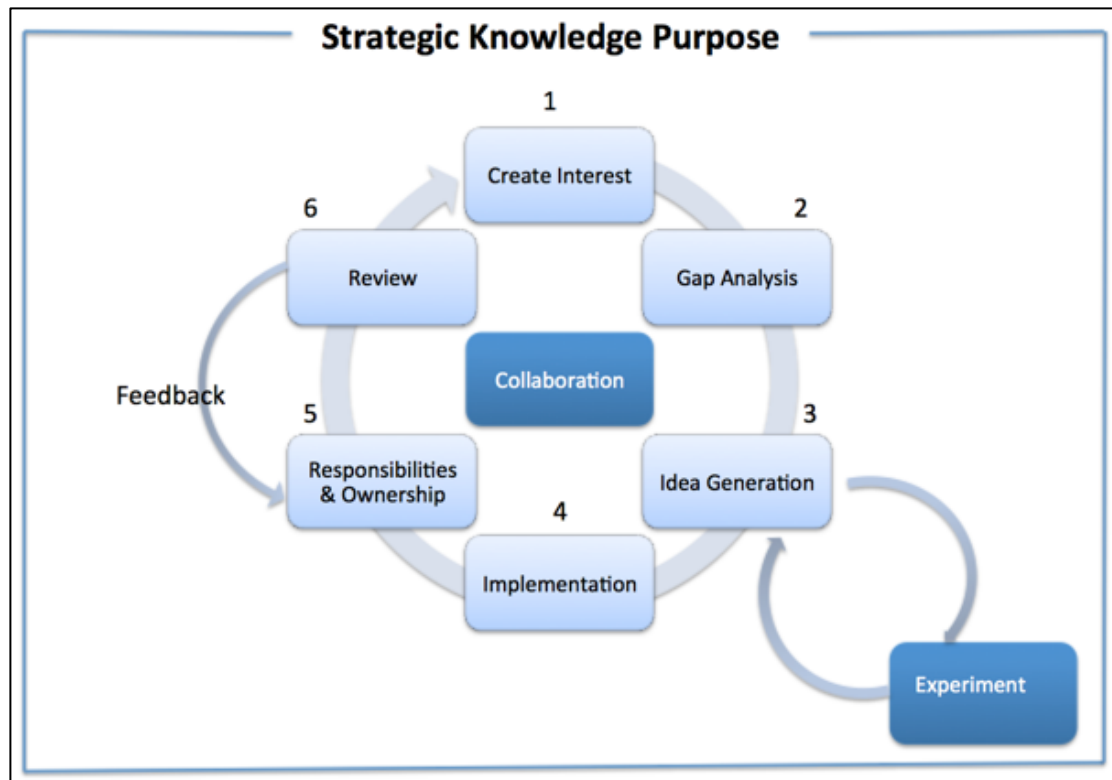
The fact that the initiative was not perceived as successful is probably good, because it provides learning points and a foundation for future work. The downside is that an opportunity to do this correctly was missed; because it may be a long time before such an opportunity arises, considering that there are no dedicated resources assigned to work on KM on a daily basis. The enthusiasm and work commitment under the team leader relates to Zacarro et al.'s (2002:465) view of cohesiveness and collective efficacy as determinants of a team's effectiveness. Newell et al. (2009:231) consider the strategic approach in relation to two main purposes, namely knowledge exploitation and exploration. The present findings show that the emphasis was on high exploitation. It should be noted, however, that as the organisation's requirements evolve, the approach may be changed accordingly, or different approaches may be combined.

The next section outlines the recommendations from the researcher's perspective.



## 5.4 Recommendations

Knowledge has become a valuable intangible asset and can arguably drive prolonged competitiveness, sustainability, or innovative abilities. The findings from this research highlighted some gaps in the approach that was taken in driving the knowledge codification agenda. Having facilitated and devoted time for the KM initiative and given the interest shown in improving the state of knowledge, management could have reviewed the process to see which benefits could be derived and what could be done to keep the momentum going. There should also have been a clear definition of the strategic knowledge direction so that processes, practices, and efforts could be channelled towards it. The risk the organisation faces is continuously running such initiatives that yield results in the short term, but require further initiatives a year later to resolve what would have gone wrong after the completion of the previous initiative. The division focuses on maintaining, enhancing, and creating new software products and might see no benefit in devoting dedicated resources to KM processes and practices. The workforce consists of highly skilled individuals who can take it upon themselves to ensure that the processes are sound. The environment is driven by projects and high delivery expectations, and this can affect the codification process. Management can ensure that there are incentives, not necessarily financial in nature, to maintain interest. The benefit is that there is a process that promotes knowledge exploitation. As the literature suggests, the aspect of knowledge exploration cannot be ignored in a knowledge-intensive environment. This makes a strong case for management to clearly stipulate the strategic intent for KM and to provide an enabling context to see it through. In reviewing the findings, it was apparent that no reference to academic literature was made, which could have streamlined the initiative's work. The literature review provided different perspectives on the research subject and arguments regarding how KM can be effective. Based on the researcher's insights as a participant-observer and a keen reader of the academic literature summarised in Chapter 2, the following model is a recommendation which addresses the research question of "How do we improve the codification process so that people can trust the existing knowledge?"



**Figure 5.1: Knowledge process improvement**

The stages in the above diagram should all be aligned to the strategic knowledge purpose or intent. Newell et al. (2009:232) discuss managing knowledge work by recognising the strategic significance of knowledge for sustained competitive advantage. These authors explain the strategic knowledge purpose as the implementation and promotion of specific knowledge processes and the active fostering of an enabling context to achieve the overall strategic aims of managing knowledge. The overarching knowledge purpose can be knowledge exploration, exploitation, or a combination of both. From there, the knowledge processes come into effect. All of the steps in the diagram have to be aligned to the knowledge purpose. As an example, in this research, the purpose was knowledge exploitation and the knowledge process was codification. It can thus be argued that the steps taken to improve the codification status should be aligned to the strategic purpose in ensuring that a sustainable competitive advantage is the ultimate outcome. The steps will now be explained in detail, on the assumption that they are aligned to the strategic knowledge purpose.

### **5.4.1 Create interest**

Creating interest is about selling the idea about the organisation's knowledge journey and dispelling doubts while obtaining input from interested parties. This is done in a collaborative manner. The current state is laid bare and the future state and the benefits thereof are explained. The work effort and commitment required is made clear. The intention is to raise the level of anticipation and appreciation of the desired goal.

### **5.4.2 Gap analysis**

In the context of KM, this step contributes to filling in the gaps that exist between the current state and where the organisation is heading. The KM aspect is not limited to codification: the concept is broader and includes other processes, namely knowledge creation, sharing, and integration. This stage could involve identifying and breaking down the problems at hand. The gaps identified are prioritised in terms of what brings the most benefit to the organisation. This step should be tools-agnostic because the intention is to have all problems noted and assessed as to whether they align to the knowledge purpose and strategic direction. Other than identifying problems, this stage could identify opportunities for KM. It could be the foundation of understanding how threats can be turned into opportunities and how weaknesses can be eliminated to create strengths. Collaboration plays a key part in this step as a means of encompassing broader thinking. It is also important to identify who is affected in the case of problems, so that the right audience is involved in dialogue and expounding the problem(s). Feedback is also sought from this audience at a later stage to ensure that the problems have been addressed.

### **5.4.3 Idea generation**

Ideas are generated regarding how to address the problems highlighted in the previous step and, most importantly, how to avoid such problems. The ideas are also gathered in a collaborative manner to encourage teamwork and shared understanding. Ideas are

selected for experimentation. If they are too big, they should be broken down in order to allow some form of experiment.

#### **5.4.4 Experiment**

The ideas proposed for experimentation are tested, similar to the software design approach of a proof of concept. The idea is to allow ideas to fail quickly and be dropped if they do not add value or cannot be pursued for any reason. It is better to invest two weeks experimenting and admitting that the idea has failed than to spend months or years working on something doomed to fail. The experimentation can also involve KM software tools.

#### **5.4.5 Implement**

The successful experiments are implemented. Depending on the complexity of the knowledge to be captured, a tool that meets the requirement is fed with the requisite details and the solution is implemented and opened for use. In the event that too much work is involved, management approval is required to ensure that the right resources are available to see the ideas through. The key point during implementation is to ensure that the solution reaches the target audience. Again, collaboration can help ensure that the implementation continues as intended, and it can be iterative.

#### **5.4.6 Responsibilities and ownership**

The process should ideally be self-managed, considering the knowledge base in a knowledge-intensive organisation. There should be continuity of the implemented solutions and some level of ownership to ensure that the good ideas do not fall off the radar and that reference can be made to such successes in future projects. Individuals who assume ownership of certain knowledge domains also receive the feedback from the current processes being reviewed.

### 5.4.7 Review

After an agreed-upon time period, the solution is reviewed, mostly using cost-benefit analysis or total cost of ownership. The end goal is to ensure the sustainability of the knowledge solution and the creation of avenues that eliminate knowledge loss. The core questions to address during the review process are:

- 1) What have we done well?
- 2) How can we maintain or improve the good work?
- 3) What have we failed to do?
- 4) How can we mitigate risk or failure?
- 5) Who is benefiting from the existing knowledge?

The review outcome determines whether it is necessary to start new initiatives or fix existing ones, so the cycle resumes with the responsible individuals engaging a wider audience in an effort to create interest.

The review process can be aided by monitoring page updates, statistics on pages viewed/not referenced over a given period, and statistics on pages linked from other pages. The assumption is that a popular page will be linked more frequently, and that can be used as a way to determine requirements for training or knowledge sharing. For example, if the claims process is linked most frequently, it could be an indication that it is core to the business unit's work and, as such, a training session can be set up to focus on it so that there is a good understanding of what is involved. Automated reports could also be used to filter feedback to different stakeholders; for instance, managers may want to reward the biggest contributors to the knowledge repository and subject matter experts might want reports on stale pages to check whether the content is still relevant.

### 5.4.8 Collaboration

This is at the core of the model and is important for all the steps. A prominent finding from the research is that collaboration plays an important role in deriving benefits by virtue of the collective effort. All the steps should involve collaborative effort when possible to keep the process visible and to encourage the challenging of ideas or

approaches for the benefit of the broader strategic intent or purpose. The aspect of collaboration also ties in with the KM aspect of knowledge sharing.

#### **5.4.9 Feedback**

It is vital for those assigned responsibilities and ownership to receive feedback on how things are going. This helps to increase visibility of the knowledge process and introduces a constant need to check where the process is. Based on the feedback, the process is either revisited or maintained in a sustainable state.

The literature review contributed insights relevant to this study. The findings highlighted areas where there were shortcomings and processes that could have been approached differently. To this effect, the researcher presents suggested improvements in the next section.

#### **5.5 Suggested improvements**

We tend to focus on the negatives and look at how to eliminate them, and we forget to understand what it is we do well and to make sure that we continue on this path. It is also vital to ensure that solutions proposed to address any issues do not affect the things done exceptionally well.

There was talk of automation of tasks and reporting metrics. It would add a lot more value if the automation could include knowledge content analytics. The organisation is already using an IBM tool called “Watson” for text analytics. It would be worthwhile to extend KM codification to this tool. The benefit would be that a new starter could be guided by what the tool would have learned from other starters to make the on-boarding process smoother. For example, a new employee can input a summary of their work experience, the department or business unit they work for, and which project they are working on. The analytics software can provide a list of recommended recent and applicable knowledge material from the knowledge base. This reduces the time it takes to search for applicable resources, and prevents the overlooking of important aspects that may not be directly part of the new recruit’s job, but are still important to their work. For seasoned employees, the tool can be useful in providing insights about what could be relevant in furthering their careers based on

what would have been learnt from like-minded individuals, and it would give highly personalised answers. Despite the existing problems, there is room for managing knowledge in an intuitive manner with the support of such a tool that has the ability to learn or be trained over time.

It is important for organisations to start engaging academic experts or at least to reference academic material when tackling issues such as KM, because there is some benefit in learning from similar organisations that have been assessed as case studies. Research is an ongoing activity, as we constantly seek to address concerns in our everyday work life, to improve existing research, and to confirm or in some cases critique existing academic work. The following section presents the researcher's view on possibilities for further research based on the outcome of this study.

## **5.6 Recommendations for further research**

There is already a vast library of research in the KM domain and, more specifically, to do with codification. As researchers, we need to constantly add to this body of knowledge and create opportunities for new and existing researchers to elevate, critique, or build on the work of others. This section does that by pointing out potential areas for further research.

The use of text analytics in enhancing codification could be pursued to gauge the influence it can have on KM. It can also be used to investigate possible avenues for KM exploration. The suggested model in Figure 5.1 can also be tested in a knowledge-intensive organisation where the intention is to improve KM processes not limited to codification. The present research was carried out at a business unit level. Further research could potentially adopt an organisational standpoint. This research was conducted in a knowledge-intensive organisation. Most organisations of this type are becoming leaner, but the knowledge workers are faced with increased work pace and workload. A possible research direction could be to examine how KM codification can help speed up delivery and enable employees to work smarter without compromising the quality of the output.

## References

- Ajith Kumar, J., & Ganesh, L. S. (2011). Balancing knowledge strategy: codification and personalization during product development. *Journal of Knowledge Management*, 15, 118-135.
- Alvesson, M. (1995). *Management of knowledge-intensive companies* (Vol. 61). Walter de Gruyter.
- Augustine, S., Payne, B., Sencindiver, F., & Woodcock, S. (2005). Agile project management: steering from the edges. *Communications of the ACM*, 48(12), 85-89.
- Baptista Nunes, M., Annansingh, F., Eaglestone, B., & Wakefield, R. (2006). Knowledge management issues in knowledge-intensive SMEs. *Journal of Documentation*, 62, 101-119.
- Barnes, S., Milton, N. (2015). *Designing a successful KM strategy. A guide for the knowledge management professional*. Information Today Inc.
- Bashouri, J., & William Duncan, G. (2014). Communities of practice: linking knowledge management and strategy in creative firms. *Journal of Business Strategy*, 35, 49-57.
- Bergeron, B. (2003). *Essentials of knowledge management* (Vol. 28). John Wiley & Sons.
- Bettiol, M., Di Maria, E., & Grandinetti, R. (2012). Codification and creativity: knowledge management strategies in KIBS. *Journal of Knowledge Management*, 16, 550-562.
- Bierly, P. E., Damanpour, F., & Santoro, M. D. (2009). The application of external knowledge: organizational conditions for exploration and exploitation. *Journal of Management Studies*, 46(3), 481-509.
- Birasnav, M., Goel, A., & Rastogi, R. (2012). Leadership behaviors, organizational culture, and knowledge management practices: an empirical investigation. *Amity Global Business Review*, 7.
- Bosua, R., & Scheepers, R. (2007). Towards a model to explain knowledge sharing in complex organisational environments. *Knowledge Management Research & Practice*, 5, 93-109.
- Bosua, R., & Venkitachalam, K. (2013). Aligning strategies and processes in knowledge management: a framework. *Journal of Knowledge Management*, 17, 331-346.
- Cooper, P. S., & Schindler, P. S. (2014). *Business research methods*. 12<sup>th</sup> edition. McGraw-Hill/Irwin.



- Dalkir, K. (2005). *Knowledge management in theory and practice*. MIT press.
- Dawson, C (2007). *A practical guide to research methods*. 3<sup>rd</sup> edition. How to books Ltd.
- Derby, C., & Zwikael, O. (2012). VOICES – Peer to Peer – The secret of (defining) success. *PM Network-Project Management*, 26(8), 20.
- Greener, S. (2008). *Business research methods*. BookBoon.
- Hall, M. (2006). Knowledge management and the limits of knowledge codification. *Journal of Knowledge Management*, 10, 117-126.
- Hansen, M. T., Nohria, N., & Tierney, T. (1999). What's your strategy for managing knowledge. *Harvard Business Review*, 77, 106-116.
- Hsieh, H. F., & Shannon, S. E. (2005). Three approaches to qualitative content analysis. *Qualitative Health Research*, 15(9), 1277-1288.
- Kankanhalli, A., Tanudidjaja, F., Sutanto, J., & Tan, B. C. (2003). The role of IT in successful knowledge management initiatives. *Communications of the ACM*, 46(9), 69-73.
- Khalifa, M., & Liu, V. (2003). Determinants of successful knowledge management programs. *Electronic Journal on Knowledge Management*, 1, 103-112.
- Kothari, C.R. (2003). *Research methodology. Methods and techniques*. Wishwa Prakashan.
- Kumar, S., & Thondikulam, G. (2005). Knowledge management in a collaborative business framework. *Information-Knowledge-Systems Management*, 5, 171-187.
- Laycock, M. (2005). Collaborating to compete: achieving effective knowledge sharing in organisations. *The Learning Organization*, 12, 523-538.
- Liu, H., Chai, K. H., & F. Nebus, J. (2013). Balancing codification and personalization for knowledge reuse: a Markov decision process approach. *Journal of Knowledge Management*, 17, 755-772.
- Liu, S., Leat, M., Moizer, J., Megicks, P., & Kasturiratne, D. (2013). A decision-focused knowledge management framework to support collaborative decision making for lean supply chain management. *International Journal of Production Research*, 51, 2123-2137.
- Metcalfé, L. (2004) Keep talking. *Chartered Accountants Journal*, 83, 59-61.
- Newell, S., Robertson, M., Scarbrough, H., & Swan, J. (2009). *Managing knowledge work and innovation*. Palgrave Macmillan.

- Mack, R., Ravin, Y., & Byrd, R. J. (2001). Knowledge portals and the emerging digital knowledge workplace. *IBM Systems Journal*, 40, 925-955.
- Muras, A., & Hovell, J. (2014). Continuous improvement through collaboration, social learning, and knowledge management. *Journal of Corporate Accounting & Finance*, 25, 51-59.
- Patanakul, P., & Shenhar, A. J. (2012). What project strategy really is: The fundamental building block in strategic project management. *Project Management Journal*, 43, 4-20.
- Patton, M.Q. (2002). *Qualitative research and evaluation methods*. 3<sup>rd</sup> edition. Sage Publications.
- Philbin, S., Kennedy, D. (2016). Becoming a complete project leader. *Industrial Engineer: IE*, 4, 39-43.
- Ragab A.F.M., & Arisha, A. (2013). Knowledge management and measurement: a critical review. *Journal of Knowledge Management*, 17, 873-901.
- Saunders, M., Lewis, P., Thornhill, A. (2007). *Research methods for business students*. 4<sup>th</sup> edition. Pearson Education Limited.
- Saunders, M., Lewis, P., Thornhill, A. (2003). *Research methods for business students*. 3<sup>rd</sup> edition. Harlow, England: Financial Times/Prentice Hall.
- Shajahan, S. (2005). *Research methods for management*. 3<sup>rd</sup> edition. Jaico Publishing.
- Shankar, R., Mittal, N., Rabinowitz, S., Baveja, A., & Acharia, S. (2013). A collaborative framework to minimise knowledge loss in new product development. *International Journal of Production Research*, 51, 2049-2059.
- Schulz, M., & Jobe, L. A. (2001). Codification and tacitness as knowledge management strategies: an empirical exploration. *The Journal of High Technology Management Research*, 12, 139-165.
- Silbiger, S. (2007). *The 10 Day MBA*. Piaktus books.
- Swart, J., & Kinnie, N. (2003). Sharing knowledge in knowledge-intensive firms. *Human Resource Management Journal*, 13, 60-75.
- Zhang, Y., & Wildemuth, B. M. (2016). Qualitative analysis of content. *Applications of Social Research Methods to Questions in Information and Library Science*, 318.
- Zaccaro, S. J., Rittman, A. L., & Marks, M. A. (2002). Team leadership. *The Leadership Quarterly*, 12, 451-483.
- Zikmund, W. (2003). *Business research methods*. 7<sup>th</sup> edition. South-Western.

## APPENDIX 1: Interview questionnaire

This gives an indication of the questions asked during the interview process. As much as the research is targeting codification in a given organisation, the aim is to derive some benefits for the academic and professional fraternity.

### Understanding the case study:

- a) What was the reason for establishing the KM (knowledge management) initiative?
- b) Were there any guidelines in kick-starting the initiative? Please explain if any.
- c) What tools are currently in use?

### Objective 1: What are the existing gaps in the current codification process?

- 1) What are the pain points of the existing KM process?
- 2) Is there a way of gauging whether knowledge stored in existing tools reaches the target audience?
- 3) Which tools are widely used? Please provide details of why they are widely used.
- 4) What is your tool of preference? Why?
- 5) Give two things you think could improve knowledge storage and retrieval within the organisation?

### Objective 2: What approach did the KM initiative team adopt?

- 1) Do you feel the team's efforts were aligned to the group's strategic thinking?
- 2) What were the benefits of conducting this initiative as a cross-functional team?
- 3) What problems if any did you encounter from the process?
- 4) Do you feel your opinions were respected?

5) Did you or any other member hold back for any reason? Please explain.

6) What do you think the team did extremely well?

7) What would you do differently if approached with the same problem in future?

8) Was there a framework or guideline that was followed in conducting your work?

9) Are you happy with the outcome of the KM initiative?

10) How would you measure the success/failure of the programme?

Objective 3: Was the outcome of the KM initiative embraced by the target audience?

1) How do you perceive the outcome to have been embraced by the greater work community?

2) If asked to guide a KM team working on improving KM, how would you go about it?

3) With the KM initiative completed, when faced with a problem, would you prefer asking someone or checking the knowledge repository?

## APPENDIX 2: Post-process interview questionnaire

This ties in with the third objective, but with feedback coming from the initiative's intended beneficiaries.

These were the interview questions asked to those outside of the team to obtain feedback on the outcome of the initiative under research.

- What is your level of confidence (Good/Bad/Excellent) with KM in the division?  
Please explain.
- Which KM tools do you use in your line of work?
- Do you think there is the right culture for documenting knowledge? Please support your answer.
- Did the KM initiative yield any results that benefit your work?
- What do you think could have been done differently?
- What do you think was done well?
- When faced with a work problem, do you prefer asking someone or checking the knowledge repository?
- If another KM team were to be set up, would you be interested to be part of it?  
Please explain?