Identifying obstacles in creating an organisational environment and culture that favour knowledge management

Mini-dissertation by

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DECLARATION

I, C.J. Mostert, declare that this mini-dissertation, *Identifying obstacles in creating an organisational environment and culture that favour knowledge management*, submitted in partial fulfilment of the requirements for the Master of Information Technology degree at the University of Pretoria, is my own work and has not been submitted to my knowledge for any degree at another university.

__________________________

C.J. Mostert
Date: 10/11/2017
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ABSTRACT

Knowledge management programmes have been proven to provide organisations with a highly competitive edge; however, not all organisations have such a programme. Some knowledge management programmes succeed, yet many have found the programme to fail for various reasons.

Neither the organisation nor the knowledge management programme has to be large for the programme to be successful. However, it is important for all organisations wanting to implement a knowledge management programme to know what the possible obstacles may be that could prevent the programme from achieving success.

A quick study to compare the organisational environment and culture of the organisation could be done to identify possible obstacles in the organisation. Once the organisation knows what obstacles lie in their way, they can focus on minimising or removing these obstacles to stand a better chance of successfully implementing and running the intended knowledge management programme.

This study sought to investigate what the literature says about the organisational culture and environment where knowledge management programmes have succeeded and what obstacles could be in the way of successfully implementing and running such a programme.

Once this was known, the study compared an organisation in the South African IT services and development sector to see if any of the obstacles found in the literature were present.

The study found that some, but not all, obstacles were present in this organisation. Some of the obstacles found in the literature were not only absent but, in actual fact, the complete opposite was found. One such discrepancy is that the literature states that employees may not want to share knowledge as they may fear a loss of job security if others also possess “their” knowledge. In the organisation, however, it was found that every respondent wanted to share their knowledge and had no concerns of job security loss due to knowledge sharing.

Keywords: business culture, business environment, information technology industry, knowledge management, knowledge management failures, knowledge management strategy, South Africa, obstacles, problems
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LIST OF ABBREVIATIONS

ICT  Information and Communications Technology
ETL  Extract, Transform and Load
BI   Business Intelligence
CRM  Customer Relationship Management
Chapter 1: Introduction

1.1 Background information

Similar to the industrial age, information and communications technology (ICT) was originally implemented to automate manual processes and therefore speed up and hopefully eliminate human error. The focus of this trend has now shifted to knowledge and what to do with knowledge. With this shift, there is a reluctance to change as it may affect employment positions and it is becoming increasingly important to work with the ground level employee right up to owner or director level to understand why this change is good.

Many writers have looked at how to implement knowledge management. Ahmad and Daghfous (2010) discussed inter-organisational knowledge networks. Ahmed et al. (2007) looked at learning to use knowledge management. Al-Busaidi and Olfman (2017) investigated inter-organisational knowledge sharing through the use of systems. Barnes and Milton (2014) focused on the use and design of a knowledge management strategy as the starting point for implementing a knowledge management programme.

Some authors prefer an open structure or non-structured approach while others opt for a more structured approach. This can be seen in the book “Designing a Successful Knowledge Management Strategy: A Guide for the Knowledge Management Professional” (Barnes and Milton, 2014).

There are also those who look at the culture that favours knowledge management, as seen Brijball’s (2010) dissertation entitled “The impact of culture on knowledge sharing”.

The focus of this study pertains to knowledge management and in particular why knowledge management implementations so seldom succeed. There are many reasons why knowledge management fails, but it usually boils down to two main reasons, namely the environment does not support knowledge management and the business culture is not ready for knowledge management (Ragsdell, 2009).
To succeed in overcoming obstacles in the way of creating an environment and business culture that favour knowledge management, it is best to stop at the following research sub-questions:

1. What does an organisational environment and culture that favours knowledge management look like?
2. What are some of the obstacles standing in the way of creating or changing to an environment and organisational culture that favour knowledge management?
3. What could be done to remove or minimise these obstacles?

1.2 Analogy to be used for this study

People often say: “I explain better if I draw a picture. Hand me some paper” or “Please hand me the whiteboard pen; I would like to draw something”. Analogies or pictures are usually fantastic tools to explain situations. These days, one gets “design thinking”, “user experience experts” and “user interface experts” to name but a few tools and resources for problem-solving in large organisations.

The researcher would therefore like to introduce an analogy to explain what this study is about. The analogy would be one of a vegetable garden. For this mini-dissertation, the researcher will focus on the traditional vegetable garden, not hydroponics or aquaponics.

A vegetable garden produces vegetables. In the traditional vegetable garden, it is said that one plants a seed and then waters the seed; the seed grows and one could then harvest the vegetables.

Similarly, it is said that knowledge management is a good thing and that, implemented correctly, it would benefit the employee and organisation. The knowledge management specialist basically implements knowledge networks and knowledge capturing and sharing software. Knowledge then starts to flow and all is well.

It is less certain what kind of person or household makes the best vegetable gardener. It is not well known what environment (nature) would be the best, what problems or obstacles there might be in a raw or uncultivated land or environment that might prevent one from generating or converting the raw land to a blooming, fertile and well-producing vegetable garden. What one would have to do to minimise, reduce or remove these obstacles is also uncertain.
Similarly, in this mini-dissertation we will look at which environment and organisational culture will favour knowledge management, what the obstacles are in the way of moving from the raw state to the preferred state and what could be done to remove or minimise these obstacles.

No two gardens are identical; they differ in size, shape, environment and layout. Figures 1 to 3 present three very different gardens, yet all of them are functional and produce vegetables.

![Figure 1: Standard garden (Gardenholic, 2015)](image1)

![Figure 2: Container garden (Gilkeson, 2014)](image2)

![Figure 3: Labyrinth garden (Villandry Chateau and Jardins, 2017)](image3)

Anyone can have a vegetable garden. With enough land, one may have a large garden; if one lives in a high-rise building, a windowsill garden is a good option. A bit of dirt in the back garden can also be promising. With very rocky soil, a containerised garden seems like the best bet.

Similarly, in knowledge management, one does not have to give up because there are too many rocks, nor is any organisation too small to implement some sort of knowledge management. One should try and implement whatever possible that would fit in the organisation. In some instances, some aspect of the organisation may be changed, but it is better to implement what fits than to change the organisation too much to fit knowledge management.

This mini-dissertation focuses on possible obstacles that prevent the household from having a vegetable garden. It does not focus on the size of the garden or household, what or how the vegetables are planted nor if the household members actually eat the vegetables.
To interpret this, the focus will be on what the obstacles are that might be preventing the organisation from having a knowledge management programme. We will not focus particularly on the size of the implementation or the organisation, what or how the knowledge programme may be implemented nor if the organisation actually uses the knowledge flowing in the programme.

In this mini-dissertation, the icon to the left (a carrot) would indicate an analogy.

1.3 Aim of the study

It is hoped that this research paper would assist more South African IT services and development organisations to implement a sustainable knowledge management programme that could and should advance the competitiveness of these organisations.

Many resources address large implementations of knowledge management for large organisations and for most project-based environments such as mining and engineering. For some reason, many of these implementations fail. Few of these resources deal with what the obstacles may be to implement a sustainable knowledge management programme in the complex South African IT industry.

1.4 Research questions

The main question is broken down into some sub-questions that, should the researcher answer them, assist the researcher to answer the main question:

What are the obstacles in the way of creating an environment and business culture that favour knowledge management?

1.4.1 Sub-question 1

What does an organisational environment and culture that favours knowledge management look like?

This question is concerned with the people who work in the organisation – what they think of, feel and know about knowledge management and how knowledge management affects their daily functioning in the business.
1.4.2 Sub-question 2
What are the obstacles standing in the way of creating or changing to the ideal organisational environment and culture?

This question aims to determine what the perceived and actual obstacles may be. The difference between perceived and actual obstacles is that perception is not always reality. The employees or organisation may have a perception that knowledge management is too expensive in terms of time or finances that need to be invested in the infrastructure. The reality might be that the infrastructure is already in place.

1.4.3 Sub-question 3
What can be done to remove or minimise these obstacles?

This question examines what can be done to circumvent, solve or diminish the perceived and actual obstacles. This will include a look at what other organisations did, what their employees thought and what the literature says about these obstacles.

1.5 Research methodology
1.5.1 Data collection tools
To answer the research questions stipulated in section 1.4 Research questions, the researcher first investigated what the literature says about the field of knowledge management.

Thereafter, the researcher followed an interpretivism approach, making use of two questionnaires, one qualitative and one quantitative in nature. These were so designed to contain questions that would indicate and point out response flaws. For instance, the quantitative questionnaire would ask the respondent if they agreed or disagreed with a statement, for instance: There are things preventing me from sharing my knowledge. The qualitative questionnaire would then pose a similar open-ended question, for instance: Name three blockages you know of that prevent people from sharing their knowledge.

One might consider the responses to be flawed if many respondents in the quantitative questionnaire stated that they agreed that there are obstacles but few of the qualitative questionnaire respondents mentioned obstacles.
1.5.2 Selection of participants

It was decided to include all employees of Organisation X in the selection process. This included all levels and all functions, though a minimum sample number was assigned to each level but not to any function type. The potential participants were randomly selected using the method as described in section 3.5 Sampling.

The selected respondents were equally divided between the two questionnaires based on seniority level and functional level. This was done so that the responses could also be compared based on these sub-divisions.

There was no distinction made between the geographical location of these employees even though the bulk of the employees were located in Gauteng.

1.6 Scope of the study

Due to the short timeframe for this research project, the researcher examined only a South Africa based organisation positioned in the IT industry.

It was important for the study to involve an organisation that represents the ethnically rich South Africa as this is the backdrop against which this study is set. However, this study does not include the impact that ethnicity or culture may have on a knowledge management programme or, as discussed in Chapter 2, on communication difficulties.

This study focuses on the obstacles in the way of implementing a successful knowledge management programme. As discussed in section 2.7.2 Knowledge management failure, one of the causal failure factors is inadequate support from management and because the entire organisation is affected by knowledge management, it was important for this study to include all levels of employees from C-level executives to junior level.
1.7 Limitations of the study

Because this study is based on an organisation in the IT industry in South Africa, the following limitations were noted:

- The findings may not apply to organisations in other industries.
- Ethnicity was not factored into this study and some obstacles pertaining to ethnicity or language nature may therefore not have been found.
- The study did not focus on the organisational or work environment.
- The organisation selected is large at about 2,000 employees and the study might therefore not apply to smaller organisations.
1.8 Brief chapter overview

Figure 4 presents a mind map to offer a short overview of each chapter in the study.

Figure 4: Mind map of overall chapter layout

This mini-dissertation is divided into five chapters (Figure 4). Each chapter will be discussed in more detail below (figures 5–9).
1.8.1 Chapter 1

Chapter 1 introduces the reader to the research subject and provides a broad overview of the mini-dissertation.
1.8.2 Chapter 2

In Chapter 2, the researcher investigated what the literature says about the field of knowledge management, including knowledge management strategy and knowledge management failure.
1.8.3 Chapter 3

Figure 7: Mind map of Chapter 3

Chapter 3 addresses the research methodology that was chosen, how sampling was done and the data collection methods.
1.8.4 Chapter 4

Obstacles in the way of creating an environment and business culture that favour knowledge management

Figure 8: Mind map of Chapter 4

This is the chapter where the data collected are analysed after the researcher has described the respondents and their responses.
1.8.5 Chapter 5

**Figure 9: Mind map of Chapter 5**

Chapter 5 is an overview chapter of what has been done and found. It serves as the conclusion of the research and mini-dissertation.
Chapter 2: Literature review

“The only irreplaceable capital an organization possesses is the knowledge and ability of its people. The productivity of that capital depends on how effectively people share their competence with those who can use it.” (Carnegie cited in Berg, 2009)

2.1 Introduction

“Although many organizations today have knowledge management initiatives under way, and spending on knowledge management systems is expected to increase, many others believe that knowledge management is just a fad or a buzzword” (Marchewka, 2006).

“…managing knowledge effectively provided competitive advantage in an increasingly competitive and dynamic business environment…” (Ahmed et al., 2007)

There are many conflicting and opposing opinions and viewpoints found in the literature when looking at knowledge management, how to implement it as well as its worth.

Some people criticise knowledge management as just another “fad”, while others think it provides a competitive advantage. Some feel the need to have as few rules as possible and just let knowledge management happen (Geisler and Wickramasinghe, 2009), while there are those who favour a structured knowledge management approach (O'Dell and Hubert, 2011).

2.2 Clarification of keywords and phrases

2.2.1 Data

“Data is the storage of intrinsic meaning, a mere representation. The main purpose of data is to record activities or situations, to attempt to capture the true picture or real event. Therefore, all data are historical, unless used for illustration purposes, such as forecasting.” (Liew, 2007)

Data are unorganised information in its raw form, for instance numbers and symbols, to refer to objects, signals or events and could be converted back into information by adding context (Botha, 2006, p.5/17 Glossary).

Therefore, for this mini-dissertation data will refer to information in its raw form, a mere representation of an event, activity or situation void of context and meaning and presented as numbers and symbols.
One may say that data are like seeds. If one sees a single seed for the first time, one may not know whether the seed would produce a vegetable or a weed, whether it is edible or poisonous. The seed without context is like a piece of data; without context, one may recognise the data as a string or integer (vegetable or weed).

### 2.2.2 Information

“Information is a message that contains relevant meaning, implication, or input for decision and/or action. Information comes from both current (communication) and historical (processed data or 'reconstructed picture') sources. In essence, the purpose of information is to aid in making decisions and/or solving problems or realizing an opportunity.” (Liew, 2007)

Information is specific, organised, and accurate data joined with the correct context and perspective. This mixture of data and context creates meaning for the receiver of the information (Botha, 2006, p.8/17 Glossary).

Therefore, for this mini-dissertation, information will refer to a mixture of data, context and perspective to form a message that has a relevant meaning for the receiver.

Let us assume that the data element is the seed and the context around the seed is that the seed comes from a carrot plant and that the carrot plant is edible. If one then joins together the context and the data, one may find that the information is the seed from an edible carrot plant.

### 2.3 Communication

Communication is required to transfer knowledge. This transfer can take place between humans, between human and system or between system and system. Communication is therefore one of the key elements in knowledge management to move knowledge from one entity or object to another. If one is aware of the communication process and especially the noise factor, then one could more easily make sure that the intended message is received correctly. Any of these noise factors may cause a serious loss in productivity or sales and various factors may cause a huge barrier to effective knowledge transfer and management.

Various models and definitions exist for communication. Communication is an entire field of study on its own. The complex-layered concept of communication could be reduced to...
something extremely simple or fill a countless number of pages (Peeters, 2009, pp.58-59; Van Belle, 2010, pp.181-182). However, for this mini-dissertation, we would define communication as the process used between a sender and receiver to successfully move a concept, message or knowledge from the sender to the receiver, using some sort of channel or medium, with the aim for the message to move without alteration and the receiver to receive the message as was intended by the sender.

One may say that the transferal of nutrients might be equal to communication. If nutrients are not transferred from the soil to the seed or plant, there would be deficiencies in the plant or vegetable that may lead to nutrient transfer deficiencies to the human.

2.3.1 Communication theory and the process of communication

Various resources, including Peeters (2009, pp.58-59) and Van Belle (2010, pp.181-182) state that the very basics of communication refer to a sender sending a message to a receiver. However, if it were this simple, words like “miscommunication” or “misunderstanding” would not exist. Rather, the process of communication is very complex and multi-layered. Some of these layers are the sender, the receiver, their individual backgrounds, the channel they use to transmit the message, noise or barriers. If one were to reduce some of the models of communication to a diagram of the basics of the communication process, it might look something like Figure 10: The Communication Process below. In this diagram, the sender uses his field of experience to encode the message and passes the encoded message through a channel to the receiver. The receiver then decodes the message using his field of experience and then sends feedback to the sender usually via the same path/method. All this is done while noise or communication barriers are added at each point (Businesstopia, 2017; Sanchez, 2016).
2.3.2 Communication barriers (noise)

According to Truter (2006, pp.55-58), Cowan (2014, pp.24-26, 51, 97) and Szostak (2014) communication barriers may be:

- The individual’s background

  This refers to the sender’s and receiver’s knowledge and assumptions accumulated over a period of time, perhaps through formal education or experience. These assumptions and knowledge may have an impact on various aspects of the individual and may include ideological, epistemological, theological, theoretical, ethical and methodological aspects to name a few. For example, the business analysts in one of the large four banks in South Africa use the term BOM for “business object model”, while BOM stands for “bill of materials” in other industries. Someone might state: “That’s how we do things here” or “You should have known this as the XYZ of the organisation”. These statements are an indicator of the differences in background between the sender and receiver. Another indicator in differences in background is when someone uses the word “obvious” or the phrase “common sense”, as in “that is obvious” or “we do not have to state that; it is common sense”.

  The following is an example of a very costly mistake of $125 million due to the difference between organisational and individual history that could have been avoided if the two parties had realised or laid down all assumptions beforehand and had not assumed it is common practice or obvious. “NASA lost a $125 million Mars orbiter because a Lockheed Martin engineering team used English units of measurement instead of metric units.”

Figure 10: The Communication Process (adapted from Businesstopia, 2017; Sanchez, 2016)
while the agency’s team used the more conventional metric system for a key spacecraft operation, according to a review finding released Thursday” (Lloyd, 1999). Grossman (2010) also wrote an article on this unfortunate event.

- Communication or information overload

Truter (2006) stated that poor listening skills are a barrier to communication and that the average speaker transmits about 125 words per minute while the average listener can receive about 400–600 words per minute. This indicates an idle time of about 75%. However, when one takes into consideration all the other channels of communication flow, such as email (relevant or irrelevant), the Internet, billboards and dashboards in this day and age, it is clear that the sheer volume of information is becoming a barrier in itself, especially when employees start to filter out relevant communication or focus on irrelevant communication.

- Physical barriers

Physical barriers refer to broken or damaged hardware and software, the distance between the sender and receiver, telephones ringing or people interrupting the conversation, sub-optimal lighting or actual audible noise.

- Semantic barriers

Semantic barriers mostly refer to the words one uses and the meaning one attaches to these words. For example, in South Africa, the term “couple of” usually mean a few, but in other parts of the world the word “couple” refers to literally two. In saying “This report will run for a couple of hours”, the sentence may mean it will take only two hours or it could take a few hours. Another example is taken from Truter (2006, p.57), citing a newspaper advertisement “Dog for sale. Will eat anything. Especially likes children. Call 504-2131 for more information.” The wording could imply that the dog prefers to eat children or that the dog is fond of (playing with) children.

Semantic problems may occur when a message is transmitted between a sender and receiver of different disciplinary backgrounds. Szostak (2014) used the example of how an economist’s interpretation of the word “investment” differs from an accountant’s view of the word. Take, for example, this sentence transmitted by a software developer: “I could not download the entire file. The pipe broke”. A plumber as the receiver of the message may ask: “Should I bring copper or iron pipe when I come to fix it?” The telecommunications expert as the receiver may ask: “Who dug up your fibre / ADSL
line?” The software developer, on the other hand, intended to indicate that there was a fault in his software code, in the section establishing and maintaining a communication channel or “pipe” and because of this fault, he could not complete the flow of data that would constitute the file.

- **Physiological barriers**
  
  Any situation that is sub-optimal on a physiological level could be seen as a barrier to good communication. These may include any illness, hearing and sight deficiencies, headaches or sitting in a cluttered environment. In general, physiological barriers refer to any uncomfortable situation.

- **Psychological and perceptual barriers**
  
  This barrier mainly pertains to perception. Perception may not be the reality of the matter; that is, an employee who thinks a manager is unapproachable may find it hard to communicate matters. In addition, in a culture where employees continuously interrupt one another, some may be very reluctant to participate in a conversation even though the employee would not have been interrupted. Another perception may be that someone who asks questions is perceived as less intelligent.

  Stereotyping could be a major barrier to communication. One may think that “this type” of person, be it based on culture, religion or ethnicity, will act or think in a certain manner and therefore assume that this “type” of person is or is not worthy of one’s time. An example may be thinking of blue collar workers as less intelligent and therefore refraining from asking them “intelligent” questions. This in turn may hamper effective extraction of knowledge from this “less intelligent” workforce.

  Management who behave badly may also fall in this category. If it is perceived that management is against communication or flow of knowledge. This perceived behaviour will then be a big barrier to communication flow further down in the hierarchy of the organisation.

  The emotional and intellectual quotient (EQ and IQ respectively) would fall under this section too. The message may be totally distorted if the wrong amount of emotion (too little or too much) or wrong emotion type is used in the decoding or encoding stage. Take the “Dog for Sale” advertisement mentioned earlier; if a person had been bitten by a dog or had lost a child due to a dog attack, they may interpret the message in the advertisement completely differently due to emotions evoked by their past experience.
Again, the message may be totally distorted if an employee with a high IQ cannot encode a message correctly to enable an employee with a lower IQ to decode the message. The opposite is also true that the employee with a high IQ may find it difficult to decode the message sent and encoded by an employee with a lower IQ.

• Intercultural barriers

One should note that intercultural does not mean interracial. Intercultural has a much broader meaning in that communication between a Zulu person and a Sepedi person or a British person and an Irish person may be under tremendous strain due to different cultural backgrounds. When communication happens interculturally, one should be careful of miscommunication due to intercultural differences. Meaning attached to symbols and signs may carry vastly different meanings in different cultures. Please refer to section 2.3.3 below for a more in-depth discussion on cultural and language differences.

• Silos in the organisation

Silos could be classed in some of the above as it might be physical (if departments or silos sit physically apart), psychological and perceptual (if some employees have a perception that one department or silo should or may not talk to another) and even intercultural (if one department or silo consists mostly of a different culture than the rest of the organisation. This may be if, for example, one department is located in another country or even a different region of the same country).

If there is a blockage in the hosepipe, a barrier to water flowing from the tap to the plants, and one does not know about it, then one may wonder why the huge amount of water does not flow (knowledge is not getting to the other side). But if one knows that there might be a barrier in the hosepipe, an effort can be made to remove or fix the problem. Removing the barrier would let the water flow properly to the intended location.

2.3.3 Cultural and language differences

A lot of research has been done on the obstacles and difficulties that knowledge management projects or implementations could and have experienced in various fields. Literature suggests and gives evidence that geographical locations and cultures could be a significant barrier to knowledge management. The literature distinguishes between macro- or global-level geographical differences (Hedlund, 2007) such as eastern and western cultures or geolocations, but also reflect on the micro or national level (Riege, 2005). It is not only the
language barrier but also the cultural barrier that is important. If one were to look at a country like England as a part of the sovereign state of the United Kingdom and the region around Leeds city as an example, one gets a vast variety in different dialects in as little as a ten-mile radius. Some people may not fully understand each other, even though they speak the same language.

The chart of the United Kingdom below (Figure 11) shows Leeds city is located in the purple area (northern area) and, as per this map, the northern area alone boasts ten dialects.

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**Figure 11: Dialects in the United Kingdom (Escola De Idiomas Galdomara, 2014)**

In countries like India and to some extent South Africa, it is perceived that certain cultures do not ask questions, even if they do not understand. Furthermore, certain classes of people do not interact with others, not even in the workplace (Krishna et al., 2004).

It is possible to overcome these cultural barriers and one does not have to adapt the culture to work with knowledge management. In fact, it is possible to adapt knowledge management to
rather fit around the culture (McDermott and O'Dell, 2001) whether it be organisational or human cultures.

One may think that all carrots are the same, but some cultivars grow better than others. With the knowledge that a certain cultivar does not grow well in colder climates, one may be able to avoid planting that cultivar or make additional efforts in preparing the environment to cater for the difference. Similarly, if one knows that there are differences in the individuals’ languages and cultures involved in communication, extra effort will be needed to make sure that all are treated correctly to get the best results.

2.4 Knowledge

“Knowledge is the (1) cognition or recognition (know-what), (2) capacity to act (know-how), and (3) understanding (know-why) that resides or is contained within the mind or in the brain. The purpose of knowledge is to better our lives. In the context of business, the purpose of knowledge is to create or increase value for the enterprise and all its stakeholders. In short, the ultimate purpose of knowledge is for value creation.” (Liew, 2007)

According to Botha (2006, p.19), knowledge is difficult to transfer and closely linked to expertise, whether it is practical or theoretical (OECD, 2012, p.34), and can be broken down into know-what, -why, -who and -when (Botha, 2006, p.24). Knowledge is comprised of information, values and expert insight gained by experience that is encapsulated in an individual and that could become embedded in processes, routines and practices (Botha, 2006, p.10/17 Glossary; Davenport and Prusak, 2000, p.5).

The literature refers to different types of knowledge. Some of these will be discussed before introducing the definition of knowledge that will be used in this mini-dissertation. For this mini-dissertation, only the following will be considered:

- Explicit knowledge
- Tacit knowledge
- Embedded knowledge

2.4.1 Explicit knowledge

“Knowledge which is codified and articulated. It appears in the form of documents, procedures and in databases” (David Skyrme Associates, 2011 b).
According to the Oxford Dictionary (2016), synonyms for the word explicit include clear, obvious, defined, precise and unambiguous.

According to Botha (2006, p.7/17 Glossary), explicit knowledge is the knowledge that is articulated and codified in a clear and precise way for all to find and use and could be found in databases, documents, publications, structured or unstructured repositories.

If one equates knowledge to nutrients, then explicit knowledge may be said to equal fertiliser. Fertiliser could be formed by extracting nutrients from nutrient-rich sources and repackaging it as fertiliser.

2.4.2 Tacit knowledge

“Knowledge that is not codified but held in people’s heads. Intuitive, experiential, judgmental and context-sensitive, it may be difficult to articulate.” (David Skyrme Associates, 2011 b)

According to the Oxford Dictionary (2016), synonyms for the word tacit include unspoken, implicit, inferred and wordless.

Therefore, tacit knowledge is the unspoken, uncaptured knowledge in the head of the individual with strong links to experience, social culture and insight, and might be hard to extract and codify into explicit knowledge (Botha, 2006, p.16/17 Glossary).

Tacit knowledge could be equated to the nutrients that are already in the soil or growth material. These nutrients were not extracted and repackaged as fertiliser would be. It could be extracted, but the extraction process is not always easy.

2.4.3 Embedded knowledge

Embedded knowledge is a form of explicit knowledge in that it exists outside of the head of humans. Embedded knowledge is captured in processes, procedures, documents and graphs, for instance (Shai and Preiss, 1999). It is important to understand that embedded knowledge could be captured in explicit sources but the knowledge itself might not be explicit. For instance, a rule, procedure or graph could be captured in a document but the knowledge in the rule, procedure or graph is not apparent (Frost, 2017).
Embedded knowledge is like the nutrient nitrate inside raindrops during a lightning storm. Nitrates are formed during the lightning process, converting nitrogen to nitrogen dioxide to nitric acid and finally to nitrate. This is not to say that embedded knowledge is created during the process, but rather that, like nitrates that are embedded in the lightning rain storm process, so is embedded knowledge entrenched in the process (Weingartz, 2011). The rain process is obvious, but it is not obvious that the “knowledge” nitrates are embedded in the process.

2.4.4 Conclusion on knowledge

For the purpose of this mini-dissertation, knowledge is therefore defined as:

Data converted to information by mixing the raw data with context and perspective, whether the context is theoretical or practical, to form a difficult to transfer or capture, message.

• The message could contain a mixture of the following elements: what, when, where, why, how and who.

• The message could reside:
  a. within the human mind (tacit knowledge),
  b. in captured form (explicit knowledge) whether it be in electronic or physical form and/or
  c. in the organisation’s processes, routines, practices (embedded knowledge).

• The ultimate purpose of the message is value creation.

2.5 Knowledge networks

The OECD (2012, p.17) defines a knowledge network and market as:

• Using platforms facilitating the use of and search for knowledge. These platforms should increase the range of potential users of research partners or knowledge assets.

• Enabling cumulative innovation and nurturing the efficient use of knowledge, with the aim of producing services and goods while potentially developing new knowledge.

• A variety of arrangements governing the circulation between independent parties of disembodied knowledge.
• Greatly increasing innovative capacity through creating interconnected networks or webs of knowledge. Some of these webs may be crowd knowledge or sourcing and external expertise.


• **Data registries and repositories:** These are large collections of data, for instance, a large collection of DNA sequences or cancer data.

• **Platform technologies and tools:** These are not only collections of data, but some are also tools related to these data sets. Tools may include formulae and models.

• **Consortia and public-private partnerships:** This form of knowledge networks and markets is usually limited in membership and all join with a common goal in mind. Contributions and membership are based on a formal agreement.

• **Pools, clearinghouses and exchanges:** In these, there is no formal common goal or project, but still a formal agreement exists between these entities on how intellectual assets are shared and what may be done with the shared intellectual assets.

• **Prizes, online auctions, brokers and citizen science projects:** In this form, the organisation makes their research problem known to the public to try and fish for new insight or talent.

Various sources (Al-Busaidi and Olfman, 2017, p.117; OECD, 2012, p.17; Van Zyl, 2011, p.18) mention trust alongside knowledge networks. If there is no or little trust connected to a node in the network, it would increase the risk or cost of that node; however, the cost is reduced as the trust grows. Trust could also be established based on various trusted nodes vouching for a new or existing node.

Al-Busaidi and Olfman (2017) as well as Ahmad and Daghfous (2010) stated that trust is absolutely critical not just for knowledge networks but also for knowledge management in general. The former mention trust more than 34 times in 19 pages and the latter mention trust more than 14 times in 10 pages.
If the formal organisational knowledge network is too difficult to use, perhaps because obtaining access is too strenuous or too difficult to add knowledge to the network or it is too difficult to find what one is looking for, then the employees may create what is known as an under-net. The term under-net is explained in more detail in section 2.5.1 The under-net below.

Most of the previous content was written from the group or organisation’s point of view. Chatti (2012, p.835) makes the distinction between knowledge management networks, organisational knowledge networks and personal knowledge networks. Chatti states in earlier pages that there has been a shift from organisational knowledge management to personal knowledge management because of failures in knowledge management implementations. From personal knowledge management came forth the personal knowledge network. A personal knowledge network consists of a unique blend of knowledge types (tacit, explicit, embedded) and the individual’s theories-in-use. This blend continually adapts as the individual goes through life.

Chatti et al. (2012, p.182) discussed LaaN or Learning as a Network which focuses on the knowledge worker and what knowledge and knowledge management look like from the knowledge worker’s perspective. Knowledge management is not seen as managing “knowledge as a thing” or “knowledge as a process” but rather as personal knowledge networks being created continuously.

A knowledge network could therefore be described as a system of agents that are transmitting and retaining knowledge. These organisms could be humans and ICT systems put together and do not refer to humans only. These networks or systems adapt and grow continuously.

As with any network, there must be a way to find things; in a knowledge network, these things usually refer to knowledge, whether it be codified (usually in ICT systems) or tacit (usually in humans).

A knowledge network is like the methods used by the farmer to get the nutrients from source to destination. There might be local pools or containers with certain nutrients but there might also be external sources like the compost heap or manure from the adjacent farm. If the source is pure, then the farmer may trust the source more than the compost heap per se that may contain weed seeds. This potential impure source may have to be handled with care to prevent the wrong kind of nutrients from entering the vegetable patch. This said, these less pure sources may contain nutrients that are not available locally and may be required for a
better crop yield. If a branch of the nutrient network is blocked or broken, such as the pipe from the nitrates, then the crop may suffer from a lack of this nutrient. It is therefore important to make sure all pipes and branches are well connected to ensure the flow of nutrients is optimal.

2.5.1 The under-net

The under-net is not to be confused with the “darknet”, similar illegal hacker or internet attacker communities (Chacos, 2013).

The word was first used in the late 1990s to refer to a knowledge management phenomenon that came into existence to circumvent strict rules of intranets and extranets of corporations or to cater for the lack of such programmes. The employees generated their own non-governed intranets or extranets that “escape the official gaze of The Corporation” (Weinberger, 1999).

Hunt (2000, p.74) more clearly defined the under-net as unofficial knowledge networks that are generated by “do-it-yourselfers”. These knowledge networks are seen as the “lifeblood” (WEINBERGER, D., 1999) and very valuable innovations for the organisation. However, these unofficial yet valuable knowledge networks can be a threat to official programmes and a delicate balance should be established between the official capturing of knowledge and the unofficial under-net.

Dalkir (2013, pp.133-134) defined it as a form of social network and knowledge sharing that is not in the foreground and completely off the radar of the organisations.

In smaller organisations, the under-net is well known or perceived to be common knowledge to the employees but never classed, named, captured or officially sanctioned. In larger organisations, these under-nets usually exist in organisational silos but seldom cross-pollinate to other silos. Inter-silo connections are very fragile and usually depend on one or two individuals. One can easily find these under-nets by asking a few questions, for instance: to whom would one speak to find out about XYZ? Where could one find this knowledge captured?

The first question would usually be answered. To the second question, one would not get an answer, or one would get an answer that it has been captured in a very old document, but the document is outdated, and very few people usually know where this document is.
Another problem with the under-net is that the commonly known knowledge is usually not so commonly known. If the links in the under-net disappear for any reason, the knowledge might be perceived as lost, even though it is only the link to the knowledge that is lost. This perception of lost knowledge might lead to a loss in very valuable time in that the person looking for the knowledge would have to spend a lot of time gaining this knowledge by redoing the research instead of getting to the person or system who actually has the knowledge (Dalkir, 2013, pp.133-134).

If a vegetable patch worker thinks that it is too difficult to collect nutrients from a certain source, he may try and find a non-vetted source, or he may bring in a source that he previously used. This is also true for stockpiling. The worker may generate a new stockpile or store if he finds it is too difficult to store the nutrients in the current destination. This is not a problem per se, however, non-vetted sources may be illegal or untrusted. The other side to the coin is that if the worker leaves and no one knows about the new source or destination or, potentially worse, if he takes the new stockpile with him, the vegetable patch may lose a lot of nutrients. It is therefore better to entice workers to declare new sources or destinations and these should be vetted as soon as possible. Potentially better, the workforce, including the knowledge manager, should determine why the new source or destination is required and try to fix the problems with the current network and sources to prevent the need for unvetted sources or destinations.

2.6 Knowledge retention

Barnes and Milton (2014, pp.167-174) spent an entire chapter on knowledge retention as a strategy for knowledge management and Ngubane’s (2014) entire MBA dissertation is dedicated to the subject of knowledge retention as a strategy.

Even though one might think of retirement as one of the largest contributing factors to knowledge loss (Barnes and Milton, 2014, p169), the industry type and department type in an organisation should also be considered. For instance, the average CIO tenure is about four to five years compared to the average C-level executive of about ten years (Adams, 2014; Bonfante, 2014; Thibodeau, 2011).

This said, one should be aware that other factors such as organisational downsizing might be a major contributor to organisational knowledge loss (Schmitt et al., 2011).
The General Knowledge Model includes knowledge retention as one of the important aspects of knowledge management. The General Knowledge Model is depicted in Figure 12 as adapted from Chigada and Ngulube (2016, p.222).

![General Knowledge Model Diagram](image)

**Figure 12: General knowledge model (adapted from Chigada and Ngulube, 2016, p.222)**

It could be argued that knowledge retention is not important as a strategy; one might state that the focus is to capture the knowledge as of a certain date and so build up the knowledge repository. However, various sources, as mentioned above, see knowledge retention as an important step. The General Knowledge Management model (Figure 12: General knowledge model (adapted Figure 12) jointly with 2.5 Knowledge networks reveals that knowledge retention should be classed as a key critical aspect of knowledge management because knowledge adapts and is created continuously. The knowledge captured at a certain point in time might be classed as old by the time the knowledge worker retires or leaves the organisation. If the adapted and evolved tacit knowledge was not captured (retained) or the already captured knowledge was not updated, then the organisation would lose this “new” knowledge.

Knowledge retention may refer to how long one could remember or retain knowledge after learning the knowledge; or as keeping knowledge from leaving the organisation. To some extent, these two separate ideas could be seen as one. If the organisation is seen as a living organism, the organisation could be compared to an individual learning something and retaining it. In the organisation, the knowledge obtained or learned by the organisation, which is usually captured in the individual mind (tacit knowledge), could be forgotten by the
organisation organism if and when the individual leaves, unless it is captured in some other
form.

An organisation without knowledge retention as one of the key features in their strategy is
like a vegetable patch with a water tank that has a leaky tap. The nutrients in the water will
keep on dripping out and be lost. In our analogy, we must understand that we can “copy” the
nutrients and water in our vegetable patch worker’s buckets but we cannot remove or drain
the nutrients and water out of their buckets. Surely, even with today’s technological advances
one cannot remove or delete knowledge from the employee’s head. We can duplicate the
knowledge to the best of our abilities but cannot remove it.

In our analogy, we have to duplicate the water and nutrients from our workers’ buckets as best
we can. This process cannot truly be done in a short time and one should therefore not see
an exit interview as a knowledge transfer session.

If one sees the water as the container (knowledge worker) of the nutrients, then one should
endeavour to prevent the water from leaving the tank in the first place; else one should
duplicate the nutrients on a continuous basis to at least prevent the nutrients from
disappearing.

2.7 Knowledge management

Below are a few definitions of knowledge management found in the literature. Although they
are not all in line with what the researcher believes, it is important to see what others have
stated as a definition of knowledge management.

“Knowledge management: This is a system that affords control, dissemination, and usage of
information. This is often a Net-enabled corporate initiative.” (Global Market Insite, 2016)

“Knowledge management is a set of processes used to effectively use a knowledge system to
locate the knowledge required by one or more people to perform their assigned tasks.”
(Knowledge Based Solutions, 2002).

“Knowledge management is the explicit and systematic management of vital knowledge – and
its associated processes of creation, organization, diffusion, use and exploitation – in pursuit
of business objectives.” (David Skyrme Associates, 2011 a)
Knowledge management is the process of managing, creating and capturing tacit and explicit knowledge from the organisation’s intellectual assets (Gartner, 2015).

Knowledge management is a multi-faceted approach to support the business objectives by making use of the knowledge in the business (UNC.EDU, 2015).

Knowledge management is an intelligent ETL process to take raw data and transform it into information units; the information elements are then loaded into context-relevant structures to simulate knowledge (Geisler and Wickramasinghe, 2009).

“A trans-disciplinary approach to improving organisational outcomes and learning, through maximising the use of knowledge. It involves the design, implementation and review of social and technological activities and processes to improve the creating, sharing, and applying or using of knowledge. Knowledge management is concerned with innovation and sharing behaviours, managing complexity and ambiguity through knowledge networks and connections, exploring smart processes, and deploying people-centric technologies” (Standards Australia, 2005, p.2).

“Knowledge management is the systematic management of an organization’s knowledge assets for the purpose of creating value and meeting tactical & strategic requirements; it consists of the initiatives, processes, strategies, and systems that sustain and enhance the storage, assessment, sharing, refinement, and creation of knowledge.” (Frost, 2017).

Knowledge management is still a new and poorly-defined field of study (Barnes and Milton, 2014, p.1) even though some of the terms and phrases found in knowledge management have been in literature since 1966 (Skyrme, 2002). It is clear from the above that there is no real consensus on the definition of knowledge management.

The definition by Global Market Insite (2016) could be viewed as an IT-centric definition focusing on systems. The definition from Knowledge Base Solutions (2002) could be regarded as much narrower in scope and still very IT and systems-focused compared to the third definition by David Skyrme Associates (2011 a), which is very concise, focusing on the business and its knowledge being managed. The next two definitions from Gartner (2015) and UNC.edu (2015) are very short and leave out many of the key features dealt with in the other definitions. In particular, Gartner (2015) makes no mention of using the knowledge, while UNC.edu (2015) does not mention the capturing, sharing or replacing of the knowledge. Geisler and Wickramasinghe (2009) leave out key elements but present a definition that aims
to describe knowledge management in information language. Although the researcher does not agree with Geisler and Wickramasinghe’s definition, it was decided to include it in this mini-dissertation to show the different opinions and ways that individuals and organisations try to define knowledge management.

Rather than defining a single definition for knowledge management, one should opt to see knowledge management as a landscape of various fields of study, as indicated by Barnes and Milton (2014, pp.1-3). Some of the fields included in the broader landscape are concerned with data linkage and patterns in the data, alongside analogous fields like BI and CRM; information structuring, presentation and retrieval; knowledge retention; and organisational learning or transfer of knowledge.

Using the analogy that nutrients are knowledge, we could say that the farmer or knowledge manager must make sure that the right nutrients are at the right time at the right place to obtain the best results. If the farmer has a lot of resources, he may install expensive equipment to try and get this right for the individual plant but also for the entire crop. However, if he focuses too much on the equipment, then the nutrients would not flow as it should. The farmer with the best equipment may still have a failed crop. On the other hand, the farmer with the least amount of equipment may have the best crop if he manages the flow of nutrients correctly.

In the context of knowledge management, the knowledge manager should manage the flow of knowledge to get the right knowledge to the right place at the right time to get the best results, not only for the organisation but also for the individual. Equipment and tools may facilitate this flow but should not become the primary focus.

2.7.1 Knowledge management strategy

There are many books about knowledge management; most of them refer to a knowledge management strategy and all agree that a knowledge management strategy is very important. One must decide on the main direction that the knowledge management strategy should take: structured or less structured (Geisler and Wickramasinghe, 2009).

Geisler and Wickramasinghe depicted the differences between structured and unstructured knowledge management implementation, as can be seen in Figure 13. Barnes and Milton (2014) hold the opinion that most successful knowledge management implementations follow a well-balanced strategy between structured and unstructured, but lean more to the structured side according to their many years involved in the knowledge management industry.
According to Barnes and Milton (2014, p.23), knowledge management programmes have a greater chance of success if the programme is closely tied to principles. Here are a few knowledge management strategy principles found in the literature (BARNES, S. and Milton, N., 2014, pp.23-39; SAMIZADEH, J. et al., 2013, p.10):

- The knowledge management strategy must be closely bound and led by the organisation’s strategy and should address key organisational problems.

The strategy must focus on the organisation’s critical knowledge areas and where high-value decisions are being made.

- The implementation team should report to a cross-organisational steering group because knowledge management should be an organisation-wide programme. Management must take a key interest in this programme.

- Knowledge management is about how people do things (behaviour) and knowledge management should therefore be seen as a behaviour change programme.
• As with behaviour change, knowledge management is a continuous process of training and retraining. It is important to note that knowledge management is a continuous process, not a product or end destination.

• The programme should be phased with regular decision gates.

• One of the phases should be a pilot phase.

• The focus of the programme should be to set in place a knowledge management framework that:
  • is part of the organisation’s structure
  • includes governance if it is to be sustainable
  • is structured rather than unstructured.

A strategy is a plan of action or policy designed to achieve an overall or major aim. If the aim is to manage the knowledge and flow of such knowledge, then the strategy will look at every aspect of management to the environment of the organisation set in a plan of action or policy designed to achieve the management of the knowledge (Barnes and Milton, 2014).

Components of a knowledge management strategy could include:
• organisational structures
• organisational culture
• knowledge retention
• core competencies
• internal and external knowledge network
• knowledge management systems to be used
• knowledge management best practices

Just like knowledge management strategies (structured or unstructured), the farmer may also decide to follow a structured or unstructured farming strategy. However, a strategy contains much more than the choice to be structured or unstructured. It also contains plans for when to plant what and where, and what nutrients to get to which plant at what time of growth. The strategy contains which sources of nutrients to use and even what the risk or trust factors may be. It contains what farmers, buyers and other users of the vegetables (stakeholders) there might be. It contains ideas and plans on how to implement the nutrient network, sprinkler systems, and even if and when the shelf life of the nutrients may pass and
therefore be discarded or purged from the vegetable patch. The plan should also contain success criteria for the farmer to know that the vegetable patch is worth the effort. Here one should be careful to focus on only how much money the farmer makes extra as not all vegetable patches have the main focus of making more money. One should therefore rather look at what the main focus and success criteria may be for the entire farm and not only for the vegetable patch.

To interpret this, the organisation’s main focus and success factors should be determined. The organisation may state that they want to broaden a number of product offerings. Assisting the organisation in broadening its product offering should be one of the success factors of the knowledge management strategy.

2.7.2 Knowledge management failure

The focus and expectation of knowledge management since the introduction of the term focused on organisational competitiveness, productivity increase, innovation and growth. However, most knowledge management initiatives failed or proved very inefficient in creating a competitive edge (CHATTI, M. A., 2012, p.829; CHATTI, M. A. et al., 2012).

One of the reasons for these failures stems from the fact that many knowledge management projects see knowledge management as a technology problem and place too much emphasis on knowledge as a process or a thing (CHATTI, M. A., 2012, p.832; GAETA, M. et al., 2015, p.57).

In the article “The Eleven Deadliest Sins of Knowledge Management”, Fahey and Prusak (1998) named eleven generic obstacles. These eleven “sins” could be grouped into three sets:

- **Not defining enough**
  
  If there is no definition or standard set, it would be impossible to measure anything, whether it be success or failure (Frost, 2014 a). However, the organisation should not be too focused on direct measures of knowledge. Rather, the organisation should focus on indirect measures like how quickly a new employee can be productive or profit percentage be increased because of lessons learned, for instance.

- **Seeing knowledge as dead objects**
  
  Anything that is alive should move and evolve. If the organisation focuses on stockpiling knowledge, it could become dormant and eventually outdated and useless. Knowledge should rather be used and shared to be useful not only in the present but
also in the future. This could be achieved by allowing experimentation with the added benefit that experimentation assists in the learning of new things (Stowell and Starcevich, 1998, p.141). Keeping knowledge alive and moving would create a shared context that feeds again into the experimentation and creation of new knowledge, as long as the organisation does not try to remove the knowledge from the context or situation. When knowledge is removed from context, it would distil into less useful information or even pure data.

- Seeing knowledge as separate from humans

The organisation must always remember that knowledge is first and foremost used by humans and resides mainly in humans. The organisation should never lose sight of this primary fact, even when the organisation has captured a lot of tacit knowledge into explicit or embedded forms. Humans will or should consume the explicit knowledge and will create new knowledge, as stated in the previous point.

The organisation should also remember that context is very difficult to capture into explicit form and one should therefore not place a premium on technology interface above human interaction. Human-to-human interaction is the best way to transfer context and tacit knowledge.

Reasoning and thinking go hand in hand with experimentation and the organisation should therefore foster an environment where the knowledge worker can and should think and reason about the explicit and embedded knowledge.

According to Frost (2017), one could divide failure factors into two groups, namely causal factors and resultant factors. Causal factors are not always visible but fundamental flaws are found within the organisation that lead to symptoms or results (resultant).


Causal failure factors occur when:

- Knowledge managers and employees are not on the correct skill level;
- There are cultural and structural problems within the organisation;
- Focus lacks on the key high-value decision-making groups;
- There is inadequate support from management;
• Measurable benefits and performance indicators are missing or poorly defined;
• There is insufficient coordination planning, evaluation and design; and
• A lack or inappropriate ICT infrastructure exists.

Resultant failure factors include:
• Poor quality assurance procedures, leading to non-relevance or usability;
• Loss of knowledge due to an ageing workforce;
• A too large emphasis on the codification of knowledge and formal learning;
• Lack of focus on building the knowledge network between people or seeing knowledge as separated from people;
• Not enough contribution from a wide audience;
• Using the wrong technology for the job or it is too difficult to use;
• Missing or lack of knowledge management ownership;
• Improper investment in the knowledge management programme;
• Confused or inappropriate messages or stigma attached to the programme discouraging potential users from using the programme;
• Seeing knowledge as a dead object instead of alive and evolving;
• Timely knowledge assists in making intelligent decisions but the reverse is also true if one does not get the knowledge in time or at the wrong time, as it could then be an obstacle and might contribute to information overload.

From a philosophical point of view, one would have to first ask what is classed as a failure. If one is neutral to knowledge management, one may agree with the above in that failure would be if the implemented programme does not work or does not fulfil the pre-set measurable success criteria. From the perspective of the knowledge management implementation manager, one may think that the programme is a failure if it could not be successfully installed or activated. Yet another viewpoint would be from the knowledge management activist’s perspective. In this case, one may argue that it is a failure if any organisation exists that does not have some form of knowledge management.

Is it a failure not to have a vegetable patch or is it a failure if the input into the patch does not equate the output/produce? Is it a failure if the patch does not produce 10 tonne vegetables? Perhaps it is classed as a failure if the patch produces 10 tonne pumpkins instead of nine tonne carrots. Similarly, one should be extremely clear about what would constitute a failure in the knowledge management programme.
2.8 Different environments

2.8.1 Project environments

The conclusions following below were drawn from six sources (Akhavan, P. et al., 2014; Project Management Institute, 2013; Ragsdell, G., 2009; Stolz, H.A.S. and Steyn, H., 2014; Usmani, F., 2012; Zyngier, S. et al., 2004).

A project could be defined as a temporary piece of work with a beginning and an end. This type of work usually has the aim to produce a service, result or product. It should be noted that the result, service or product is not necessarily temporary in nature.

A project-based organisation divides the employees into project teams to do a set of work with a start and an end. Each project has a project manager who has the authority and backing of their superiors. Therefore, reporting lines are clearly defined and less conflict is experienced with faster and more flexible decision-making.

When looking from a knowledge manager’s perspective, the benefits of such an environment might be:

- Due to a sense of urgency to complete the project, there is usually good communication between project members; this in-turn leads to better knowledge sharing and transferring between members.

- Versatility and flexibility are nurtured in individuals if they get the chance to work on a broad range of projects. However, if the individuals focus on the same kind of projects, a deeper understanding will be cultivated which will lead to becoming a knowledge expert.

- The right skill and knowledge worker may be obtained at a moment’s notice if the organisation makes use of contractors.

Some of the disadvantages of this type of environment, from a knowledge manager’s perspective, may be:

- Pressure on team members to move on to the next project. There might not be enough time for project members to properly close off projects in lessons learned sessions if the organisation is too highly driven and creates too tight deadlines; as a result, knowledge may be lost. Consequently, members will not have time to capture the knowledge learned from the previous project and as they must focus all their attention on the new project,
which may be very different from the previous project, they may tend to forget a lot of the finer details of the previous projects.

- Lack of eagerness to learn from past mistakes. Similar to the above, but on the other end of the project, if members do not have enough time to study previous lessons learned, the captured knowledge might be of little value. This is usually due to a lack of incentives or guidance to spend the time to learn. Many of these projects have very tight deadlines and the team is therefore expected to “get on with it” and are generally frowned at if they want to do research on past mistakes to learn from them. This “looking into past mistakes” is sometimes perceived as a waste of time as “everyone knows how to do this project” but some employees may also feel threatened as they do not want to be exposed as being not knowledgeable enough.

- Contractors might be great for gaining the correct knowledge at the right time. However, there is a heightened risk of knowledge loss once the project has come to an end. Contractors may also refuse to share knowledge to make themselves more valuable. Members might, furthermore, withhold experience out of fear of rejection either because they have made mistakes or because they got it right. Some employees may have been reprimanded for being arrogant or boastful when they relayed their experience on projects they had gotten right in the past. Others may have been excluded from new projects that bear similarity to previous projects, especially when they had made mistakes in during previous projects. Sometimes, employees must be reprimanded and other times employees are carefully picked to obtain the best results on projects. Enough care must be brought into these matters to prevent employees from feeling stigmatised and to prevent this problem.

- Lacking regulation of knowledge management procedures in the environment. This is different to the previously mentioned disadvantage in that this is not a reflection of the individual but rather of the organisation, and is an indication that the knowledge management strategy is not defined or followed properly.

- Integrating past experience into current project processes does not happen. This could be because the team do not know about the previous lessons learned, they think that this project is too different from the past projects, or again the team do not want to spend the time to do the investigation and analysis of past lessons learned.
• Individuals do not understand the benefits and philosophy of knowledge management. Included in these benefits, one should clearly explain and distinguish between benefits to the individual, team and organisation. The culture may be of such a nature that sharing knowledge is detrimental to the employee or team. In some organisations, knowledge is seen as empowerment in that teams are elected for better and more prestigious projects because they know more; if they were to share the information, they would not have an advantage over the other teams.

• Debriefings are regarded a low priority and many difficulties in co-ordinating debriefings are therefore experienced. Again, this is often a symptom of a lack of time, no or little incentive to share knowledge or because there is a greater priority placed on the next delivery than on completing the previous project.

• Debriefing does not happen correctly, as members may not know the methods and missing key skills available to them to perform a meaningful debrief. This in itself displays a mismatch of knowledge management. All employees should have a very good understanding of how to extract and codify knowledge.

Top management carries a lot of responsibility to foster and support knowledge management and sharing. Almost every literature source in the knowledge management arena addresses the buy-in of management and executive commitment. Management has the power to change and foster an organisational culture that instils trust and sharing of knowledge internally as well as externally. If knowledge cannot be shared externally, knowledge from external sources should at least be used and incorporated.

One would also require the buy-in from top management to obtain the appropriate infrastructure, both hardware and software, in order to facilitate sharing. Most organisations drive continuous improvement but driving improvement and continuous change in knowledge management is necessary. If knowledge management systems are not constantly looked after, they may become antiquated very quickly, leading to difficulties in adding or finding the required knowledge. If the system becomes difficult to use, then employees may stop using the system altogether.
2.8.2 Matrix environments

The conclusions following next were drawn from seven sources (Akran, G., 2011; Juneau, H. L., 2013; Mbele, Z., 2008; Rowlinson, S., 2001; Stowell, F. A et al., 1993; SY, T., 2005; Werner, A. et al., 2012 - E-Book).

A matrix-based environment usually groups the workforce in two ways. The employee is firstly placed into a function or department. Next, the employee is used or placed on a project. One could therefore say that the matrix structure is a mixture of multiple organisational structures. The employee usually has two managers, namely the project manager and the functional manager. The managers and more so the organisation should place a emphasis on preventing interdepartmental or inter-functional conflict and organisation politics. If not, the employee may experience a heightened level of frustration and stress. This may be due to receiving conflicting instructions from various managers. For instance, the project manager may say that the employee must work overtime to finish the project and that the organisation will pay for the overtime, while the functional manager may tell the employee that the department must cut on costs and that no employee may work overtime. There is an African proverb: it is the grass that gets hurt if two elephants fight (Healey, 2001).

There are various advantages but also disadvantages of this organisational structure. In the knowledge management arena, the benefits may be:

- Lateral communication channels are formed between various departments. This in turn assists in strengthening the knowledge network.

- Complex problems could be solved more easily due to various individuals (knowledge sources, each with their own “personal” knowledge network) from various departments joining a project. This, in turn, may more easily create new knowledge.

- Better communication skills are encouraged and fostered because of the broad variety of individuals and backgrounds that each team member brings.

- Knowledge transfer may happen more easily because the individual with their skill set and knowledge could easily be transferred where the knowledge is needed. A knowledge transfer opportunity is created every time the individual is transferred.

On the other hand, the following disadvantages may occur from a knowledge management perspective:
• The new function-specific knowledge may be lost if the individual is not brought back to their functional group to transfer or capture the new knowledge.

• If there are conflict or organisational politics, the individual may not be willing to share their knowledge freely in the project team. New knowledge creation may be stifled in this situation.

2.9 Conclusion

There are solutions. This very short sentence has far-reaching implications; it indicates that there are problems or obstacles to knowledge management but that there are also solutions. It does not matter how many barriers there are, as long as the organisations tackle each one from the priority of most severe to least severe to get the giants out of the way of knowledge management but equally not to forget to remove the small foxes either as they could cause a lot of damage in the long run.

The organisation may have to change the culture slightly, for instance, changing the “under-net” (Dalkir, 2013) to be more visible. However, sometimes it is the knowledge management implementation and strategy that need to be formed around the organisation.

Even though language and organisational culture or individuals’ culture could be some of the obstacles, there are ways around this. On the language front, the organisation should make use of a well-defined set of taxonomy, including words and phrases, to prevent confusion of what these words and phrases mean. The knowledge management implementation would be a lot simpler if a common language is used. However, if this is not possible, a lot of effort should go into translating all captured knowledge into the languages used in the organisation.

Still, it is very difficult to state that there should be only one culture in an organisation when referring to ethnic cultures. Here the employees should rather be well taught on how the ethnic cultures differ and how to overcome the ethnic cultural obstacle. The organisation would benefit a lot if individuals could be placed on a team where most of the individuals were capable of transcending this obstacle or had at least one or two strong individuals to act as a cultural bridge.

On the organisation cultural level, a huge amount of effort will have to come from top management to make sure the culture is ready or very deliberately on its way to favour
knowledge sharing. However, one should always keep in mind that the knowledge management implementation should not be so rigid that everything must bend around it or break. Instead, the designers of the knowledge management strategy should do everything in their power to form the knowledge management strategy around the culture of the organisation.

Whether the organisation is in a project-based environment or not, the organisations should place enough emphasis on sharing knowledge through whatever means, though care should be taken not to overemphasise any one part of the strategy, especially technology, as the originators of knowledge have up to now been humans and most probably will be for the foreseeable future. It is clear from the literature that when an organisation places too much emphasis on technology, the knowledge management implementation faces a very real and large threat of failure.

When one has to decide what the main stream of knowledge management strategy is to follow, it would be prudent to remember that the literature reveals that the most success has been obtained when an organisation used a more structured approach rather than an unstructured approach. The flipside of the coin is that when things are too structured and rigid, knowledge management implementations tend to fail too. It is therefore important that the designer and core team strike the right balance between a structured and unstructured knowledge management strategy.
Chapter 3: Research methodology and design

3.1 Introduction

This chapter provides the reader with the literature and empirical approach, methods and methodology followed for the design of the research, collection of data, validity of the responses, and the scope that was adopted. Additional insight is provided into the sampling strategy chosen.

3.2 Research goals

In the banking industry it is said that one needs to know what a real banknote looks and feels like in order to spot the fake. One does not need to know all the fakes.

“Federal agents don’t learn to spot counterfeit money by studying the counterfeits. They study genuine bills until they master the look of the real thing. Then when they see the bogus money they recognize it.” (Challies, 2006).

Firstly, the goal of this study was to identify what the organisational environment and culture should look like for a knowledge management programme to succeed in, the proverbial idyllic organisation. This has been done in Chapter 2 through the investigation and discussion of many studies and authors.

Secondly, when it is known what the ideal environment is like, one may see the obstacles that stand in the way of getting to the ideal environment. Many of these obstacles have also been discussed in Chapter 2.

Thirdly, when the obstacles are known, solutions to these obstacles can be found. The solutions may be to minimise or completely remove the obstacles. Some of these solutions have been discussed in Chapter 2.

The final step of this study is to see how these findings in literature compare to what is found in an organisation in the South African IT services and development industry.
3.3 Research philosophy

“…the interpretivist approach allows the focus of research to be on understanding what is happening in a given context. It includes consideration of multiple realities, different actors’ perspectives, researcher involvement, taking account of the contexts of the phenomena under study, and the contextual understanding and interpretation of data.” (Carson et al., 2011)

After considering Carson et al. (2011, pp. 2-11), Johari (2009, p.25) and Saunders et al. (2009), it was decided to follow an interpretivism approach.

The research onion as depicted in Figure 14 below indicates the path of thought one may take to the centre, namely data collection and analysis.

In the first layer, the researcher chose to follow interpretivism, which led to deductivism. The researcher fully understood that the environment consists of many variables, including the human element, and because the human element may have a huge impact on the whole, it was decided to make use of surveys and questionnaires to collect data.

Figure 14: The research onion as adapted (Saunders et al., 2009, p.138)
The reason for choosing questionnaires was that the researcher wanted to collect as much data as possible in the short amount of time available. The researcher considered using interviews as a data collection method but this method would have required a lot more time to cover the same planned sampling field, as discussed in section 3.5 Sampling.

The researcher did not want to lose the qualitative side by focusing on only the statistical data and therefore elected to have two separate questionnaires. In a project-based environment, time is usually very scarce and the researcher wanted as many responses as possible. There was a concern that the respondents might not complete a long questionnaire containing both qualitative and quantitative questions of 25 each, totalling to 50 questions, for example. The researcher consequently decided to make use of two questionnaires of about 30 questions each, leading to about 60 questions. The one questionnaire was purely qualitative in nature, making use of open-ended questions while the other questionnaire was purely quantitative, making use of scalar questions.

It was hoped that the data from the two questionnaires would support one another with the benefit of obtaining insight into the human element and still obtaining clear statistical data.

3.4 Research design and methodology

This researcher made use of the interpretivism research philosophy and obtained data through the use of questionnaires. The idea was not to focus on the individual but rather to aggregate the responses, using employment function and level of employment (seniority) as variables. These two aggregated sets (employee level and function) were analysed and compared to the overall data set to see if there was any deviation based on employee level or employee function. The overall data analysis might have shown a respondents’ split where 45% disagreed and 55% agreed with a statement. This might not have been a significant indicator, but comparing the employee function, one will see that 20% of software developer responses disagreed compared to 75% of business analysts who agreed with the statement, or that 90% of top management disagreed and all other levels combined accounted for only 10% agreeing with the statement.

Two questionnaires were designed, one with scalar answers where 1 signified an answer that strongly disagrees with the statement and 4 signified an answer that strongly agrees with the statement. The reason for the range (1 to 4) was to prevent the participants from choosing a “safe” answer or middle road. This approach suited the study very well in that the researcher
could obtain both a statistical view of what the participants thought (group A) as well as what their insight was (group B) when filling in the open-ended questionnaire.

3.5 Sampling

3.5.1 Target population

The target population was employees of an IT services and development organisation in South African. The sample included employees of all seniority levels and functional types, therefore forming a good representation of the entire organisation.

The organisation (Organisation X) focuses on corporate and public accounts and sells IT consulting services on a per project basis of six- to twelve-month contracts. Organisation X became a department of Dimension Data in 2016, however, the sample involved only the employees of Organisation X and no additional employees of Dimension Data.

The organisation:
- has less than 3,000 employees;
- has a national footprint;
- is in the IT services and development space; and
- partakes in the Dimension Data IT infrastructure.

3.5.2 Sampling method

The researcher worked in collaboration with the HR department of Organisation X to categorise all employees into the following groups independent of department, such as development, business analysis, project management or business administration:

- C-level executives
- Senior managers
- Line managers
- Account managers
- Senior team members
- Mid or junior team members.

The bottom two (team member types) were not divided according to age or years’ experience but rather according to competencies and knowledge.
Microsoft Excel’s random number generator was used to assign a random number to each employee after the employees had been divided into these groups and loaded into Excel. Each group was then sorted by this random column from the largest random number to the smallest.

The researcher used two different questionnaires, one with open-ended questions and the other with scalar questions (1 to 4 where 4 strongly agrees with the statement and 1 strongly disagrees with the statement).

The total sample size was 93 employees who were equally divided between the two questionnaires. The various seniority levels and number of candidates per level were as below:

- 4 C-level executives
- 7 Senior managers
- 10 Line managers
- 7 Account managers
- 24 Senior team members.
- 41 Mid or junior team members.

3.6 Data collection

As part of this study, a lot of data were collected in a variety of ways but mostly through the two questionnaires. These methods are declared and discussed below.

3.6.1 Questionnaire method

The researcher discussed the attitude of Organisation X’s employees towards questionnaires and administrative work with various senior employees at Organisation X. The general statement was that the employees are not performing well on administrative tasks. Therefore, the researcher chose to use AllCounted (www.allcounted.com) as questionnaire engine with its plethora of functions to remind and entice participants to complete the questionnaire. Organisation X makes use of both Yammer and SharePoint but the tools were not selected to host the questionnaires and collect the data because several senior employees of Organisation X stated that Yammer is not used extensively and that getting SharePoint access might be challenging due to internal politics.

The researcher also found that AllCounted was a lot easier to use with much more functionality than the other two options mentioned.
Both qualitative and quantitative questionnaires were used and analysed to find commonalities and anomalies, as is discussed further in section 3.7 Data analysis below.

As stated in section 3.5 Sampling, the candidates were equally divided between the two surveys. Below is a short description of the two questionnaires. The two questionnaires are more or less the same except for a number of questions and the questionnaire type. There was no distinction between what type of employee received what type of questionnaire.

3.6.2 Questionnaire 1

This questionnaire consisted of 27 qualitative questions divided into two sections. Part A contained five questions and dealt with demographics, in particular the respondent’s position held in the past and aim for the future. Part B contained 22 questions that dealt with information and knowledge sources.

3.6.3 Questionnaire 2

This questionnaire comprised 38 quantitative questions divided into two sections. Part A contained five questions and dealt with demographics, in particular the respondent’s positions held in the past and aim for the future. Part B contained 33 questions that dealt with information and knowledge sources.

3.6.4 Advantages of questionnaires

Questionnaires have the following advantages, according to Leedy and Ormrod (2010, p.189) and Kumar (2011, p.141):

- **Anonymity** is ensured, unless of course if one asks for a name or some sort of reference number. In the questionnaires used, the researcher did not ask for any identifying data.

- **Truthfulness** can be expected because of the anonymity of the respondents.

- **Cost** is usually lower than many of the other research tools. The researcher used [www.allcounted.com](http://www.allcounted.com) free of charge.

- **Data analysis** is made a lot easier, especially if quantitative questions are used. The researcher exported the responses to Microsoft Excel, even though [www.allcounted.com](http://www.allcounted.com) offers some analysis tools because Microsoft Excel allowed the researcher to do a lot more than what the site presented.
• **Ease of distribution** is ensured as the researcher distributed the questionnaires to only a randomly selected audience.

In this study, the researcher found:
• A lot more data were collected in a shorter span of time using these two questionnaires as opposed to interviewing 93 candidates.

• It was easier to use the quantitative data from the questionnaires in calculating derivative data than it would have been to try and interpret qualitative data collected by means of interviews.

• Respondents required less time to complete the questionnaires as opposed to what would have been needed for an interview. This was a big benefit as many of those who responded first did not want to respond or participate as they “do not have enough time” or “are on a very tight deadline”.

### 3.6.5 Disadvantages of questionnaires

Questionnaires have the following disadvantages according to Leedy and Ormrod (2010, p.189) and Kumar (2011, p.141):

• **Low response rate**
  
  In this study, the response rate was less than 50%, even with direct Skype communication to the potential respondents. This communication was used to introduce the researcher and reasons for the study instead of using a meeting or impersonal email. Getting the employees to complete the questionnaires took a bit of effort. After the first week, only 20 responses had been collected. The researcher then sent out various reminders using the reminder function in AllCounted, yet additional responses were still very slow. The researcher then spent two days communicating directly with potential candidates and an additional 17 responses were collected in these two days.

• **Literacy limits**
  
  Literacy could have been a problem if the potential respondents were on a low literacy level; however, all candidates were on a medium to high literate level.
• **Ambiguity cannot be discussed**
  This refers to ambiguity in answers and questions and was in fact found to be a problem in some answers. From the answers provided, it seemed that there was very little if any ambiguity in the questions.

• **No spontaneous questions**
  During an interview, one answer may lead the interviewer to ask other explorative questions about the answer. In a standard “set” or fixed questionnaire, this is not possible. In this study, it would have been better to have had the capability to explore some answers more with spontaneous questions.

3.6.6 **Declines**
Three potential respondents elected to decline and one respondent completed only part A of Questionnaire 1.

3.7 **Data analysis**
3.7.1 **Data cleaning**
On the qualitative questionnaire, each individual answer was checked to make sure the answer was coherent and that the question had been answered.

Where answers did not make sense or the answers did not refer to the question asked, the answer was removed in order not to skew the data. One such example was the question “List three departments or functions you would rather not ask for knowledge and please state why”. One respondent answered: “Netball – I don't like it, wrestling”.

When a respondent answered a question in a nonsensical way, the researcher scrutinised all answers by that respondent to make sure that the rest of the answers made sense. No respondent was disqualified because of being “funny” or incoherent as no respondent was found to have answered more than one question “incorrectly”.

In both questionnaires (qualitative and quantitative), the data were grouped and compared according to the respondent’s level of employment. This allowed for similar data to be compared between two or more respondents of the same level, especially if the answer of one respondent did not make 100% sense or was out of the norm.
The answers from the quantitative questionnaire were also checked to see if there were any patterns visible for any individual respondent but no patterns were detected. Thus, no respondent selected only one value such as only 3s selected or followed a repetitive pattern such as 1, 2, 3, 1, 2, 3.

Furthermore, the qualitative and quantitative data were compared to see if there were any contradictions between the two questionnaires, but no contradictions were found and the data from the two different questionnaires in fact supported each other, strengthening the validity and integrity of the data collected.

### 3.7.2 Data grouping

Each questionnaire type (qualitative and quantitative) was analysed separately. However, data from the two questionnaire types were compared where the questions between the two types were similar. One could call these “check” questions because they were deliberately built in to check if the answers were more or less the same between the two types of questionnaires, for instance one quantitative question may state “There are obstacles in my way that prevent me from sharing my knowledge” (remember the 1–4 scale as described above) and the equal qualitative question might be “Please name three obstacles that prevent you from sharing your knowledge”. As described in section 3.4 Research design and methodology, if the data did not correlate, it would indicate a flaw in the responses. Conversely, if the data did correlate, it would strengthen the integrity of the data.

The data of each questionnaire were sub-divided according to respondents with the same level of seniority. This allowed the researcher to see if there were any differences or similarities between different levels of respondents. At this grouping analysis, one might find that top level management think completely differently about a certain matter than junior staff.

As well as being separately sub-divided based on employee function, this allowed the researcher to see if there were any differences or similarities between different functional types of respondents. At this grouping, one might find that software developers prefer to access certain knowledge sources but that project managers do not share the affinity for the developers' knowledge sources.

These groupings are important to try and find both differences and similarities. Differences might indicate an obstacle or misunderstanding/miscommunication and similarities might
indicate that there is no problem or, on the other hand, that the problem exists across the organisation or sub-set of the organisation.

Once these factors are known, it is easier to focus efforts on the problem areas and learn from the areas where the problem is less or not in existence.

3.8 Ethics

Ethical guidelines were observed as set out by the University of Pretoria at all times and the following steps were taken:

1. The researcher presented the research instruments to the faculty committee for research ethics, who granted their approval of the questionnaires.

2. The CEO of Organisation X read through both questionnaires and found that it was not necessary to get the organisation’s legal department involved and granted access to all employees of the organisation. This access entailed the completion of the questionnaires as well as direct communication to the employees via email and Skype for business.

3. Before data were collected, each individual received an email explaining to them what the data would be used for and that they had the following rights:
   a. Not to participate
   b. To withdraw at any time
   c. Anonymity
   d. Confidentiality.

4. The aforementioned rights were presented to the respondents in a paragraph on the first page of each questionnaire.

5. The individuals were further informed on how their data would be kept safe and how it would be destroyed after the length of required time for keeping the data had expired.

6. The researcher did not use any prize or incentive whatsoever to lure the individuals to participate in the research.
7. All data collected were stored in a private Google Drive account that uses a 16-character password containing upper and lower case, digits and special characters. At the end of the research, the data was encrypted using the BitLocker as part of Microsoft Windows.

3.9 Conclusion

The researcher did everything possible to obtain the best results with the highest form of integrity.

The research method and way of collecting data, including the questions and questionnaire design, were chosen and designed with a lot of care to further strengthen the purity and quality of the data.

As a project-based company, most of the respondents did not have a lot of time and the best data collection tool was therefore to make use of questionnaires that would consume a lot less time than other tools like interviews.

Of the randomly selected 93 potential respondents, only three verbally elected not to participate and only one respondent did not complete the questionnaire. A total of 45 responses were obtained with mass email invitations and direct Skype messages to the potential respondents.
Chapter 4: Empirical data findings

4.1 Introduction

This chapter presents the assumptions, analysis and findings of the data collected during the empirical component of this study through the use of online questionnaires.

The main research question for this study was:

What are the obstacles in the way of creating an environment and business culture that favour knowledge management?

Questions from the questionnaires were covered under three themes:

1. Organisational environment and culture;
2. Obstacles that might stand in the way of a successful knowledge management programme; and
3. Obstacle removal or minimisation.

The selection process of potential respondents aimed to select respondents who would be representative of the organisation with the hope that the responses received would also be representative of the workforce of the organisation on a seniority and functional level.

This was mostly achieved, as can be seen in Table 1: Selected respondents and Table 2: Responses received, however, it is the researcher’s opinion that it would have been better to have received more responses from respondents at junior level.

4.2 Description of the respondents and responses

4.2.1 Reference numbering system

Each respondent received a reference number to make it easier to refer to their individual responses. This reference number is in the form S<questionnaire nr>.<sequential number>. For instance, S2.12 would refer to Respondent 12 of questionnaire 2.

4.2.2 Colours used

In this chapter, the researcher used:

- Blue for charts based on questionnaire responses from the quantitative Questionnaire 2.
- Green for charts based on questionnaire responses from the qualitative Questionnaire 1.
4.2.3 Respondents selected versus respondents’ responses and response rate

The random selection process used produced a list of 93 respondents as shown below in Table 1: Selected respondents. The grouping as shown in the table was done according to HR’s descriptions received.

However, only 45 responses were received and grouped as per Table 2: Responses received. The grouping as shown in the table was as per respondents’ descriptions received.

The response rate was just under 50% with only three selected respondents who verbally declined to participate. The response rate could be ascribed to two facts:

1. The researcher had the buy-in of the managing director of Organisation X, who was a participant in this study as well.

2. The researcher actively communicated directly to the selected respondents via:
   - Skype for business
   - A function on www.allcounte.com through which the researcher reminded the respondents to respond. This function did not allow the researcher to see who had not yet responded but rather served as a function as part of the toolset provided by www.allcounted.com.

Table 1: Selected respondents

<table>
<thead>
<tr>
<th>Questionnaire</th>
<th>Count</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4</td>
<td>Account Manager</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>BA Intermediate</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>BA Junior</td>
</tr>
<tr>
<td>1</td>
<td>5</td>
<td>BA Senior</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>C-Level Executives</td>
</tr>
<tr>
<td>1</td>
<td>3</td>
<td>Consultant</td>
</tr>
<tr>
<td>1</td>
<td>8</td>
<td>Developer Intermediate</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>Developer Junior</td>
</tr>
<tr>
<td>1</td>
<td>8</td>
<td>Developer Senior</td>
</tr>
<tr>
<td>1</td>
<td>3</td>
<td>Development Manager</td>
</tr>
<tr>
<td>1</td>
<td>4</td>
<td>Line Manager</td>
</tr>
<tr>
<td>1</td>
<td>5</td>
<td>Team Member Mid/Junior</td>
</tr>
<tr>
<td>1</td>
<td>5</td>
<td>Team Member Senior</td>
</tr>
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<td></td>
<td><strong>52</strong></td>
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<td>---------------------</td>
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<td>Account Manager</td>
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<tr>
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<td>2</td>
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<td>5</td>
<td>Team Member Mid/Junior</td>
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<td>Team Member Senior</td>
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<td>41</td>
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Table 2: Responses received

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<th>Questionnaire</th>
<th>Count</th>
<th>Level</th>
</tr>
</thead>
<tbody>
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<td>1</td>
<td>1</td>
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<tr>
<td>1</td>
<td></td>
<td>BA Junior</td>
</tr>
<tr>
<td>1</td>
<td>3</td>
<td>BA Senior</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>C-Level Executive</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>Consultant</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>Developer Intermediate</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>Developer Junior</td>
</tr>
<tr>
<td>1</td>
<td>5</td>
<td>Developer Senior</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>Development Manager</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>Line Manager</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>PM Intermediate</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>PM Junior</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>PM Senior</td>
</tr>
<tr>
<td>2</td>
<td>22</td>
<td>Total</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>Account Manager</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
<td>BA Intermediate</td>
</tr>
</tbody>
</table>
The researcher deliberately spread out the sample selection over all positions and all levels of the organisation and was pleased that respondents from all sections and levels responded. Had this not been the case, the resultant data analysis might have been lopsided or not representative of the entire organisation. Interestingly, the managing director was one of the very first respondents. It should be noted that the researcher was able to see only the employment title of the respondents and not the names.

What is not visible from the above is that some of the respondents were permanently located at client sites and very few of these responded from the viewpoint of the client where they were located. For instance, on the question “List three departments or functions you would rather not ask for knowledge and please state why”, Respondent S1.10 stated “BIS – extremely difficult to get information and Cards – extremely difficult to get information”. These departments are departments in one of the four largest banks in South Africa.

It should be noted that during data scrubbing, this kind of answer was not included. However, the respondent was not disqualified if the rest of the answers made sense and were in context.

In Table 3: Comparing responses received, the two questionnaires used are compared.
Table 3: Comparing responses received

<table>
<thead>
<tr>
<th>Questionnaire 1</th>
<th>Questionnaire 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qualitative with 27 questions</td>
<td>Quantitative with 38 questions</td>
</tr>
<tr>
<td>Estimated time to take the questionnaire: 60 minutes</td>
<td>Estimated time to take the questionnaire: 20 minutes</td>
</tr>
<tr>
<td>Time taken was analysed and outliers (potential disruptions or meetings) were removed. The average time taken to complete the questionnaire was 37.7 minutes.</td>
<td>Time taken was analysed and outliers (potential disruptions or meetings) were removed. The average time taken to complete the questionnaire was 12.1 minutes.</td>
</tr>
</tbody>
</table>

A big spike in responses received can be noted on the 22nd and 25th of August. The 22nd of August corresponds with an email reminder to all selected respondents that the researcher would like to investigate the data over the weekend. The 25th of August corresponds with the researcher actively communicating with all selected respondents who were online during the day on Skype for business to ask them for their assistance with the research. The researcher invited all to ask any questions about the research. It was during this time that three selected respondents verbally declined to participate.

4.2.4 Characteristics of the respondents

Analysing the answers provided to the question “What would you like your next position in the organisation to be?”, one could deduce that most of the respondents could be seen as ambitious and only 9 out of the 45 respondents did not have a next or different position in mind. One of these was the managing director of the organisation. He and three others who had just been appointed to new positions might be excluded, although they might still be included as they did not state a “next” step.
Respondent S1.14 would like to change career paths completely from junior PM to accountant.

When looking at the aspirations of the 36 respondents that could be marked as ambitious due to having an aim at another or better role, only one stated “more money” as a reason for the aspiration and another would like to move to a contractor position, which could also be seen as “more money” as a motivator. The rest all stated an elevation of responsibilities as a motivator.

The top three respondents who had been employed by the organisation the longest were as listed in Table 4.

**Table 4: Top three longest employed respondents**

<table>
<thead>
<tr>
<th>Respondent</th>
<th>Current position</th>
<th>Years Employed</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1.17</td>
<td>Organisation X Mobility Project Services Manager</td>
<td>10</td>
</tr>
<tr>
<td>S1.22</td>
<td>Developer</td>
<td>10</td>
</tr>
<tr>
<td>S2.1</td>
<td>Managing Director</td>
<td>20</td>
</tr>
</tbody>
</table>

The top three respondents that had been employed by the organisation the shortest were as listed in Table 5.

**Table 5: Top three shortest employed respondents**

<table>
<thead>
<tr>
<th>Respondent</th>
<th>Current position</th>
<th>Years Employed</th>
</tr>
</thead>
<tbody>
<tr>
<td>S2.9</td>
<td>Snr BA</td>
<td>0.1</td>
</tr>
<tr>
<td>S2.3</td>
<td>Intermediate BA</td>
<td>0.3</td>
</tr>
<tr>
<td>S2.2</td>
<td>Snr Software Developer</td>
<td>0.3</td>
</tr>
</tbody>
</table>

In Figure 15: Length of employment (in years) below, one can see that more than 50% of the respondents have been with the organisation for more than two years. A great deal of knowledge lies in these employees, which could be transferred to the employees that have been in the organisation for less than two years.
In Figure 16: Distribution of employment type, one can see that most of the respondents are firstly employed as developers and secondly as business analysts.

Only five of the respondents, all at a senior level, left additional comments. These are shown in Table 6: Respondents’ additional comments.
Table 6: Respondents’ additional comments

<table>
<thead>
<tr>
<th>Respondent</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1.2</td>
<td>“Knowledge management has always taken a backseat to what is seen as ‘real work’. KM is not seen as a value add activity in the job profile. It should be taught at university and the discipline to use proper repositories and record management rules should be mandated by organisations.”</td>
</tr>
<tr>
<td>S1.8</td>
<td>“The challenge around knowledge sharing has always seemed to me to be one of changing personal work habits, rather than technology. So, maybe it is more of a change management process than a technical challenge.”</td>
</tr>
<tr>
<td>S2.9</td>
<td>“I believe that knowledge sharing sessions would benefit companies immensely and contribute to the better, more efficient future planning and executing of projects.”</td>
</tr>
<tr>
<td>S1.15</td>
<td>“I think knowledge sharing is a critical element of a successful organisation. But it needs to be targeted, relevant and easy to access.”</td>
</tr>
<tr>
<td>S2.17</td>
<td>“Encouraging employee research is good for both the employee and the company. That is invariably the birth of new products.”</td>
</tr>
</tbody>
</table>

4.3 Themes found in the questionnaires

4.3.1 Organisational environment and culture

Under this section, the researcher asked qualitative and quantitative questions.

1. Qualitative questions pertained to:
   - The longevity/tenure of the employees in the organisation;
   - How much time the respondent spent in the past and is spending currently searching for information;
   - What sources they use for finding information; and
   - Whether they created knowledge sources or see themselves as knowledge sources.

2. Quantitative questions were concerned with:
   - Access to tools and knowledge sources;
   - The culture of sharing;
   - The use of sources and progression to other sources; and
   - Current time spent on research.
4.3.1.1 Longevity or tenure

As discussed above, more than 53% of respondents have been in the organisation for longer than two years. If one would compare “years with the company” of Organisation X to the data found on [www.payscale.com](http://www.payscale.com) (Payscale Inc, 2016) as shown in Table 7: “By the Numbers: Comparing Tech Employee Salary, Age, Stress and More” as adapted (Payscale Inc, 2016), one would see that the organisation, with an average of 2.99 years, compared to the likes of Adobe, Apple and eBay.

**Table 7: “By the Numbers: Comparing Tech Employee Salary, Age, Stress and More” as adapted (Payscale Inc, 2016)**

<table>
<thead>
<tr>
<th>Employer name</th>
<th>Median age</th>
<th>Years of experience</th>
<th>Years in company</th>
</tr>
</thead>
<tbody>
<tr>
<td>LinkedIn</td>
<td>29</td>
<td>5</td>
<td>NA</td>
</tr>
<tr>
<td>IBM</td>
<td>36</td>
<td>7.4</td>
<td>7.1</td>
</tr>
<tr>
<td>HP</td>
<td>38</td>
<td>7.7</td>
<td>6.3</td>
</tr>
<tr>
<td>Oracle</td>
<td>37</td>
<td>9</td>
<td>5.3</td>
</tr>
<tr>
<td>Intel</td>
<td>32</td>
<td>5.5</td>
<td>5</td>
</tr>
<tr>
<td>Microsoft</td>
<td>33</td>
<td>6.4</td>
<td>4.8</td>
</tr>
<tr>
<td>Qualcomm</td>
<td>33</td>
<td>7.7</td>
<td>4.3</td>
</tr>
<tr>
<td>Cisco</td>
<td>33</td>
<td>6.7</td>
<td>4</td>
</tr>
<tr>
<td>Adobe</td>
<td>31</td>
<td>5.2</td>
<td>3.3</td>
</tr>
<tr>
<td>eBay</td>
<td>33</td>
<td>6.9</td>
<td>2.7</td>
</tr>
<tr>
<td>Apple</td>
<td>31</td>
<td>6</td>
<td>2.7</td>
</tr>
<tr>
<td>Samsung</td>
<td>33</td>
<td>6</td>
<td>2.3</td>
</tr>
<tr>
<td>SpaceX</td>
<td>29</td>
<td>6.1</td>
<td>2.3</td>
</tr>
<tr>
<td>Amazon</td>
<td>30</td>
<td>5.2</td>
<td>2</td>
</tr>
<tr>
<td>Google</td>
<td>30</td>
<td>5.2</td>
<td>2</td>
</tr>
<tr>
<td>Salesforce</td>
<td>30</td>
<td>5.3</td>
<td>1.8</td>
</tr>
<tr>
<td>Tesla</td>
<td>30</td>
<td>5.6</td>
<td>1.6</td>
</tr>
<tr>
<td>Facebook</td>
<td>29</td>
<td>4.3</td>
<td>1.1</td>
</tr>
</tbody>
</table>

The figure of 2.99 years is lower than the U.S. Bureau of Labor statistics (2016) with a figure of 4.3 years for organisations in the information industry.
This figure could be used in determining if there could be a problem with an ageing workforce or, presented in another light, what the risk factor might be for losing the knowledge that has not been transferred.

If the longevity figure is low, then the organisation might have to spend a lot of effort in transferring this knowledge quickly to other sources and preferably sources that would be accessible to employees over a long period of time, like system driven sources.

If, however, this figure is high, it could indicate a stable workforce, but the risk of losing a lot of knowledge if one employee leaves is increasing. It could therefore indicate that the organisation could spend more time to transfer knowledge from one employee to others as well as to system-driven sources. However, as opposed to this figure being low, the workforce seems to be more stable and therefore system-driven endeavours might be less of a priority than transferring the knowledge among employees.

Originally, the researcher thought that the “standard tenure” of an IT organisation would be approximately two years. It was really an eyeopener that this organisation has a large workforce that has been with the organisation for two years and longer, yet very refreshing to see that a lot is being done to upskill young and upcoming IT professionals. It would seem that the organisation found a good balance between attracting young talent and keeping this talent in the organisation for longer than two years.

4.3.1.2 The culture of sharing

When asking the respondents whether they agreed with the statement “There is a culture of sharing knowledge and experience in the organisation”, the answers reflected a resounding “agree” (59.09%). If it were a yes/no question, then 72.72% would have stated “yes”, as evident in Figure 17: Sharing culture. The bottom axis refers to 1 as strongly disagree and 4 as strongly agree. The graph as shown in Figure 18: Using others’ knowledge presents a very similar picture where 77.27% of respondents stated that they make use of others’ knowledge on most projects.
A very interesting observation was made when the above data were analysed on an employment functional level. There was a substantial difference noticed between software developers who say they rely on others' knowledge (62.5%) compared to business analysts (88.89%) and administrators and administrative respondents (80%), even though the sharing factor did not change substantially.

However, when the same data were compared to an employment seniority level, it was noticed that all (100%) of managerial respondents thought that there was a level of sharing (60%
agreed and 40% strongly agreed) whereas only 66.67% of senior and mid-level and only 50% of junior respondents thought that there was a sharing culture in the organisation.

**Figure 19: Using others’ knowledge (seniority)**

On the question of making use of others’ knowledge, as can be seen in Figure 19: Using others’ knowledge (seniority), the researcher noticed that 80% of managerial, 50% of senior, 88.89% of intermediate and 100% of junior respondents stated they make use of others’ knowledge.

This could be since junior employees know they have very little knowledge but employees at managerial level realise the words of Albert Einstein, namely “The more I learn, the more I realise how much I don't know” (Goodreads Inc, 2017).

In comparison to the above figures, 66.64% of respondents were humble enough to state that they do not know more than their peers. Could it be that humility is one of the golden nuggets to look for in a potential employee?

When comparing data (questions 21–24 on Questionnaire 2) between capturing and sharing knowledge, the researcher found that 68.18% of the respondents stated that the organisation does not capture knowledge about what was done correctly or incorrectly on projects. However, 68% freely share what was done correctly on projects but only 54.55% freely share what was done incorrectly on projects. Even though this figure of sharing what was done incorrectly is high, it is still lower than the figure on what was done correctly. This might indicate
that there is a bit of stigma around doing things wrongly or even retribution for doing things incorrectly, as discussed in Chapter 2.

Delving further into the data presented on the sharing culture of the organisation, the researcher found that sharing what was done right and what was done wrong greatly differed between software developers and business analysts. Software developers would share right and wrong experiences 87.5% and 62.5% respectively, compared to business analysts who would share right and wrong outcomes 44.44% and 33.33% respectively. This is a drastic difference and should be researched further.

The worst sharers of knowledge, whether they have done something wrong or right, are senior staff at a meagre 33.33% compared to managerial respondents at 80%, and intermediates at about 70%. Conversely, all (100%) junior respondents will boast and share that they have done something right and all (100%) will keep quiet when they have done something wrong.

Originally the researcher thought, based on sources read and discussed in section 2.8.1 Project environments, that there might be a lot more problems in the sharing of knowledge. However, the researcher was really surprised to find a culture where almost everyone is willing to share their knowledge and to see an organisation where the employees have a sense of job security that makes it easy for them to share their knowledge. It should be mentioned that all the respondents (100%) stated that they like to help others.

4.3.1.3 Sources: creation, use and migration

Knowledge source creation is quite prevalent in the organisation, with two sources being created on average by each respondent from Questionnaire 2, even though nine respondents from this questionnaire stated that they do not have time to create knowledge sources. Software developers and project managers, on average, create the most resources. This being said, only four respondents stated that the sources they initiated or assisted in creating are still in use.

Two questions in Questionnaire 1 explored the knowledge sources used by the respondents. One of these questions asked what sources the respondent used when they started at the organisation, coupled with another question that asked how long it took the respondent to find information or knowledge at that point in time. The other question asked what sources the respondent is currently using, coupled with a question to ask the respondent how long it now
takes to find knowledge or information. These were asked to see if there was any progression between sources used when the respondent started at the organisation and now.

Some differences were found between these two questions. Table 8: Sources used to find information compares the past and present sources used and the number of respondents making use of these sources. One should note that respondents could elect more than one source as part of the qualitative questionnaire.

**Table 8: Sources used to find information**

<table>
<thead>
<tr>
<th>Sources</th>
<th>Past</th>
<th>Present</th>
</tr>
</thead>
<tbody>
<tr>
<td>People Network</td>
<td>= 15</td>
<td>= 16</td>
</tr>
<tr>
<td>Internet</td>
<td>= 10</td>
<td>= 12</td>
</tr>
<tr>
<td>Intranet</td>
<td>= 10</td>
<td>= 8</td>
</tr>
<tr>
<td>Books</td>
<td>= 1</td>
<td>= 1</td>
</tr>
<tr>
<td>Personal knowledge</td>
<td>= 1</td>
<td></td>
</tr>
</tbody>
</table>

Internet sources included specific sites or search engines, Intranet included “shared folders”, “emails” and other internal sites like Yammer, and People Network included “word of mouth” as mentioned by the individual respondents.

Respondent S1.1, a business analyst, stated that they had moved from (listed in order of importance) “People, Intranet, Shared drives” to using only “People” as the source of knowledge. The reason given for this was “After having formed relationships with people, it became easier to acquire information needed [using people].”

Respondent S1.22, a developer, moved from using the Intranet to using the Internet because “[The] Internet has more info and [it is] quick”. This might indicate a problem with the current intranet sources or merely that the respondent outgrew the usefulness of the knowledge found on the intranet. This is similar to respondent S1.15, who moved from a purely people network to (listed in order of importance) “Intranet, Internet, People Network”, and stated the reason for this progression as “Experience”.

Comparing the past against the present, one can see other source progressions in Table 8: Sources used to find information. In the present, one additional respondent elected “personal network”, two additional respondents elected “Internet”, two fewer elected “Intranet” and one elected “Personal knowledge”.
In Questionnaire 2, as can be seen in Figure 20: Still making use of initially used sources, 59.1% of respondents combinedly agree (3) and strongly agree (4) that they still make use of sources they had initially used when starting with the organisation. Interestingly though, only 20% of top management stated that they still make use of the sources initially used when starting with the organisation. However, 83% of senior level respondents stated that they still make use of the initially used sources when starting with the organisation. This could indicate that the learning curve to move from senior to top management might be steep or perhaps that the time elapsed from starting employment with the organisation to top level management might be very long, making the initial sources outdated.

![Figure 20: Still making use of initially used sources](image)

In Figure 20 above, 1 indicates strongly disagree and 4 indicates strongly agree.

### 4.3.1.4 Time and tools

In Questionnaire 1, as stated in section 4.3.1.3 Sources: creation, use and migration, there were two questions about what sources the respondent used when they started at the organisation compared to presently. When looking at the coupled questions revolving around the time it took the respondent to find information or knowledge when they started at the organisation compared to now, a huge difference is evident. Table 9: Average time to find information or knowledge compares the past and present hours taken to find the required knowledge.
Table 9: Average time to find information or knowledge

<table>
<thead>
<tr>
<th></th>
<th>Past</th>
<th>Present</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average time taken to</td>
<td>184 hours</td>
<td>29 hours</td>
</tr>
<tr>
<td>find information or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>knowledge</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In Questionnaire 2, the statement “I have access to tools (software and hardware) to assist me in sharing knowledge” received an astounding “yes” response in 86.36% of the responses, with a distribution as seen in Figure 21: Access to tools, where 1 indicates strongly disagree and 4 indicates strongly agree.

It is worrying that 50% of senior level and 50% of junior level respondents thought it would be a waste of time to try and find what previous projects did correctly or incorrectly. However, more than 76% of respondents across all functions and all (100%) top level respondents stated that it is not a waste of time to look for what previous projects did correctly or incorrectly. This might be coupled with the fact that all (100%) senior respondents stated that they do not capture what was done incorrectly and only 33% of senior respondents stated that they would freely share what had been done incorrectly. Contrastingly, 83.33% of senior level respondents thought it is more important to know where to find information than to know everything.

The flipside of the coin, one might wonder, is that the respondents think it might be a waste of time to look for knowledge about what was done correctly or incorrectly because it has not been captured in the first place.

These three figures support one another, combined with the current time constraints on projects, in that senior level respondents do not have the time to capture what was done wrong and, because it was not captured, they feel it will be a waste of time to search for this information, They feel it is more important to know where one can find information than to know everything.

As respondent S1.15, a senior software engineer, stated “No time. Day-to-day task always takes preference over any ‘nice-to-have’ initiatives.”
Figure 21: Access to tools

Most respondents stated that they had access to tools to share knowledge as can be seen in Figure 21: Access to tools. When the researcher delved deeper into the data on an employment function level, it was found that no software developer said that they do not have access to tools to share knowledge. However, 22.22% of business analysts and 20% of administrative respondents stated that they do not have access to tools to share knowledge.

However, when looking at level of seniority, only junior respondents stated they are fully satisfied that they have tool access to share knowledge. Twenty per cent (22%) of top level, 16.67% of a senior level and 11.11% of intermediate respondents were not satisfied with the access they have to knowledge sharing tools.

As a side note, 80% of top management think that tools assisting in knowledge sharing are not too expensive.

Some related questions to the “access to tools” issue pertained to whether the respondent would rather not use certain departments or knowledge sources and if there were departments and knowledge sources to which they would like to have access. On average, only 18.18% of all respondents in Questionnaire 2 stated that there are resources and departments they would rather not use because the knowledge in those departments and sources are not relevant. Interestingly, 72.73% of all Questionnaire 2 respondents stated that there are resources to which they would like to have access. In comparison to responses received in Questionnaire 1, only two respondents stated that there are departments in the organisation they would not use (Security, Accounting and HR).
When looking at time spent to do research, the researcher posed the statement in Questionnaire 2: “As a team, we spend more than 25% of our time researching or using knowledge from others and previous projects”. The focus here was not so much on an individual level but rather on the team. As can be seen in Figure 22: Spending 25% or more of our time researching (all respondents), more than 68% of respondents stated that they do not spend 25% or more of their time as a team on research.

![Figure 22: Spending 25% or more of our time researching (all respondents)](image)

The question arose if this phenomenon is the same across all seniority and functional levels. These data graphs can be seen in Figure 23: Spending 25% or more of our time researching (Functional Level) and Figure 24: Spending 25% or more of our time researching (Seniority Level).
Figure 23: Spending 25% or more of our time researching (Functional Level)

As seen in Figure 23, 50% of software developers spend 25% or more of their time researching, while only 22.22% of business analysts and 20% of administrative respondents spend 25% or more of their time researching.

Figure 24 reveals that 100% of top management, 50% of senior respondents, 66.67% of intermediate and 50% of junior respondents stated that their teams do not spend 25% or more of their time on research.

Figure 24: Spending 25% or more of our time researching (Seniority Level)
One may deduce that software developers think technology is moving so fast that they need to spend the time researching, however, business analysts and administrative respondents do not feel the same need. This trend could indicate a problem in the organisation in that the business analysts do not spend enough time researching and therefore might not be able to advise the clients of better and newer technological solutions. It might also be that the clients using the business analysts do not require technologically advanced solutions. If, however, the organisation would like to be known or maintain a reputation for providing groundbreaking services, it might be suggested that the business analysts spend more time researching.

The figures in this section may let one wonder if the respondents want to spend time researching and if they think it would be beneficial, especially if one realises that 100% of top management think their team spend less than 25% of their time researching.

One may think that 25% of one’s time spent on research is way too much, like Google did (D’Onfro, 2015), so there were a few questions in the questionnaire around spending 12.5% of one’s time researching. This 12.5% equates to one hour out of an eight-hour day.

Almost 91% of the respondents stated that it would be beneficial to the organisation if every employee spent five hours a week doing research and gaining knowledge, with 80% of top level respondents thinking it would make the organisation more profitable.

Only 13.64% of all respondents thought spending the five hours a week would be detrimental to the current project, with 80% of top level and 83% of senior level respondents stating that they think it would be beneficial to future projects.

With this positive outlook, it was surprising to find only 86.34% of the respondents stating that they would like to spend five hours researching and those who disagreed were all business analysts.

The trend that is seen in the previously discussed question about spending 25% of the team’s time on research, coupled with the fact that only business analysts disagreed to spend one hour a day gaining knowledge, is very concerning and it is suggested that this should be further investigated.
4.3.2 Obstacles that might stand in the way of a successful knowledge management programme

In Questionnaire 1, the question was posed “Do you think there are obstacles in the organisation that would prevent you from sharing knowledge? If yes, please list the top three”. A third of respondents stated that there are obstacles. Comparatively, in Questionnaire 2 the statement was given “I would like to share my knowledge, but something holds me back” and again a third agreed. A third might not seem significant, but if an organisation employs a thousand employees, more than 300 employees think there are obstacles in the way of sharing knowledge. On the other hand, if the organisation were a start-up of three, then only two would think there are no obstacles.

On a functional level this 70:30 split seems to be the norm, however, on a seniority scale it is found that a profound 80% of top level respondents stated that there are obstacles holding them back. One might think that “time” would be stated as the main obstacle and even though some cited time as a reason, most stated other reasons, as seen in Table 10.

Table 10: Obstacles in the way of knowledge sharing

<table>
<thead>
<tr>
<th>Respondent</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1.2</td>
<td>“Time to manage resources.”</td>
</tr>
<tr>
<td></td>
<td>“Discipline to do uploads and management.”</td>
</tr>
<tr>
<td></td>
<td>“Not my job.”</td>
</tr>
<tr>
<td>S1.6</td>
<td>“Internal policies.”</td>
</tr>
<tr>
<td>S1.7</td>
<td>“Yes, the attitude of others not willing to share or lack of patience to understand that there is a knowledge gap.”</td>
</tr>
<tr>
<td>S1.8</td>
<td>“Habit – people tend to use what they are accustomed to.”</td>
</tr>
<tr>
<td>S1.10</td>
<td>“Yes, many divisions, departments, channels, etc. are not aware of what the other is doing. It’s difficult to quickly refer to the relevant person for information specific to their area.”</td>
</tr>
<tr>
<td>S1.15</td>
<td>“Yes. 1) Silo mentality 2) Complicated structures 3) Disparate systems.”</td>
</tr>
<tr>
<td>S1.16</td>
<td>“Time and awareness.”</td>
</tr>
<tr>
<td>S1.18</td>
<td>“No specific site with the content.”</td>
</tr>
</tbody>
</table>
Interestingly, 15 respondents gave a reason when the question was stated slightly differently as “If you did not initiate a knowledge capturing initiative, please mention three reasons why you did not start any knowledge capturing or sharing initiatives”. Nine of these 15 respondents stated time as a reason for not initiating a knowledge capturing initiative.

Thirteen of the respondents stated that they were not aware of any initiatives to capture knowledge when the supporting question was asked: “Are you aware of any initiative to capture knowledge in the organisation, could you name three?”

Supporting data were found to some of the comments from respondents from Questionnaire 1 above when comparing data from Questionnaire 2. It was found that 80% of top level, 66.67% of a senior and intermediate level and 100% of juniors stated that there are departments in the organisation that do not talk to others. Similar figures were found when analysing the data on a functional level.

Interestingly and surprisingly, the researcher did not find any of the mentioned obstacles as discussed in Chapter 2 in sections 2.7 Knowledge management and 2.8 Different environments. The more surprising obstacles not found are that virtually the entire respondent base stated that even though they would most probably not get a status or monetary raise if they share the knowledge, they do not fear a loss of job security if they do share their knowledge either. Another obstacle not so prevalent in the respondent base is the fear to share what was done wrong just in case a stigma might form and they might not be picked for similar projects.

4.3.3 Obstacle removal or minimisation

One of the ways to remove obstacles is to entice or incentivise people to find ways around the obstacle. Another way is to force people – the proverbial carrot and stick approach. The researcher therefore included a few questions directed at incentives and initiatives around knowledge gathering and management.

In Questionnaire 1, the question was posed “Are there any incentives in the organisation that entice you to share your knowledge? If yes, list the top three according to you”. To this, 78% of the respondents stated that there is no incentive; the other 22% stated that there had been incentives in the past, or they named a personal benefit like improving communication skills.
The question was then asked “What incentives would you like to see or have to entice you to share your knowledge?” Interestingly, none of the top level respondents stated any incentives; in fact, the two responses received from top level respondents both implied that knowledge is for your own benefit and should be part of the common goal that everyone should be working towards. Most senior respondents gave an answer to this question and only 18% stated that there should be no incentive. The common theme for this level was some kind of incentive and ranged between monetary reward, time off, a simple thank you and formal recognition or award. All of the intermediates and juniors wanted some sort of incentive. This is not definitive, although, in Questionnaire 2, one of the junior level respondents strongly disagreed with the statement “I would like to get some sort of compensation for sharing my knowledge”. This said, this respondent stated that they would like to be an intermediate software developer and the reason for this is that it comes with more responsibility. No other information like age, affluence or family background is known about this respondent. All (100%) top level respondents in Questionnaire 2 stated that no incentives should be given for knowledge sharing.

The researcher also wanted to know if the respondents knew of any initiatives in the organisation to capture and share knowledge. The reason for this was to see if anyone knew of any knowledge management strategy as discussed in Chapter 2 section 2.7.1 Knowledge management strategy. The answer was a resounding “No” from 79% of respondents and the other 21% gave very vague answers like “Not sure, but closest likely Sharepoint” from respondent S1.16 or “[Organisation X’s parent company] sales training” from respondent S1.18.

A question was then posed to find out if the respondents thought more initiatives should be created for sharing and capturing of knowledge. Only 17% of the respondents stated that no additional initiatives were required. It leaves an astounding 83% that think additional initiatives are required and 86% of respondents that think the organisation will be more profitable if each employee spent only five hours researching per week.
4.4 Conclusion

The two questionnaires, one qualitative and one quantitative, complemented each other in that the respondents were split equally between the two questionnaires and a number of responses received were also more or less equal on seniority and functional levels.

A high degree of similarity was found in the data between the two questionnaires. This boosted the integrity of the responses received.

The researcher made some assumptions about the environment and culture of the organisation based on literature resources investigated and discussed in Chapter 2 section 2.8 Different environments, the organisation’s size and work structure.

The picture formed was one where there is very little time to capture knowledge on what was done correctly or incorrectly in projects nor any time to research what could be done differently on similar projects because of the project-based environment. Based on the matrix environment, it was thought that the communication and some knowledge might be flowing but not captured through the organisation. Some losses occur when employees move too quickly between projects and are not brought back to the functional home base.

Some expected company politics and interdepartmental fighting with little or no focus on knowledge management. Some potential obstacles were not in the scope of this study, including obstacles like language and personal cultural or age differences. However, some potential misconceptions were found between top level management and other levels, for instance on the questions in Questionnaire 2 “We freely share what we did wrong on projects” and “We freely share what we did right on projects”, 80% of top level respondents said yes but only 33% of senior level respondents said yes.

Another expectation formed was one where employees do not like to share knowledge for a multitude of reasons. These reasons include fear of job security and concerns about stigmas forming if they shared what they have done wrong on projects.

The environment and organisational culture, however, was often found to be very different from the expected environment and organisational culture. An astounding 72% of respondents stated “Yes” to the statement “There is a culture of sharing knowledge and experience in the organisation” and 77% of respondents stated that they use other’s knowledge in their projects. Almost 55% of respondents would share what was done wrong and even more what was done
right. But, as expected, most respondents stated that the organisation does not capture this knowledge and that the lack of time was definitely a factor to why knowledge was not captured. Many respondents stated that it would be a waste of time to try and find this information, with the assumption that it is because the knowledge had not been captured in the first place.

The researcher expected to find obstacles as presented in the literature discussed in Chapter 2, but found mainly the lack of time, as was expected. The other obstacles found in the questionnaire data had to do with where to place the captured knowledge. Everyone likes to help others but very few know where exactly and what system to use to capture and present the knowledge; jointly, various systems are being used to search for knowledge and there was no single clear winner from the systems mentioned.

Another big obstacle found is that there is no clear knowledge management strategy in place and many of the obstacles found could be ascribed to this single biggest failure. The single biggest obstacle not found in the organisation is the fear factor. This includes fear of rejection when sharing knowledge about what went wrong, fear of job security loss if knowledge is shared, and fear of asking for help and knowledge.

There is a lot less work to be done to minimise the obstacles found. This is because the organisation already has a very positive employment force that like to help others, would like to do research, would like to share what was done wrong and right, and who have very little, if any, fear to ask for help or of rejection. Some even stated they would not require incentives to entice them to participate in capturing knowledge. Surely there are some who would like to have some sort of incentive like time off, monetary incentives or a simple thank you note.
Chapter 5: Conclusion and recommendations

5.1 Introduction

This chapter brings this research journey to an end. Returning to the vegetable patch analogy, the reader can see that in Chapter 2 it was researched what a vegetable patch might be (knowledge management), what natural environment would be best for the vegetable patch to succeed in (organisational environment and culture), what rocks, pests and other obstacles could hamper a vegetable patch from producing (obstacles in the way of knowledge management) and what one might do to remove or reduce the impact of these obstacles (reducing the obstacles in the way of knowledge management). The researcher then devised a journey in Chapter 3 to see if what was found in Chapter 2 is indeed what could be found in the chosen South African IT services and development organisation. The data received were then presented in Chapter 4 with some similarities and differences compared to the literature discussed in Chapter 2. In this chapter, the researcher would like to present an overview of the journey, give a summary of the findings, make some recommendations and suggest further research that could be done in the future.

5.2 Evaluation of research methodology used

The researcher decided to embark on an interpretivism journey, however, fully understood that the environment consists of many variables, including the human element. Carson et al. (2011) stated that the interpretivism philosophy assisted in considering multiple realities, contexts, different actors and the contextual understanding of the data, while allowing for a clean and clear interpretation of said data.

To further remove any doubt about the validity of the data to be collected, it was decided to make use of both a quantitative and qualitative questionnaire with questions in each to support the other or to point out any discrepancies.

When looking at the data collected, it was found that the above decision was the correct one. However, in retrospect, it would have been even better if interviews had been included in this journey. The lack of interviews was apparent when the researcher discussed some of the data elements with some of the employees of the organisation.

The researcher did not include these discussions as interviews because these discussions were completely informal, not recorded and were not intended to be interviews or to form part
of the research, nor did these discussions comply with the statements made in section 3.8 regarding Ethics. As a result, all efforts were made to not allow these discussions to taint the data or findings in this study and were held only after the completion of Chapter 4.

The questionnaire tool used was www.allcounted.com, which contained many useful tools and functions well suited for online questionnaires. It does not suffer from the limitations of some of the other free online questionnaire tools, for instance, limitation on type or amount of questions. It also has many features that the other free tools do not have; some of these include various methods to notify and limit the respondent population. The tool also has some analytical capabilities, however, the researcher only exported the data and used Microsoft Excel to analyse the data. The researcher would definitely recommend this tool to other researchers.

5.3 Summary of findings

As per section 1.4 Research questions, the research set out to answer the main question: “What are the obstacles in the way of creating an environment and business culture that favour knowledge management?” In order to answer this main question, the researcher tried to answer three sub-questions. Each of these sub-questions are discussed in sub-headings below.

5.3.1 Sub-question 1

What does an organisational environment and culture that favour knowledge management look like?

This question is concerned with the people that work in the organisation – what they think of, feel and know about knowledge management and how knowledge management affects their daily operation in the business?

From Chapter 2, it is clear that the idyllic picture would be one where the organisation has a:

1. well-thought out knowledge management strategy that is aligned with the organisational strategy (section 2.7.1 Knowledge management strategy);
2. fully co-operative management that supports the knowledge management strategy (section 2.7.2 Knowledge management failure);
3. workload or project plan that provides time for capturing and researching of knowledge (section 2.8 Different environments);
4. workforce that wants to participate in the sharing of knowledge (*section 2.7 Knowledge management*); 
5. ethos of freely (not necessarily free) sharing knowledge without any fear of retribution for sharing what was done wrongly or loss of job security (*section 2.8 Different environments*); and 
6. zero tolerance for organisational politics (*section 2.8 Different environments*).

When one looks at Chapter 4 *section 4.3.1 Organisational environment and culture*, one can see that the workforce loves to share knowledge and help others, even though the knowledge is not captured and there seems to be an ethos of freely sharing knowledge without fear of retribution for sharing what was done wrongly or for loss of job security. In addition, the top level management seems to be eager for knowledge to flow as they understand some of the benefits of knowledge management.

With this said, at Organisation X, there is no clear knowledge management or knowledge sharing strategy. The projected timelines or workload do not currently allow for knowledge research or capturing even though some knowledge sharing tools and sessions do exist and there seem to be some departments that do not freely share knowledge, indicating that some organisational politics exist.

### 5.3.2 Sub-question 2

What are the obstacles standing in the way of creating or changing to the ideal organisational environment and culture?

This question looks at what the perceived and actual obstacles may be. The difference between perceived and actual obstacles is that perception is not always reality. The employees or organisation may have a perception that knowledge management is too expensive in terms of time or finances that need to be invested in the infrastructure, whereas the reality may be that the infrastructure is already in place.

If any items, as stated in *section 5.3.1 Sub-question*, of the idyllic organisation are missing it could be seen as an obstacle in the way of knowledge management. Communication was not mentioned in *section 5.3.1 Sub-question* but the lack of communication or too much communication could also be seen as an obstacle as discussed in Chapter 2 *section 2.3 Communication*. Another obstacle could be the lack of infrastructure or software.
The data collected and analysed in Chapter 4 section 4.3 Themes found in the questionnaires revealed that the organisation does have some obstacles in the way of fertile soil, but only 33% stated that they know of or perceive obstacles that prevent them from sharing knowledge. Some of the obstacles mentioned are:

1. Do not know where to place the knowledge, so it is not captured.
2. Lack of time to guide resources (including self) to capture and research knowledge.
3. People tend to use what they know, leading to a lack of new sources that are being created or used.
4. Disparate systems, which are linked to the first point above. Case in point, the organisation uses Microsoft SharePoint (data and document store), SharePoint intranet (SharePoint sites), Yammer, and Microsoft Teams to name a few.
5. Silo mentality where some departments do not talk to others.
6. One respondent even mentioned that an attitude of “not my job” to capture knowledge exists in some employees.

The lack of software and infrastructure was not mentioned; some might not have known where to place the captured knowledge, but this does not indicate a lack of software or infrastructure.

5.3.3 Sub-question 3
What could be done to remove or minimise these obstacles?

This question looks at what could be done to circumvent, solve or diminish the perceived and actual obstacles. This would include a look at what other organisations did, what the employees think, and what the literature says about these obstacles.

As discussed in Chapter 2 section 2.7.1 Knowledge management strategy and in “Designing a Successful KM Strategy: A Guide for the Knowledge Management Professional” (Barnes and Milton, 2014), one of the key areas of knowledge management is to have a well-designed knowledge management strategy aligned to the organisational strategy. What should be in a knowledge management strategy was discussed in section 2.7.1 Knowledge management strategy and even if these points are not in the strategy, one should at least have an aim or well-defined goal written down. If there is no aim, one would not know if the knowledge management programme has succeeded or failed. Knowledge management failures are discussed in section 2.7.2 Knowledge management failure and one of the eleven “sins” of knowledge management is not defining enough (Fahey and Prusak, 1998). Similarly, two of the seven causal failure factors speak to not having an aim or strategy.
Many, if not all, obstacles found in the organisation as mentioned in the previous section could be solved by a well-defined knowledge management strategy.

5.3.4 Failure factors

Analysing the data and investigating the organisation, one could see that some of the knowledge management failure factors are visible and others do not seem to be a problem.

5.3.4.1 Causal failure factors

- Knowledge managers and employees are not on the correct skill level: the researcher found that almost all respondents and information found through general discussions pointed out that very few employees really know what knowledge management entails.

- Organisation cultural and structural problems: the data collected indicate that the organisational culture is one of sharing and one where many employees would like to do research, even though some respondents made comments about silo mentality.

- Not focusing on the key high-value decision-making groups: as there is no strategy, there is also no aim or focus on these groups.

- Inadequate support from management: even though there is no knowledge management strategy, there seems to be some commitment to the notion of knowledge management from top level employees.

- Missing or poorly defined measurable benefits and performance indicators: the researcher could find no performance indicators for knowledge management.

- Insufficient coordination, planning, evaluation and design: there is no knowledge management strategy in place.

- Lack or inappropriate ICT infrastructure: the organisation is part of the large international IT group and this is therefore not a problem.
5.3.4.2 Resultant failure factors

- Poor quality assurance procedures leading to non-relevance or usability: there is no formal structure in place to do quality assurance on knowledge that has been captured.

- Loss of knowledge due to an ageing workforce: this technology organisation does not have many employees nearing retirement, though focus should be placed on employees that are with the organisation for longer than the organisation’s tenure average.

- A too large emphasis on the codification of knowledge and formal learning: the data collected point to a lack of codification.

- Lack of focus on building the knowledge network between people or seeing knowledge as separated from people: there are pointers that show a breakdown in people networks even though there are many respondents who stated there are knowledge sharing sessions and that people networks are or should be one of the top priorities.

- Not enough contribution from a wide audience: according to the data collected, there are very few contributors, and some have stated that time is one of the main reasons for not contributing.

- Using the wrong technology for the job or difficult to use: the organisation recently implemented Microsoft Yammer and recently (2017/09/25) also started using Microsoft Teams. However, it seems the organisation is not 100% sure how to use these tools nor if they are the best tools. This said, one team did mention that communication between team members rose to an all-time high after they started using Microsoft Teams. It should be mentioned that Microsoft SharePoint is also widely used in the organisation.

- Missing or a lack of knowledge management ownership: the researcher could not find any specific knowledge management ownership other than a few employees that took ownership and are driving tools, however, they do not focus on the knowledge captured.

- Improper investment in the knowledge management programme: there is no official investment in a knowledge management programme as one does not officially exist.
• Confused or inappropriate messages or stigma attached to the programme, discouraging potential users from using the programme: no official programme exists in the organisation.

• Seeing knowledge as a dead object instead of alive and evolving: there is no focus on knowledge.

• Timely knowledge assists in making intelligent decisions but the reverse is also true that if one does not get the knowledge in time or at the wrong time, it could be seen as an obstacle and might contribute to information overload. Knowledge currently flows only on request, other than in knowledge sharing sessions. Therefore, the receiver of the knowledge often receives the knowledge too late.

5.4 Recommendations

Firstly it is advised for any organisation to focus firstly on generating a knowledge management strategy. It is recommended that the knowledge management strategy should, as per section 2.7.1 Knowledge management strategy, include:

• Organisational structures: this can already guide the organisation to see potential obstacles and solutions to minimise these obstacles as discussed in 2.8 Different environments.

• Organisational culture: this refers to how the employees think and feel about knowledge management. The organisation may find that the perceived and actual organisational culture may differ. This study found that the actual culture may be one of sharing. If, however, it is found that there are obstacles in the way of sharing, these might have to be addressed first to allow an easier adoption of the knowledge management strategy.

• Knowledge retention: This pertains to knowledge that is important for the organisation to capture, as discussed in section 2.6 Knowledge retention.

• Core competencies: This refers to knowledge management competencies. What the organisation knows about knowledge management and if it is enough or if it would be better for the organisation to train or employ someone with the right knowledge.
Internal and external knowledge network: This research found that the respondents make use of various knowledge networks, including people networks. If the organisation knows what knowledge networks are in place, then it would be easier to analyse what knowledge resides in each of these. It would therefore be easier for the organisation to strategise about what network to bring in as the first official knowledge network. Knowledge networks are also discussed in section 2.5 Knowledge networks.

Knowledge management systems to be used: This section is fairly important and would prevent the organisation from wasting time and effort on various systems. It would be better to focus on one or two systems than to focus on too many or to let every department use their own, as is the current case in Organisation X.

Knowledge management best practices: This section is for the organisation to set down the rules that the organisation will use as best practice for knowledge management. The organisation should select the set of best practices that fit the organisation even though the organisation should look at what the market and literature state to the best practices.

Potential obstacles and solutions: This section is very important. It is important for the organisation to know what obstacles could be hampering the knowledge management programme. Once the organisation knows what their potential obstacles are, then the organisation could focus on solutions or ways to minimise the potential obstacles. As seen in the literature and in this study, time is one of the obstacles mentioned. The organisation could therefore decide how to tackle this obstacle from the get-go. The organisation might decide to add 15% time to each project from day one with the immediate directive to use this time to do research and knowledge capture.

Secondly, besides this knowledge management strategy, Organisation X might investigate why some responses revealed that there is interdepartmental conflict and start scheduling all project plans to include time for knowledge capturing and research. This should include the five hours per week per employee and a set amount of time to find knowledge on what was done right and wrong in previous projects.
5.5 Future research

Future research may include how ethnicity or individual (personal) cultures in an organisation could affect or act as an obstacle in the way of knowledge management. As part of the study, the researcher may include how language affects the transferring or capturing of knowledge.

Another future subject may include what smaller organisations (possibly 10–100 employees) find as knowledge management obstacles.

5.6 Conclusion

After all is said and done, one can still plant a carrot in a cup of soil.

This mini-dissertation was based on the stance that any organisation of any size can implement a knowledge management programme. It focused on an IT services organisation in the South African market. The organisation used in this study was larger than originally planned, however, this study aimed to find what obstacles could be in the way of implementing a successful knowledge management programme.

This study investigated several sources in Chapter 2 to find what the literature states could be obstacles and compared this to what was found from the empirical data collected through one qualitative and one quantitative questionnaire.

The data collected and analysed in Chapter 4 confirmed several obstacles that were found in Chapter 2. However, some of the obstacles found in the literature were not only “not found” but in, actual fact, the complete opposite was confirmed.

Where the literature suggested that the employees may not be willing to share knowledge because they may fear a loss of job security or that a potential stigma may be formed if knowledge was shared on what had been done wrong, it was actually found that the organisation’s employees have virtually no fear of the loss of job security and most employees did not have a problem to share what had been done wrong. However, not all shared this knowledge as they did not know where to capture this knowledge.

There were two major obstacles found in the organisation that stood in the way of implementing a successful knowledge management programme. These two obstacles would remove almost all other obstacles found in the organisation. The two major obstacles found were:
1. There is no knowledge management strategy.
2. The lack of time to manage knowledge, which includes all aspects of knowledge management.

It was therefore suggested that the organisation could remove or minimise most of the obstacles by firstly generating a well-thought out knowledge management strategy and secondly adding a minimum of 15% of their time to all projects for the management of knowledge.
List of references

Date of access: 20 March 2017.


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Appendix A: Questionnaire 1

Section 1: Demographic detail

1. What is your current position at XYZ?
2. How long have you been with the organisation?
3. If you had other positions in this organisation, what were they?
4. What would you like your next position in the organisation to be?
5. What would you say are the differences between the two roles (if different) in questions 1, 3 and 4?

Section 2: Information and knowledge sources

Information or knowledge sources here refer to anything you need to do your job; this includes information about people (internal and external), tools (software and hardware), potential solutions, etc.

1. When you started at the organisation:
   a. How long on average did it take you to find information or knowledge sources?
   b. Normally, how and where did you find information or knowledge sources?
2. Now that you have been with the company for a while:
   a. How long does it take you now to find information or knowledge sources?
   b. Normally, how and where do you find information or knowledge sources now?
   c. If 1b is different from 2b, why are they different and do you know anyone who still makes use of the sources mentioned in 1b?
3. Information and knowledge sources:
   a. Have you ever created or assisted in creating a knowledge source, and how many?
   b. Do you consider yourself a knowledge source? If so, a knowledge source of what and to whom?
   c. Name five internal and five external sources of knowledge.
   d. Who else in the organisation, do you think, is making use of these 10 sources?
   e. If you were presented with a new knowledge source, how would you go about evaluating if the knowledge source is any good?
   f. What scale would you use to tell someone how good or trustworthy a knowledge source is? E.g. 1 to 5 where 1 is poor and 5 excellent, or simply “good” and “bad”, etc.
g. What ways exist in the organisation to let others know of this new knowledge source, name five ways in order of importance? For instance, would you use email, special meetings, notice boards, general chat etc?

4. Obstacles in the way of knowledge sharing
   a. Do you think there are obstacles in the organisation that would prevent you from sharing knowledge? If yes, please list the top three.
   b. Can you freely ask for and share knowledge across departments or organisational functions? If no, please provide three main reasons why you are not comfortable to ask or share knowledge.
   c. List three departments or functions you would rather not ask for knowledge and please state why.

5. Incentives to share knowledge
   a. Are there any incentives in the organisation that entice you to share your knowledge? If yes, list the top three according to you.
   b. What incentives would you like to see or have, to entice you to share your knowledge?

6. Capturing knowledge
   a. Are you aware of any initiative to capture knowledge in the organisation, could you name three?
   b. Do you think there should be more initiatives and if so how would you go about initiating these programmes?
   c. What knowledge do you think should be captured in these programmes?
   d. If you did initiate a knowledge capturing initiative please name them and if they are still being used.
   e. If you did not initiate a knowledge capturing initiative, please mention three reasons why you did not start any knowledge capturing or sharing initiatives.
Appendix B: Questionnaire 2

Section 1: Demographic information

1. What is your current position at XYZ?
2. How long have you been with the organisation?
3. If you had other positions in this organisation, what were they?
4. What would you like your next position in the organisation to be?
5. What would you say are the differences between the two roles (if different) in question 1, 3 and 4?

Section 2:
How strongly do you agree with the following statements?
1 – Strongly agree
2 – Agree
3 – Disagree
4 – Strongly disagree

<table>
<thead>
<tr>
<th>Statement</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>Not applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>1  I have access to tools (software and hardware) to assist me in sharing knowledge.</td>
<td></td>
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<tr>
<td>2  I would like to share my knowledge but something holds me back.</td>
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<tr>
<td>3  I would like to get some sort of compensation for sharing my knowledge.</td>
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<td>4  There is a culture of sharing knowledge and experience in the organisation.</td>
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<td>5  Sharing my knowledge would raise my status in the organisation.</td>
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<td>6  Sharing my experience and knowledge would put my job security at risk in this organisation.</td>
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<tr>
<td>7  People trust me because I share my experience and knowledge.</td>
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<tr>
<td>8  I use others’ knowledge and insight on most of my projects.</td>
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<tr>
<td>9  I usually know better or have better knowledge than my peers.</td>
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<tr>
<td></td>
<td>Statement</td>
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<tr>
<td>10</td>
<td>I am concerned that others will take my ideas and they reap the rewards instead of me.</td>
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<tr>
<td>11</td>
<td>Senior staff not directly involved in the project made the decisions on most of the projects I worked on.</td>
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</tr>
<tr>
<td>12</td>
<td>Sharing my knowledge will increase my chance of promotion.</td>
<td></td>
<td></td>
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<tr>
<td>13</td>
<td>I am still making use of knowledge stores and tools that I used when I first joined the organisation.</td>
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</tr>
<tr>
<td>14</td>
<td>I feel too young or inexperienced to share what I know.</td>
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<tr>
<td>15</td>
<td>I think people sharing their knowledge can more easily be replaced.</td>
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<tr>
<td>16</td>
<td>I think tools to assist in sharing of knowledge are too expensive.</td>
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<tr>
<td>17</td>
<td>Most employees in my organisation know who to ask or where to find what they are looking for.</td>
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<tr>
<td>18</td>
<td>At work, I have at various times been in a situation that I thought to myself or said: “If I only knew…”</td>
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<td></td>
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<td>19</td>
<td>It is a waste of time to try and find what previous projects did wrong and right.</td>
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<td>20</td>
<td>We capture what we did right on projects.</td>
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<tr>
<td>21</td>
<td>We capture what we did wrong on projects.</td>
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<tr>
<td>22</td>
<td>We freely share what we did right on projects.</td>
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<tr>
<td>23</td>
<td>We freely share what we did wrong on projects.</td>
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<tr>
<td>24</td>
<td>As a team, we spend more than 25% of our time researching or using knowledge from others and previous projects.</td>
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<td>25</td>
<td>It is more important to know a lot than to know where to find the answer.</td>
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<td>26</td>
<td>I have tried to create a knowledge pool for others to use.</td>
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<tr>
<td>27</td>
<td>There are knowledge pools, tools, and people in the organisation that I would not use because the knowledge they have is less useful.</td>
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<tr>
<td>28</td>
<td>At work, there are knowledge pools, tools, and or people I wish I had access to.</td>
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<td>26</td>
<td>I will spend one hour per day researching and gaining knowledge if I am allowed.</td>
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<tr>
<td>27</td>
<td>It would be detrimental to the organisation if all staff spend one hour per day researching and gaining knowledge.</td>
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<tr>
<td>28</td>
<td>It would be detrimental to the CURRENT project if all project staff spend one hour per day researching and gaining knowledge.</td>
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<tr>
<td>29</td>
<td>It would be beneficial to FUTURE projects if all staff spend one hour per day researching and gaining knowledge.</td>
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<td>30</td>
<td>The organisation would be more profitable if each employee spends one hour per day to do research and gain knowledge.</td>
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<td>31</td>
<td>In the organisation, there are departments that do not communicate with others.</td>
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<td>32</td>
<td>I like to help other people.</td>
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<td>33</td>
<td>Many people ask me to share my insight and or help them.</td>
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</table>