Knowledge transfer practices and knowledge sharing behaviour: a South African manufacturing perspective

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ABSTRACT

Title: Knowledge transfer practices and knowledge sharing behaviour: a South African manufacturing perspective

Key terms: Knowledge Transfer, Knowledge Sharing, Knowledge Management, Organisational Learning, ICT, Manufacturing, South Africa.

Abstract: The field of knowledge sharing, especially within the context of ICT, is a fairly new field of study. This limits the extent to which research can be used to facilitate the practical application of KS and KM interventions. This study attempted to establish a standardised measuring instrument, which could be used to benchmark an organisation and organisational disciplines against industry peers. This study will assist organisations with the identification of intervention opportunities for implementing KM using ICT. The general organisational KT culture, its ICT proficiency and the factors which might constrain the effective transfer and management of knowledge were assessed and identified.

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To my Heavenly Father: You are the reason for my being. With humbleness and great humility I thank You for Your unending mercy and grace and the talents You have blessed me with.

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TABLE OF ABBREVIATIONS

Abbreviation	Definition/explanation
CRM	Customer Relationship Management. A system which allows businesses to manage business relationships and the information associated with them.
ERP	Enterprise Resource Planning, is a large-scale software program designed to aid the flow of internal business processes and data
GFC	Global Financial Crisis
ICT	Information and Communication Technology
ISO	International Organization for Standardization
KM	Knowledge Management
KS	Knowledge Sharing
KT	Knowledge Transfer
MIS	Management Information Systems
OL	Organisational Learning
SHEQ	Safety, Health, Environment and Quality (Department)
URL	Uniform Resource Locator

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CHAPTER 1: NATURE AND SCOPE OF THE STUDY

1.1 Introduction

This mini-dissertation covers the topic of knowledge transfer (KT) in a manufacturing organisation, set to the background of the South African milieu. It looks at the perceptions of knowledge holders (teachers), knowledge recipients (learners) as well as the suitability of using Information and Communication Technology (ICT) in a specific discipline and at various levels of the organisation.

1.1.1 Background

Learning and KT are as old as time itself. The book of Genesis 3:3 (Bible, 1995) indicated God's teaching/instruction as follows: *"But of the fruit of the tree which [is] in the midst of the garden, God hath said, ye shall not eat of it, neither shall ye touch it, lest ye die".* This was a clear instruction (or alternatively put: an explicit knowledge transfer) from God. A few verses later we learn that although God gave clear instruction, Adam and Eve disobeyed God, and had to experience the effects of not heeding God's instruction. We could call this experiential learning. The Bible is a good example of the process of documenting both explicit and also tacit knowledge.

Using similar, although more modern, principles, the key focus of this study is to investigate the most effective manner in which to transfer knowledge in the South African manufacturing environment by focusing on known KT practices and the human behavioural aspects regarding knowledge sharing (KS).

With the explosion of knowledge in the last hundred years, new risks and challenges have arisen as a result of this explosion: the risk of not retaining this knowledge and even the risk of not being able to retrieve the retained knowledge. Sifting through, and finding only relevant information, is a mammoth task given the flood of information modern organisations are exposed to. The advancement of computer technology over the last few years has facilitated the capturing of information and the storage of data, but the experiential knowledge has not been captured effectively. This type of knowledge is normally transferred from person to person not through systems, but rather through discussions, stories and on-the-job training. Industry now runs the risk of losing this information as a result of the following:

1.1.2 The Ageing Population

As indicated by Delong (2004:1) within the next decade the relatively inexperienced age-group of 20-34 will shrink by 9%, whilst the economically active and prime workers of

between 35 and 49 will shrink by 8%. The alarming statistic is that the baby boomers are now approaching the retirement age of 64 and this group will shrink by 34%.

1.1.3 Educational Problems of the Developing World

Nawaz (2013:39) indicated that as much as 25% of teachers in sub-Saharan Africa are not adequately qualified. High learner to teacher ratios, shortage of basic instructional materials and poor physical infrastructure also contribute to low levels of learning achievement in this region. This then later manifests itself in literacy, trainability and competency levels once learners become economically active.

1.1.4 The Brain Drain

(a) The Global Financial Crisis: The global financial crisis (GFC) of 2008 forced organisations internationally to revisit their cost structures. This led to far-reaching consequences, not only for organisations, but also for economies. In a report requested by the European Commission on the impact and potential policies to rectify the impact of the GFC, Izsak *et al.* (2013:3) indicated that the 2008 crisis had a profound effect on knowledge intensive activities. It was reported that countries with robust knowledge-intensive industrial structures, such as the Nordic countries, appeared to be less sensitive to the financial and general economic downturn. In countries such as Greece, Ireland, Portugal and Spain the reduced public research and innovation budgets resulted in a challenge to retain skilled resources (Izsak, *et al.*, 2013:4). In South Africa, according to the Southern African Migration Project (2000:1), emigration exceeded immigration before the political reform in South Africa in 1994. This study performed by the University of Cape Town estimated that during the period of 1989 to 1997 over 233,000 South Africans emigrated permanently to 5 countries - the UK, the USA, Canada, Australia and New Zealand. At the time of the study it was foreseen that this trend was unlikely to slow down and black South Africans were just as likely to leave as whites.

(b) Broad-Based Black Economic Empowerment Act (53 of 2003): The government of South Africa introduced strategies and later legislation aimed at the economic improvement of previously disadvantaged individuals. Due to pressures by government for organisations to conform to the demographic requirements set by the legislation, this necessary corrective action, did not take into account the time required to naturally increase the education levels of individuals after the extended periods of discriminatory education. This meant that organisations were required to

employ previously disadvantaged individuals who may not have had adequate experience to fulfil the job requirements. With the introduction of these individuals the existing incumbents were not necessarily motivated to transfer knowledge adequately, which further exacerbated a lack of KT and retention.

(c) General Retrenchments in the Manufacturing Industry: Business Day (Maswanganyi, 2014:1) reported that a survey performed by Adcorp, a labour specialist, indicated that retrenchment levels in South Africa were at a 10-year high. Their employment index report indicated that more than 36 thousand jobs were lost in January 2014. Most of which were in the manufacturing and construction industries. This continued loss of jobs, has a devastating effect on the retention of knowledge and experience in the manufacturing industry.

Leaders of South African organisations are therefore facing enormous demographic shifts which have huge economic costs if nothing is done. Where will they find talent? What succession plans do they need to put in place? Are they building a retention culture which is crucial for the survival of the organisation?

With new developments in the ICT industry the opportunity has arisen to address some of these risks through the use of technology in facilitating the capturing, classification and presentation of knowledge in a simple yet cost-effective manner. The challenge faced, is the probability of the successful uptake of the technologies, given the educational, cultural and generational challenges which exist in South African organisations.

1.1.5 Challenges Regarding the Capturing of Tacit Knowledge

Assessing how much tacit knowledge is available to the organisation, not even considering estimating the value of this knowledge, is almost impossible. Individuals would attach their personal as well as organisational value to this “experiential” knowledge and would therefore be reluctant to share this information. The transfer of tacit knowledge is therefore mainly driven by behavioural aspects of individuals as well as the organisational culture. The extent to which tacit knowledge has already been captured as explicit knowledge (for instance in procedures and policies) also needs to be considered when establishing the cost/benefit of capturing the remaining tacit knowledge to the organisation.

1.2 Problem Statement

Given the circumstances related to the loss of knowledge as described above, would it be viable for a manufacturing organisation, using internal resources, to effectively record and transfer experiential/tacit knowledge using ICT?

1.3 Objectives of the Study

This study is expected to assist organisations in identifying intervention opportunities for implementing KM using ICT in a South African manufacturing context.

1.3.1 Primary Objective

The primary objective of the study is to determine the KT intervention opportunity, based on the perception of the most effective method of transferring knowledge at various organisational levels, in a South African manufacturing organisation.

1.3.2 Secondary Objectives

The secondary objectives are as follows:

(a) Assessing the general organisational KT culture.

(b) Assessing the organisation's ICT proficiency.

(c) Establishing which factors might constrain the effective transfer and management of knowledge.

1.4 Scope of the Study

Although knowledge management (KM) is a wide field of study, this study will focus primarily on KT practices and KT behaviours and will perform unlimited assessment regarding the use of ICT in KT. The study will be conducted at a single manufacturing concern in the Gauteng province in South Africa with samples taken across the entire width and breadth of the organisational hierarchy.

1.5 Research Methodology

The research method consists of two phases namely a literature study and an empirical study.

1.5.1 The Literature Study

In reviewing literature the focus is on identifying factors that influence the successful transfer of knowledge using ICT based on prior research conducted in this field. Dimensions which were focused on related to the characteristics of teaching, learning and the subject matter which is being transferred, considering the use of ICT related media such as video, electronic documents and other forms of digital media.

The following databases were consulted:

- The Internet
- Electronic databases of journals, articles and reports such as EBSCOHOST were used in conducting the research. Key words and concepts such as Knowledge Management, Knowledge Transfer, Organisational Learning and e-Learning were used.
- Library Catalogues

1.5.2 Empirical Study

The general objective of this research is to design a measuring instrument to utilise as a benchmarking tool for organisations to identify the intervention opportunities in the adoption of KT practices through the use of ICT, in a South African manufacturing environment.

(a) Research Design

The research was designed in such a way to establish the validity of the research findings and to enable the repeatability in other sectors of industry.

A cross-sectional survey design was implemented to address the research objectives. The design was used to assess the current status of variables at a specific point in time, without external intervention. Interrelationships between variables were not analysed; the status of each variable was assessed to form a benchmark for later studies. Basic statistical descriptive methods were used.

(b) Study Population

The total population was 231 employees of the single organisation; the tested population consisted of 74 (N=74) individuals across the entire manufacturing organisation. The population includes employees from all levels of the organisation, all age groups and all levels of exposure to or experience with KT, KM and ICT.

(c) Measuring Instrument

The measuring instrument is in the form of a questionnaire. The questions in the questionnaire were designed specifically for the purpose of this research taking factors highlighted by the literary study into consideration. Questions were high level and based on the respondents' perceptions as it aims to obtain a general understanding of the behaviours and practices within the organisation without drilling into much detail regarding the behavioural aspects of individuals.

The measuring instrument was designed to assess the following dimensions of knowledge transfer:

- The organisational maturity and climate
- Perceptions regarding the requirements for knowledge transfer
- Perceptions regarding the best methodologies of knowledge transfer to utilise at various organisational levels
- To enable the development of a relationship between the organisational maturity levels and KT practices
- To enable the identification of KT methodologies for KM interventions at various levels of the organisation based on the organisational maturity and perceptions of KT methodology effectiveness

(d) Research Procedure

Before the onset of the study, the researcher obtained permission from the management of the manufacturing organisation to conduct the study. Questionnaires were then compiled and distributed to employees via e-mail accompanied by a covering letter explaining the purpose of the study assuring anonymity and confidentiality. Questionnaires were compiled in two formats: a web-based system through which responses could be collected and controlled through a cloud based system and an electronic.pdf document which could be printed and completed manually. Respondents were given the opportunity to choose between the two, the choice was also recorded as it is an indication of the potential buy-in for ICT based KM.

(e) Statistical Analysis

Statistical analysis was done using Microsoft Excel Power Pivot data analysis and statistical analysis plug-ins.

(f) Limitations of the Study

The study will be limited to one organisation which may not be representative of the entire industry nor country. Due to the limited number of people in the organisation, especially in certain departments where only a few staff members may be present (i.e. research and development), the findings may not be representative of national results of said discipline (such as research and development).

1.6 Layout of the Study

The study considerations for effective KT can be depicted as follows.

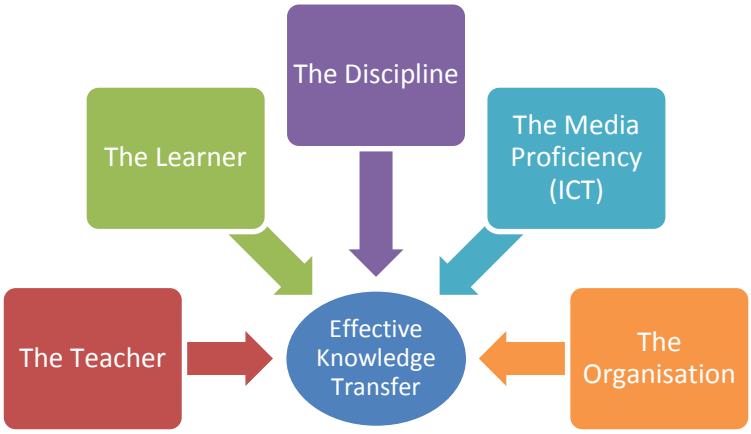

Figure 1-1 Dimensions in the Layout of the Study

Study Variables:

The dependent variable is effective KT practices.

The following independent variables influence effective KT practices:

- Behavioural aspects of the teacher/mentor
- Behavioural aspects of the learner
- Organisational culture and influences
- The predisposition of the discipline (subject matter) to tacit KT
- The practical application of ICT in the transfer of knowledge for a particular discipline.

1.7 Summary

The objective of this study is to identify the intervention opportunities in the adoption of KT practices through the use of ICT, in a South African manufacturing environment. This may require the design of a measuring instrument to utilise as a benchmarking tool for organisations to assist with the identification of the opportunities. This will be explored further in chapter 3 and 4.

CHAPTER 2: OVERVIEW OF THE ORGANISATION

2.1 Introduction

Chapter 1 provided an introduction and problem statement and elaborated on the procedure and methodology which will be applied in answering the research question. As the scope of this research is aimed at one specific organisation, this chapter focuses on the organisational background and history of the organisation.

2.2 Overview of the Organisation

The organisation is the world's leading producer of its speciality powders, with a global market share of around 50%. It provides powders for ore beneficiation in the mining industry. The beneficiation technology can be described as making up a suspension of powder in water to form a type of `heavier liquid´ thereby separating mineral / metal particles in a sink-float process. This liquid is then used to separate materials with different densities from each other. Main customer industries are the diamond, platinum, iron ore and scrap recycling industries. The company distributes its products in South Africa as well as to Middle and Southern Africa, Australia and Europe. The entire organisation is situated on one location in Gauteng, South Africa. The plant started its first operation in 1949 and although the equipment has been modernised, the original technology is still being used. The operation historically formed part of a large mining conglomerate with centralised (head-office driven) KM systems. These systems typically consisted of global ERP, document and knowledge management systems. Global intranet which incorporated, communities of practice, predefined operating procedures and guidelines - especially regarding health and safety matters.

In 2006 the organisation was sold as part of a black economic empowerment initiative. The new shareholders were able to retain management for a short period of time through the use of short-term incentives. As a result of the "divorce" from the centralised systems the organisation had to rapidly implement systems and business processes to fill the void which was created. To a large extent the processes and procedures from the conglomerate were adopted to facilitate rapid mentation. This adoption did ensure that governance and good practices remained intact in the short term, but unfortunately the tacit knowledge of how and why these practices were developed remained in the conglomerate. This therefore left a void which was only detected once the organisation started reviewing its practices. This highlighted the impact of the intangible risks (such as the loss of knowledge) which the corporate unbundling process tends to neglect or

ignore. In 2007 the general manager left the organisation starting his own business by mainly trading with and marketing for a Chinese competitor. In 2010 the company suffered another set-back when the marketing manager left to start her own company with a similar business model, leaving the organisation exposed in the marketing environment. Due to the company's niche market an experienced marketing manager could not be procured easily and a chemical engineer was appointed as marketing manager in a developmental role. In 2012 the general manager, previously operations manager, resigned his post to retire. His replacement was appointed in 2013 as CEO with the mandate of growing the business.

The management team consists of the CEO, general (operations) manager, financial manager, marketing manager and a human resources manager. The organisation consists of 231 employees of which 55 perform managerial and office functions; the remainder of the employees work in a high-risk plant area with furnaces which operate at 1600^0C, high pressure water systems and multiple overhead cranes.

The management structure is fairly flat, with only the operations departments consisting of more than three management levels. This causes challenges regarding knowledge retention, KT as well as succession. The organisation is ISO 9001 certified. The 9001 standard is based on a number of quality management principles including a strong customer focus, the motivation and implication of top management, the process approach and continual improvement (International Organization for Standardization, 2014). These principles help ensure that customers get consistent, good quality products and services, which in turn bring many business benefits. This therefore implies mature systems with documented processes, procedures and policies.

2.3 Relevant Organisational Strategies

One of the core strategies identified in the business plan of the organisation is to retain core skills and knowledge and creating a guiding policy specifically focused on KM through embedding ongoing formal mentoring / training to enable faster and better decision making, problem solving, and work operations. To increase productivity and innovation in order to identify, capture, store, maintain, and deliver useful knowledge in a meaningful form to anyone who needs it, any place and anytime within the organisation.

2.4 Causal Factors to the Study

As with most ISO certified manufacturing organisations, jobs are clearly defined, a vast array of standard operating procedures are in place and strict discipline and control is applied to ensure that these procedures are adhered to. This is mainly driven through operations for process and task standardisation purposes as well as risk mitigation for health and safety reasons. Required compliance to international standards (ISO) then further supports the existence of these procedures. These organisations are not always proficient when it comes to tacit knowledge management. The organisation in this study has experienced the loss of vital tacit knowledge as a result of staff turnover, the lack of effective KT with the limited human capital resources pool in the organisation and as a result of corporate unbundling. The organisation has therefore identified knowledge management (and retention) as one of the key strategic initiatives in its business plan. This study will assist the organisation (and other organisations of a similar nature) in determining the perceptions of its employees regarding knowledge transfer practices and their effectiveness within the context of the organisation, the disciplines within the organisation and lastly the organisational learning culture measured as a perception of knowledge transferability and the willingness to transfer knowledge.

CHAPTER 3: LITERATURE REVIEW

3.1 Introduction

This chapter aims to review the general concepts and constructs of Organisational Learning (OL), Knowledge Management (KM), Knowledge Transfer (KT) and the related concepts. It then more specifically focuses on the constructs regarding KT by mainly focusing on the influence of the three main participants in the KT process being: the knowledge holder (the teacher), knowledge recipient (the learner) and the discipline (or study material) for which knowledge is being transferred within the organisational context and through the use of Information and Communication Technology (ICT).

3.2 Organisational Learning

"The Only Thing That Is Constant Is Change" (Heraclitus). Learning is one of the key processes employed in modern organisations to manage change. Cummings & Worley (2013:752) define organisational learning as *"the change process that seeks to enhance an organisation's capability to acquire and develop new knowledge. It is aimed at helping organisations use knowledge and information to change and improve continuity. It involves discovery, invention, production, and generalisation."* In organisations OL change processes are typically associated with the human resources function and may be assigned to a special leadership role, such as Chief Learning Officer. According to Cummings & Worley (2013:538) learning includes two interrelated change processes: Organisational Learning (OL) and Knowledge Management (KM). They state that OL enhances an organisation's capability to acquire and develop new knowledge whereas KM focuses on how knowledge can be organised and used to improve performance. Both these processes are crucial in today's rapidly changing environment. These two concepts are frequently used interchangeably as a result of the different disciplines traditionally associated with OL and KM which focused on different aspects of learning. Figure 3-1 graphically represents the relationship between OL and KM as described by Pun & Nathai-Balkissoon (2011:206)

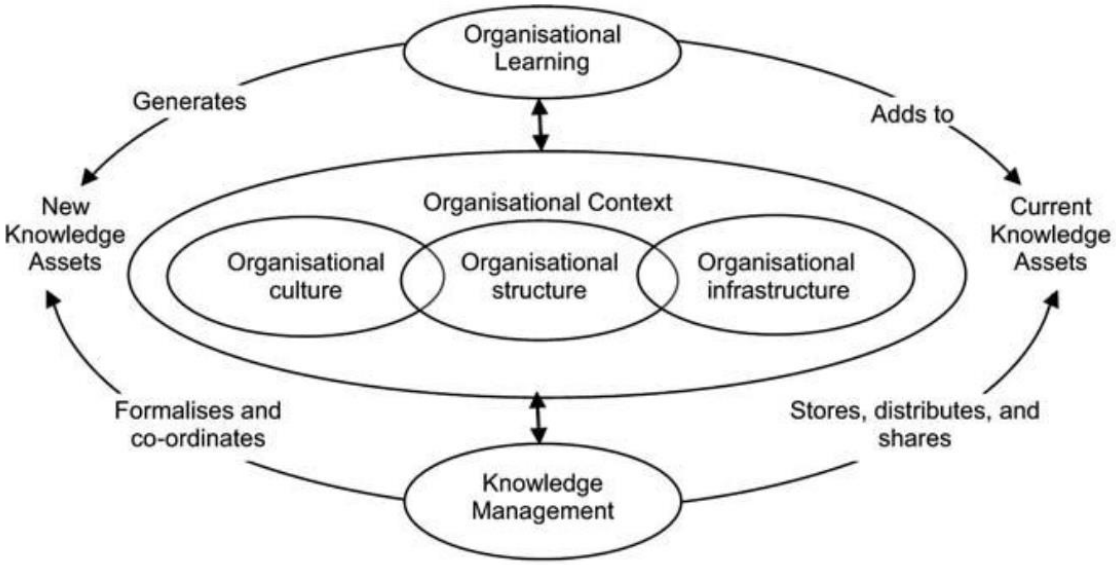

Figure 3-1 The Relationship Between OL and KM
(Pun & Nathai-Balkissoon, 2011:205)

Figure 3-1 highlights that both OL and KM share the ultimate objectives of developing current knowledge assets and creating new knowledge assets. This needs to be contextualised in the organisational environment which covers three components namely: organisational culture, organisational structure and organisational infrastructure.

According to Cummings & Worley (2013:538) OL interventions highlight the organisational structures and social processes that enable teams and employees to learn and to share knowledge. OL relies to a large extent on social sciences for conceptual grounding in its application in organisational design interventions such as teambuilding, structural design, and employee participation. KM interventions focus on the tools and techniques that enable organisations to collect, organise and translate information into useful knowledge. They are conceptually rooted in the ICT sciences and emphasise electronic forms of knowledge storage and transmission such as intranets, data warehouses and knowledge repositories.

3.3 Knowledge

Knowledge is complex, multi-dimensional and imparted in different ways to different people. (Pun & Nathai-Balkissoon, 2011:205). The complex interrelationship between supply and demand within modern organisations requires these entities to build new business models regarding knowledge: it forces them to become knowledge-based. The knowledge-based organisation is one that optimises the application of knowledge to reach its operational and strategic goals. It aims to find the most efficient, transparent and

therefore effective way of transferring knowledge, but what is knowledge? To answer this question we need to start with the components of knowledge: data and information.

Data is discrete, objective facts. Data is the raw material for creating information. By itself, data carries no judgement, interpretation or meaning.

Information is data that is organised, patterned and/or categorised. It has been sorted, analysed and displayed, and is communicated through various means. Information changes the way a person perceives something, thus, affecting judgement or behaviour.

Knowledge is what is known. It is more meaningful than information. Knowledge is gained through experience, reasoning, intuition, and learning. Because knowledge is intuitive, it is difficult to structure, can be hard to capture on machines, and is a challenge to transfer. A "knowledgeable person" is seen to be someone who is well informed and thoroughly proficient in a given discipline. Knowledge can be expanded when others share their knowledge with us. New knowledge is created when knowledge is pooled together. Alternatively formulated:

Table 3-1 Data, Information & Knowledge

Data	=	Unorganised Facts
Information	=	Data + Context
Knowledge	=	Information + Judgement

3.3.1 Explicit Knowledge

As a general rule explicit knowledge consists of anything that can be documented, archived and codified (Baltzan, 2013:203) this is normally easily done through the use of information technology. Explicit knowledge is relatively easy to capture and store in databases and documents. It is shared with a high degree of accuracy. It may be either structured or unstructured. Structured: Individual elements are organised or diagrammed in a particular way for future retrieval. It includes documents, databases, and spreadsheets. Unstructured: The information is not referenced for retrieval. Examples include e-mail messages, images, training courses, and audio and video selections.

3.3.2 Tacit Knowledge

Tacit knowledge is the knowledge contained in people’s heads. (Baltzan, 2013:203). The challenge inherent in tacit knowledge is figuring out how to recognise, generate, share and manage knowledge that resides in people’s heads. People are not aware of the knowledge they possess or how valuable it may be to others. Tacit knowledge is

considered more valuable because it provides context for people, places, ideas, and experiences. Effective transfer of tacit knowledge generally requires extensive personal contact and trust.

3.4 Knowledge Management

Knowledge Management refers to practices used by organisations to find, select, organise, disseminate, and transfer important information and expertise necessary for activities such as problem solving, dynamic learning, strategic planning and decision-making. (Pun & Nathai-Balkissoon, 2011:205). KM programs are typically tied to organisational objectives and are intended to lead to the achievement of specific outcomes such as shared intelligence, improved performance, or higher levels of innovation. Effective KM seeks to transform tacit knowledge into explicit knowledge for storage and dissemination across the organisation.

The concepts of OL and KM are both fairly new fields of study. This means that although historically quite a number of studies were done, these were done in specific fields as stand-alone studies and they therefore lacked holistic considerations. Based on a literary study done by Pun & Nathai-Balkissoon (2011:209) on the integration of KM into OL in which 14 models and frameworks of KM and OL were evaluated, it was concluded that there was a need to simplify and align theories of KM and OL within the integrated fields to make them more easily comprehensible, better aligned and more clearly applicable to specific fields of work or to best management practice. A large portion of the models focused on single and double loop learning with almost no focus on higher levels of learning. If this continues to be the case, continuous improvement will remain the norm, but for organisations to leap forward, their strategies also need to include a focus on innovation. (Pun & Nathai-Balkissoon, 2011: 218). Many of the authors in the study highlighted the need for further research on several fronts. The authors also suggested further study on the applicability and relevance of these models in non-western/large-scale/Anglo contexts.

3.5 Knowledge Retention

DeLong (2004:119), in his book, focuses on practical application of knowledge management in highlighting components of knowledge retention strategies. The author then extends this to KM practices which could be utilised to retain knowledge. Figure 3-2 is an adaptation and a graphical representation of the practices discussed by DeLong. The knowledge transfer focus areas are represented by the horizontal arrows and the

methodologies applied and each focus area represented are listed below each arrow, the ultimate goal being knowledge retention within the organisation.

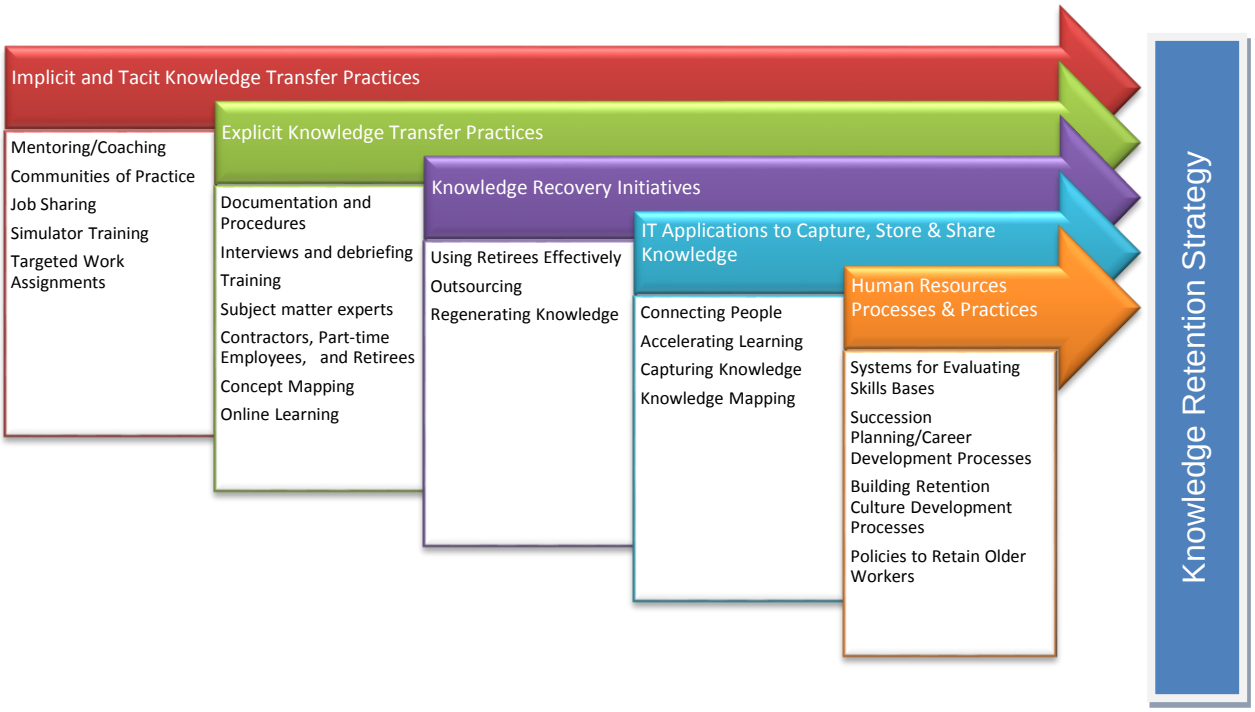

Figure 3-2 Knowledge Retention Strategy
Adaptation by this author of DeLong (2004)

Knowledge retention strategy can be categorised as follows:

(a) Human resources practices

This aspect considers cultures, values, skills, competencies, and lastly experience. This focuses on people and the processes involved regarding employing, managing, enhancing organisational learning and the retention of knowledgeable people. This is one of the key starting points of ensuring that proper knowledge enters the organisation: the typical garbage-in-garbage-out principle. In these practices, systems for evaluating skills bases need to be in place. Succession planning and career development processes need to be active to support a culture of learning. Incentives and retention, both monetary and non-monetary, need to be in place to motivate development and to safeguard retention.

(b) The use of ICT

ICT is a strong tool used in the capturing, linking and dissemination of knowledge between people and systems. Although ICT can be used in the transfer of knowledge, it mainly acts as an intermediate between people and people. What this implies is that people transfer knowledge to people, the role of ICT is one of storage,

facilitation and to some extent translation of this knowledge as part of the KT process. For instance: a teacher is digitally recorded whilst telling a story of the experiences he had in a particular situation. This knowledge might only be required years later, when a similar situation occurs. The learner will then use the electronic KM and retrieval system to access the knowledge/insights provided by the original teacher. ICT merely played that facilitation and "connection" role between the two individuals. The strength or failure of ICT is in its ability (or inability) to structure, store and quickly retrieve the required knowledge. Factors which typically need to be considered under electronic KM systems are: data, applications, structured vs. unstructured data and internal vs. external data.

(c) Knowledge Recovery Initiatives

In this case all the other processes failed the organisation to retain knowledge and therefore it needs to be sought again. These initiatives are aimed at recovering or regenerating lost knowledge through the use of people external to the organisation, for instance retirees or consultants.

(d) Knowledge Transfer Practices

KT practices can be subdivided into two categories namely Explicit and Tacit KT practices. Explicit KT practices typically include documentation of procedures and processes, standards, formalised training and debriefing. Tacit KT practices typically include mentoring, communities of practice, job sharing, simulation training and work assignments specifically aimed at exploiting and extracting tacit knowledge.

The details of each of these KT practices are discussed in more depth in the next section.

3.6 Knowledge Transfer

KT (an aspect of KM) has always existed in one form or another through on-the-job discussions with peers, apprenticeship, maintenance of organisational libraries, professional training and mentoring programs. Since the start of the digital age, technology has played a vital role in KT through the creation of knowledge databases, expert systems and other knowledge repositories.

DeLong (2004:122-129) identified the following ways of transferring knowledge:

(a) After Action Reviews: These debriefings are a way to identify, analyse and capture experiences, to record what worked well and what needs improvement, in order for others to learn from those experiences. For maximum impact, after action reviews

should be done either immediately following an event or on a regular basis, with results shared quickly among those who would benefit from the knowledge gained.

(b) Best Practices: The identification and use of processes and/or practices that result in excellent products or services. Best practices, sometimes called preferred practices, often generate ideas for improvements in other organisations or work units.

(c) Internships: Formal arrangements are established for an experienced person to pass along knowledge and skills to a novice. It also serves as a mechanism for learners to obtain practical on-the-job experience and academic credit as part of their educational experience.

(d) Communities of Practice: Groups of individuals who share knowledge about a common work practice over a period of time, though they are not part of a formally constituted work team. Communities of practice generally cut across traditional organisational boundaries. They enable individuals to acquire new knowledge faster. They may also be called Communities of Interest if the people share an interest in something but do not necessarily perform the work on a daily basis.

(e) Documenting Processes: Developing a written or electronic record of a specific work process that includes the business case for the process, steps in the process, key dates, relationship to other processes that come before and after, key players and contact information, any required references and legal citations, back-up procedures, and copies of forms, software, data sets, and file names associated with the process.

(f) Document Repositories: Collections of documents that can be viewed, retrieved, and interpreted by humans and automated software systems (e.g. statistical software packages). Document repositories add navigation and categorisation services to stored information. Key word search capability is often provided to facilitate information retrieval.

(g) Expert Interviews: Sessions where one or more people who are considered experts in a particular subject, program, policy, or process, etc. meet with others to share knowledge. Expert interviews can be used for capturing knowledge of those scheduled to leave an organisation, conducting lessons learned debriefings, and identifying job competencies.

(h) Job Aids: These are tools that help people perform tasks accurately. They include things such as checklists, flow diagrams, reference tables, decision tree diagrams,

etc. that provide specific, concrete information to the user and serve as a quick reference guide to performing a task. Job aids are not the actual tools used to perform tasks, such as computers, measuring tools, or telephones.

(i) Mentoring: In mentoring, an experienced, skilled person (mentor) is paired with a lesser skilled or experienced person (protégé), with the goal of developing or strengthening competencies of the protégé.

(j) On-the-Job Training: Most organisations use some form of on-the-job training where an experienced employee teaches a new person how to perform job tasks.

(k) Storytelling: This involves the construction of fictional examples or the telling of real organisational stories to illustrate a point and effectively transfer knowledge. An organisational story is a detailed narrative of management actions, employee interactions, or other intra-organisational events that are communicated informally within the organisation.

(l) Formal Training: Formal Training encompasses a large variety of activities designed to facilitate learning (of knowledge, skills, and abilities or competencies) by those being trained. Methodologies can include: classroom instruction, simulations, role-plays, computer or web-based instruction, small and large group exercises, and more. It can be instructor-led or self-directed in nature.

3.7 The Role of ICT in Knowledge Transfer

The KT process is an individual learning process. By imparting knowledge to the individual, the individual learner has been enriched, but the organisation may not have benefited from a knowledge point of view. In such a case OL has not been achieved. By being able to manage (collect, structure, store and disseminate) the knowledge which is being transferred to the benefit of the entire organisation, OL can be achieved.

If this KT process is captured/facilitated using ICT, this knowledge can be structured and classified for easy retrieval and dissemination. ICT therefore transforms the process of KT into KM. The KM process then facilitates the organisational objective of OL.

3.7.1 Educational Challenges of the Developing World

Nawaz (2013:39) comments that e-learning is a “blessing in disguise”, especially for developing countries. These countries are struggling against illiteracy, poverty, global isolation and disempowerment. ICT has emerged as a potential solution for most of the educational challenges.

Nawaz (2013:39) highlights the learning challenges in developing countries as follows:

(a) Shortage of qualified and skilled teachers
(b) Low level of learning achievements such as high learner-teacher ratios, shortage of basic instructional materials and poor physical infrastructure.
(c) High drop-out rates at all levels of education
(d) Lack of opportunities for remote areas
(e) Lack of study materials and resources

In an organisational context the teacher can be substituted with “knowledge holder”, and the learner can be replaced with “knowledge recipient”. For ease of reference the terms “teacher” and “learner” will be used in the pages following.

The trajectory of e-learning projects around the world is confirming that success of these new systems is not automatic, but rather a complex and multifaceted process that includes technology as well as curriculum, pedagogy, institutional readiness, and teacher competencies (Nawaz, 2013:42). Teachers feel that they become merely controlled by machines where human aspects of work are disappearing. Contextual and demographic impacts on user perceptions and attitudes have widely been reported as critical points for the decision makers to consider when planning and implementing e-learning solutions. Research is frequently identifying the incompatibility of e-learning models with contextual requirements of certain countries, particularly in the developing countries such as Pakistan (Nawaz, 2013:42). Many obstacles for the implementation of the ICT in universities were identified for example resistance to change from the teacher’s point of view. Higher education has been in two minds regarding perceptions regarding and approaches to e-learning from behaviourism through cognitive to social constructivism or alternatively stated, from transmitted knowledge to negotiated and then harvested knowledge (Nawaz, 2013:42). Universities in developing countries face a number of challenges as they seek to implement e-learning systems:

(a) Building a communication and network infrastructure
(b) Providing adequate hardware and software
(c) Implementing transactional information systems to record transitions
(d) Implementing Management Information Systems (MIS) for different roles of managers
(e) Establishing computer centres to help users while using e-learning facilities
(f) Arranging high-performance computing for special research tasks
(g) Arranging training of all categories of users.

Furthermore, high-quality digital teaching requires the administration functions to provide support by adequately funding the staffing of IT services, so that they can accommodate the demands of users.

Fortunately in the private sector, even in developing countries, most of the required resources such as ICT infrastructure and systems are in place to drive e-learning or KM initiatives.

3.7.2 Drivers behind the Use of ICT in KM

Table 3-2 summarises the results of research conducted on 145 engineering learners at the University of Tunis with the objective of determining the perspective that learners have on their role in an education system where ICT is present and to determine various perceptions that a learner could have when a lesson is presented to him/her which makes use of ICT. (Yassine, 2010:24)

Table 3-2 Motivators behind the use of ICT

Motivator	Result
The Teacher	46%
The Learner (self)	20%
The Discipline	16%
Other	18%

(Yassine, 2010:124)

The study observed that the most significant promoter for the use of ICT in the classroom was the teacher at more than double the impetus of the learners themselves. Relating this to a corporate organisation indicates that a supervisor/manager, who would typically be the "teacher" in the context of tacit knowledge transfer, should be the primary focus of a KT intervention seeking to use ICT as a KM platform. In the next sections we will be analysing these three main motivators, as well as other environmental factors, with the use of ICT in the context of KM in more detail.

3.7.3 Challenges with the Use of ICT

Educational institutions have long investigated and started utilising ICT in the form of electronic learning (e-learning) as a means of delivering training (or alternatively stated – a method of KT). This development of the potential use of e-learning was driven through the growth of Internet technology with its ability to reach target audiences much wider than the traditional scope of a learning institution. Numerous studies have been

conducted in this regard but the studies conducted in developing countries, which have a similar milieu to this study, have been utilised to assist with identifying and contextualising the use of ICT in the South African manufacturing industry. These educational challenges manifest themselves in the private sector, and as a result, need to be taken into consideration when developing the context of OL and KT strategies. This section focuses on e-learning as the studies regarding e-learning in an educational context in a developing country are the closest parallel which can be used to actualise these findings in a South African context. These challenges are the following:

3.8 Effective Knowledge Transfer in the Context of ICT

3.8.1 Effective Learning

The use of ICT in higher education as a medium to more easily reach students beyond the normal boundaries of a university has generally established itself as the term “distance learning”. The concept of distance learning and its effectiveness in higher education has been the topic of various studies, since its emergence, over the last few years. There are various participants in the knowledge transfer environment. We have therefore used the outcomes of these studies as a proxy indicator for the effectiveness of ICT in the knowledge transfer process in industry.

If the open system method is followed, the main inputs to the KT process would be:

- the teacher
- the learner
- the subject matter or discipline
- organisational factors and barriers

These will be discussed in more detail over the next few pages.

3.8.2 The Teacher

In distance education, teachers are not course producers. Course materials are prefabricated, usually highly structured, and the main teaching is integrated into the teaching materials. This has the consequence that teachers tend to value facilitation skills more than presentation skills (Xiao, 2012:375). Learners placed a premium on theacher presentation skills, but the level of learner-engagement demonstrated that they might not be fully ready for autonomy and hence expected their teachers to play the role of teacher in the classroom context instead of taking full advantage of the course materials.

Xiao (2012:369) conducted a study on the motivational influence of a teacher on distance learning learners. As with traditional learning methods, the motivation for learning in

distance learning was largely driven by teacher competence, personal characteristics of the teacher, subject matter expertise and the teacher-learner relationship.

Of the 60 learners, 22 reported motivating incidences in their distance English learning experiences while 38 reported both motivating and demotivating experiences. In contrast, all but two of the teacher participants focused on motivating incidences. Four major themes surfaced from the data, which were perceived by both cohorts to impact on learners' learning motivation:

(a) Teaching competence

Teaching competence, which covers presentation skills, learner engagement, use of technology, facilitation skills, and practical relevance, was identified as a motivating factor almost unanimously by both cohorts (100% vs. 97%).

(b) The teacher's personal characteristics

Analysis of the data indicates that 93% of learners and 91% of teachers believed that teachers' personal characteristics affected learners' learning motivation. Of all the characteristics mentioned by learners and teachers, professional commitment - being responsible for and passionate about one's teaching job - tops the list in both cases, and is believed to be the most important personal characteristic influencing learners' motivation. The teachers' personal characteristics: committed, approachable, empathetic, accepting, humble, and egalitarian were highly rated as a motivating factor by both learners (93%) and teachers (91%).

(c) Subject matter expertise

Of the participants, 70% of learners and 56% of teachers acknowledged that teachers' subject matter expertise influenced learners' learning motivation. Subject matter expertise in the context of the study was described as disciplinary knowledge and English proficiency.

From the study it could be concluded that teachers should endeavour to "ensure motivation before they train learners to become autonomous". (Xiao, 2012:375). The background to this is that as e-learning improves, the more autonomous the learners become in shaping their learning experience. Without the motivation the learner may not even complete the learning objectives. Technology-literate teachers can give learners a flexible, interactive, and amusing learning experience. Despite the fact that no mention was made of the demotivating effects of a technology-illiterate teacher, the implication may be justified that teachers should be skilled at using ICT.

3.8.3 The Learner

3.8.3.1 Factors Contributing to the Satisfaction of Learners in e-Learning

Customer satisfaction has been one of the most significant variables of loyalty and usage intention in the fields of marketing and information sciences. Customer satisfaction can also be highly correlated to academic success. (Calli, et al., 2013:85). In his study into the factors which contribute to student satisfaction in e-learning, Calli concluded that perceived ease-of-use and playfulness had positive effects on the perceived usefulness of an e-learning system. Perceived playfulness had a positive effect on satisfaction. This is important mainly because satisfaction, as an output of education, should be considered as an emotional performance measure. The study showed that using written and visual course materials which were understandable and well established, constituted an enjoyable part of the student's learning processes. Multimedia content effectiveness had a relatively low effect on perceived usefulness and satisfaction. Effective visual, written and animated content indicated positive influences on both satisfaction and perceived usefulness.

3.8.3.2 Generational Factors

Generational differences make KT more challenging. Under the current economically active age groups we have diversity between the Generation-Y (below 26); Generation-X (27-43); Baby Boomers (44-62); and Traditionalists (63 and older). (McShane & Von Glinow, 2010:21) The learning, and teaching styles of Generation-Y (very used to electronic methods of learning) is unlikely to match the learning style of a Baby Boomer (very used to classroom learning). This therefore poses challenges for the two generations in achieving effective KM. Two-way mentoring would probably be the most effective way in achieving effective KT and bridging the gaps between the generations.

3.8.3.3 The Role of the Learner in the use of ICT

The learner plays various roles when ICT is introduced. Depending on the type of ICT utilised in the training, the learner may be engaged in the training process at different cognitive and behavioural levels. The roles are set out as follows:

(a) User learner

According to Yassine (2010:119) in the field of didactic and educational sciences, the learner is the most important consideration in any e-learning project. The learner is represented by three constructs: the emotional, the cognitive and the social. All these

constructs contribute when the learner is confronted with the process of learning. With the introduction of ICT matters become even more complex as the learner is also transferred into the role of user. The user, must control and utilise the tools to enable him to complete the training. This added strain on the learner may cause “cognitive overload” due to the necessary control and concentration required by the learner to navigate the training and assessment which may lead to a reduction in concentration and effectiveness of learning. At the same time, by being more emerged in the process, the learner’s attention may be more closely drawn to the subject matter - he therefore becomes an active participant rather than a passive recipient of the training experience.

(b) Learning learner

The learner becomes more autonomous and active in the learning process. The learner is no longer a simple user. He is responsible for his training. As the learner is largely autonomous, within the constraints of the training activities as governed by the ICT system, the learner becomes responsible for planning, monitoring and successful completion of this training.

(c) Teacher learner

In this case it is the learner who controls or navigates the computer. Within a particular situation, the learner implements the variables that the machine will take into account and it is the learner who dictates the steps to be followed. Learners are active, they must understand its operation to be able to display the anticipated results. Learners feel superior by controlling the machine. This pre-supposes that the learner has the minimum amount of knowledge required to command the software.

(d) Taught learner

This is a more traditional form of teaching where the learner is not as engaged in the training, as the learner does not control the tools which are presenting the lesson to him. The learner is passive and is ignorant to the use of ICT. (Yassine, 2010:120).

Learners may not have any direct contact with the technological tools available in class. It is rather the teacher who manages the ICT in a purely transmissive way. Generally it is a teacher who presents the chapters or elements of the course through slides by using a computer.

The study performed by Yassine (2010:125) concluded that as the ICT develop, and depending on the ease of use of the tool, learners perceive themselves to become more in control of their own training. Learners become more conscious of the importance of ICT and do not regard themselves as simple passive users of technology anymore. The

intrinsic motivators of using ICT come from a positive experience and attitude towards ICT. The external motivators stem from the influence of others, to a certain extent the discipline being taught, but most influential is the teacher.

The teacher-learner relationship is the key link which brings these two factors together. According to Xiao (2012:374) there was an almost perfect alignment between the teachers on distance learning students in relation to the importance of the teacher-learner relationship, which was recognised by 65% of learners and 63% of teachers. Both teachers and learners viewed good rapport as the basis for a good teacher-learner relationship. A teacher who has a good rapport with learners often shows a genuine concern for them and is able to communicate effectively with them.

3.8.4 The Discipline

In a study conducted by Yassine (2010:124), it was concluded that 16% of the motivators for the use of ICT come from the discipline being studied or taught. Alternatively put: the use of ICT will be driven by certain disciplines more than by others purely as a result of the nature of the discipline. If students need to use ICT to achieve learning objectives for a particular discipline, the active interaction with and learning through ICT is much more effective. If the learning objectives for a particular discipline therefore lend themselves more to the use of ICT, the discipline will drive the use of ICT as the learner is much more engaged in the learning process as was discussed in more detail under section 3.8.3.3. Traditionally the environment for interaction with the ICT system was limited to the classroom environment, but with the introduction of mobile computing even the limits of a classroom environment do not apply anymore. Consider the fact that a geology student can for instance now enter his field work observations into an ICT system, whilst actually being in the field.

3.8.5 Organisational Factors and Barriers

3.8.5.1 Organisation

With tough competition, customer relationship management (CRM) is one of the most important tools a customer orientated organisation can utilise to maximise its competitive advantage. CRM tools/systems are mainly focused on gathering knowledge about the organisation's clients and, with this knowledge, to maximise the service delivery to customers by building up a relationship with the customer. Essentially this is a knowledge management system which consolidates information internal to the organisation and

external to the organisation by capturing and analysing customer spending patterns, preferences, behaviours and tracking all communication with customers. Numerous CRM systems have been implemented over the past years but not all of them have been successful. Customer relationship management is therefore one of the key strategic tools an organisation can use to manage the knowledge about their external customers. Garrido-Moreno & Padilla-Meléndez (2011:441) studied the impacts of knowledge management on the success rate of customer relationship management (CRM) systems. In this study they evaluated organisations according to the following criteria:

(a) The organisation's *KM capabilities* which included concepts such as knowledge acquisition and application and knowledge diffusion. The areas covered were the organisation's channels to enable ongoing communication; established processes to acquire knowledge about customers, products and competitors; the firm's ability to understand its customers' needs and the speed at which decisions are made based on this knowledge.

(b) *Organisational variables* such as employees, leadership and organisational structure. Under employees concepts such as employee qualification and resource availability; training programs; performance measurement and reward were considered. Regarding leadership, questions were asked around clarity of business objectives; the extent to which top management concerned CRM a top priority; top management's involvement in the implementation of a CRM strategy. Organisational structure explored whether the structure of the organisation was designed to follow customer centric approaches; the extent of two-way communication between different departments; the extent to which different departments worked together to achieve CRM objectives.

(c) The *CRM technology* being implemented in the firm's ability to support the technology.

(d) The organisation's *customer orientation* covering areas such as the business objectives and how orientated they are towards customer satisfaction, the extent to which the organisation monitors and assesses its level of commitment to serving the customer's needs, the extent to which the firm's competitive advantage is based on an understanding of the customer's needs amongst others.

Garrido-Moreno & Padilla-Meléndez (2011:442) in their empirical study concluded that, considering all the variables analysed, for the successful implementation of CRM the role of organisational factors such as leadership of top management, human resource

management, functional integration and organisational structure are fundamental. The findings showed that even if an organisation aquires the most advanced technology and tries to motivate customer centric orientation, but these initiatives are not integrated into the organisation and the organisation does not redesign its structure and processes and leadership is not involved and committed to the project, the CRM implementation will not be successful.

3.8.5.2 Incentives

In a study on the influence of intrinsic and extrinsic motivators on an individual's KS behaviour, Hung, et al. (2011:425) concluded that extrinsic motivators such as economic reward on its own may not be adequate motivators of KS. Economic reward together with reciprocity and altruism positively influenced KS satisfaction. The study found that the strongest incentive for both quantity and quality of KS was reputational feedback.

3.8.5.3 Barriers

As part of his literary review Hong, et al., (2011:14419) identified and tested the barriers to KS in an organisation as depicted in Table 3-3:

Table 3-3 Barriers to Knowledge Sharing in an Organisational Context

Type	Barrier	Description
Individual Barriers	Internal resistance	Passing on knowledge to colleagues or putting work results into a knowledge database may be considered as exposure
	Trust	If individuals do not trust the knowledge that they receive they are unlikely to make use of it
	Motivation	Some employees do not anticipate reciprocal benefits from transferring the knowledge
	A gap in awareness and knowledge	Some employees may only be aware of issues, not have any exposure/access to the knowledge base
Organisational Barriers	Language	A common language is required for effective knowledge transfer
	Conflict avoidance	An effort to avoid change and not risk too much - this may suppress the transfer of knowledge based on conflicting ideas to the norm

Type	Barrier	Description
	Bureaucracy	A high level of bureaucracy often produces approaches which result in a reduction of KS
	Distance	Geographical separation may cause different cultural environments. In some cultures face-to-face communication is most effective

Hong (2011:14424) tested these components in his study and found that of the individual barriers, internal resistance and motivation had the highest relative importance to KT satisfaction. The most important organisational barriers were identified as bureaucracy, conflict avoidance and language.

3.9 Summary

In this chapter we started at a high level glance of OL, we explored how KM ties into OL and explored the key component of any KM process: the point where the actual knowledge is transferred from one individual to the other, named KT. We dissected the act of KT into the components required for effective KT namely the teacher, the student, the subject matter and the organisational influences on the process of KT. The fact that successful KT and KM have little to do with technology but almost everything to do with the organisational and leadership culture of an organisation was evident in the empirical studies performed on CRM implementations.

In assessing the knowledge transfer practices and KS behaviour in a South African manufacturer, emphasis was placed on environmental factors such as organisational structure and leadership within the organisation, and less emphasis on the use of technology. The method of KT also needs to match the subject matter (or discipline) being taught as well as the student's and teacher's educational backgrounds.

CHAPTER 4: EMPIRICAL STUDY

4.1 Introduction

In a literature study on KS research performed over recent years, Wang & Noe (2010:116) summarised the areas of research as depicted in Figure 4-1.

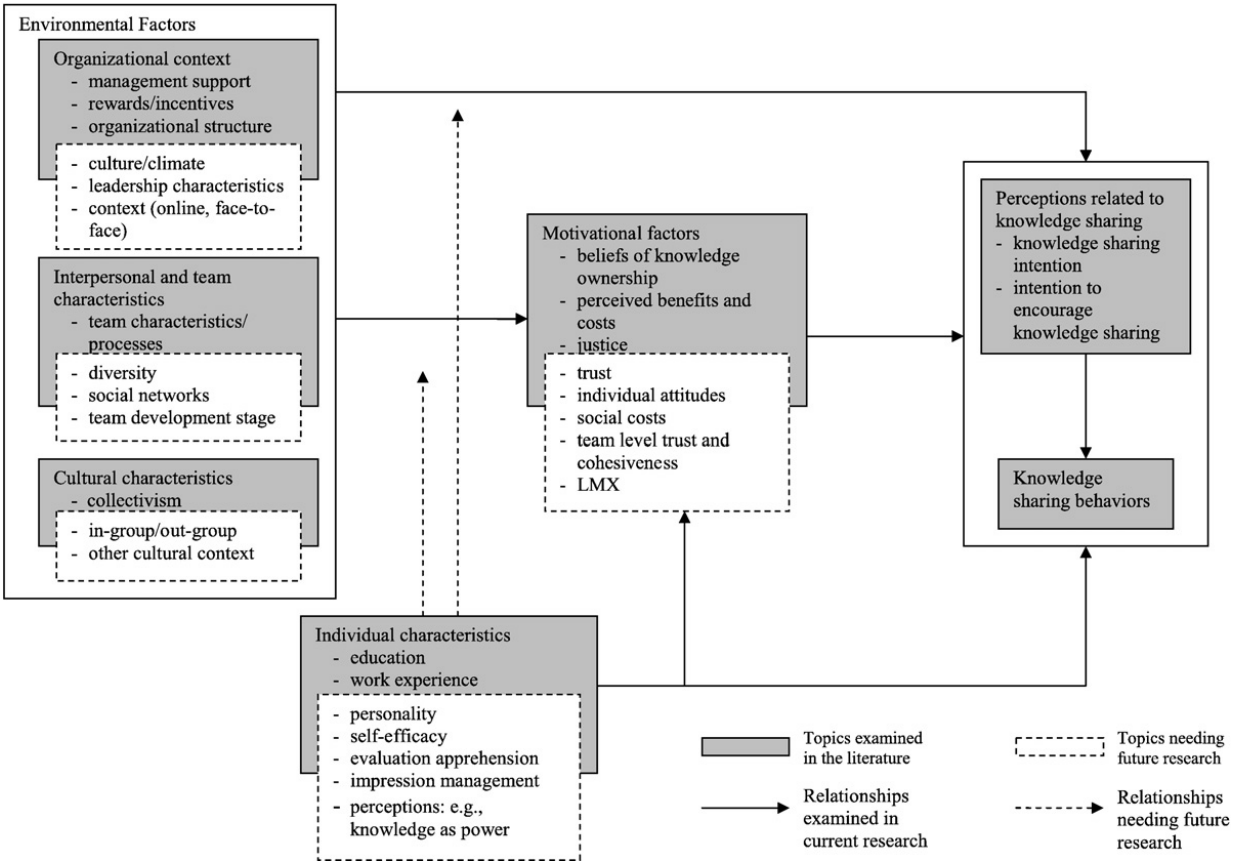

Figure 4-1 Framework of Knowledge Sharing Research
(Wang & Noe, 2010:116)

In this mini dissertation the framework as set out by Wang & Noe was used, even the topics which have not been researched yet, in an endeavour to cover the entire spectrum of influencers on successful KT behaviours.

4.2 Methodology Overview

(a) Based on the outcome of the literary review, a questionnaire was developed to assess the KS status of the organisation by considering the following:

- the organisational maturity and climate
- the extent to which KT practices are being used
- the ICT proficiency of the organisation

(b) Develop a relationship between the existing KT practices and the opportunity for and usability of KT practices at various levels of the organisation.

(c) Based on the organisational maturity and perceived opportunities for applying KT practices, to identify KT interventions with a high probability of success at various levels of the organisation.

4.3 Structure of the Questionnaire

As no questionnaire could be found which combines both the organisational factors as well as the potential KT practices, which could be used to improve the KT process in organisations, a high level questionnaire was developed to analyse KT practices within the context of organisational KM success factors. The detail of how the questionnaire was structured can be found in Table 6-1 under Annexure A. This section sets out how this questionnaire was constructed within the context of the objectives it aims to achieve.

4.3.1 Demographic Information

The demographic information gathered had the following significance:

- Age-group: to be able to analyse each age group's predisposition to the use of ICT as well as the perception of KM and learning in general.
- Departmental segmentation: This aims at segmenting the respondents into disciplines as certain disciplines may be more predisposed to experiential learning than others.
- Employment with the company: This aims to understand the extent to which the individual has been influenced by organisational factors. Employees with a short history with the organisation would be influenced by "groupthink".
- Highest level of education: this aims to understand the extent to which an individual has been trained. This however assumes that the individual is employed in his field of study.
- The current job grade: The "Patterson Classic" scales were used to compare various jobs, as this is an industry standard. The assumption is that as the job grading increases, the job becomes more about experiential knowledge and less about theoretical knowledge. This study aims to assess the perception of employees regarding this assumption.
- The number of direct reports: This is an indicator of the extent to which succession (and therefore KT) is possible as well as the method of KT. Mentoring may not be possible in the case of a specialist position as the new incumbent may start after the older person retires.

- Time in current position: This speaks to the extent to which the person has gained experience with the current job, and may affect the extent to which the person has knowledge to share.

4.3.2 Environmental Factors

The key objectives of these questions are to establish the employee's perception of the organisational, interpersonal and cultural characteristics which influence the organisation from a KT perspective. Components questioned were the following:

(a) Organisational context

- The extent to which management supports KS in the organisation
- Rewards and incentives in place to stimulate knowledge transfer
- Culture and climate of the organisation in the context of organisational learning
- Leadership and encouragement of KS initiatives

(b) Interpersonal and team characteristics

- Team Characteristics/Processes
- Team Development Stage

(c) Cultural characteristics

- Collectivism and the extent to which the team willingly shares knowledge and experience between each other.

Question 4 and 5 with their various sub questions aimed to assess the current perception of employees regarding the environmental factors. A five point Likert scale was used to evaluate the responses.

4.3.3 Individual Characteristics

Based on the literary reviews performed by Wang & Noe (2010:116) as illustrated in Figure 4-1, the following characteristics were analysed using a five point Likert scale with demographic questions as supplement to facilitate the analysis: education; work experience; personality; self-efficacy; evaluation comprehension; impression management; perceptions. These characteristics were tested in questions 6 through 10, with question 10 using a five point Likert scale. The detailed classification of these questions can be found under Annexure A - Table 6-1.

4.3.4 Motivational Factors and Perceptions Related to Knowledge Sharing

Questions 11 and 12 aim to establish employee's beliefs regarding KS and focuses on potential social and reputational impacts. The five point Likert scale aims to assess the employees' perceptions regarding their beliefs of knowledge ownership; perceived

benefits and costs of sharing knowledge; individual trust; social costs; team level trust and cohesiveness. It further analyses the individual's perception regarding KS intention and the intention of the organisation to encourage KS. A five point Likert scale was used for response selection. The detailed classification of these questions can be found under Annexure A - Table 6-1.

4.3.5 Method and Medium of Learning

Using a five point Likert scale, questions 13 to 15 aimed to understand the employees' perceptions regarding their preferred method of learning. It also aimed at establishing the perception of practical versus theoretical knowledge required to perform their jobs effectively. The objective was to identify the applicability and usefulness of tacit knowledge transfer practices, which are dealt with under the next section.

4.3.6 Tacit verses Explicit Knowledge

Question 16 aims to establish the individual's perception of the extent to which tacit (experience) knowledge is required in performing his/her job effectively. This is one of the key points to consider when deciding on a KT intervention as this will determine the KT practice which should be applied to that job/discipline/top level.

4.3.7 Knowledge Transfer Practices

Using the knowledge transfer practices as identified by DeLong (2004:122-129), using a three point Likert scale, question 17 to 19 seek to understand the employees' perception regarding the relevance and use of these KT practices in transferring knowledge in their jobs. More specifically question 17 is aimed at establishing a *baseline* for historic KT practices, question 18 aims to identify the perceived *opportunity* to utilise these KT practices and question 19 confronts the employee with the *practical use/application* of these KT practices in the context of his/her job discipline. Question 20 confronts the employee with the reality of potentially being part of the KT process and tests that employee's level of comfort in becoming part of the process. It more specifically tests the employee's willingness in the use of, and participation in the use of ICT for the benefits of the KM process.

4.3.8 Exposure to ICT

Question 21 through 24 establish a basic baseline of employee proficiency in using ICT. With the objective of using ICT as a medium for KM and KT, a high level of understanding and utilisation of ICT would be required.

4.4 Gathering of Data

The questionnaire was prepared using an online hosted questionnaire website. This website allows for anonymity, ease of use and forces the respondent to complete each question (no questions are skipped). The Internet link (URL) can be sent to potential respondents for direct capturing into the database. As all responses are collected online, data extraction and analysis is made simple and transcribing errors are eliminated. A copy of the questionnaire was also saved in a ".pdf" format for off-line electronic completion and printing purposes.

Employees were given the opportunity to complete the questionnaire in one of three ways:

(a) By clicking on the URL and completing the questionnaire online

(b) By opening the ".pdf" document and completing the questionnaire electronically

(c) By printing the document and completing it manually, after which it was collected and recaptured into the online system.

The target population covered employees from the selected organisation across all levels. An e-mail was sent out to all supervisors and other employees within the organisation who have access to e-mail. They were then asked to print and distribute the questionnaire to employees without access to email. Questionnaires were distributed on the annual "wellness day" for completion by shift workers the majority of whom do not have access to e-mail.

4.5 Study Population

This study was carried out at a medium-sized manufacturing company in South Africa including the entire workforce, but primarily focusing on junior, middle and senior management. Of the 231 permanent employees in the organisation 74 responded, but some of them exited the website before completing the entire questionnaire. Although these respondents did not complete all the questions, responses were used where they were given. The response count varied from 74 responses down to 67 and was indicated for each question. The response rate by management level is represented in Table 4-1

Table 4-1 Response Rate by Management Level

Management Level	Response Count	Employees per Level	Response Rate
Semi-Skilled	29	91	32%
Skilled & Junior Management	24	115	21%
Middle Management	15	20	75%
Senior Management	4	5	80%
Grand Total	**72**	**231**	**31%**

It will be noted that a high response rate was received from all management levels, although senior management only consists of four people, which may make statistical analysis difficult the response rate was 80% which gives a high level of reliance on the responses given. From Table 4-2 it can be appreciated that the response rate by discipline was quite high in the non-operational disciplines. Specialists and generally higher skilled employees can be found in these departments. The operational disciplines are also where most of the semi-skilled workforce is found - these employees did not form the primary focus of this study. The author is therefore confident that the appropriate response rate per discipline was received to formulate meaningful conclusions.

Table 4-2 Response Rate by Discipline

Discipline (Department)	Response Count	Employees per Discipline	Response Rate
Administration & Services	25	27	93%
Research & Development	8	12	67%
Engineering (Maintenance)	22	52	42%
Marketing, Sales & Distribution	3	7	43%
Operations, Raw Material Handling & Dispatch	16	133	12%
Grand Total	**74**	**231**	**32%**

The demographic characteristics of the sample are described in Table 4-3. It is evident from Table 4-3 that 62% of the respondents are between 40 and 50 years of age, 75% are employed in the Engineering, Finance, Operations and Research & Development disciplines. Jobs are mainly specialised and 49% do not have any subordinates. Of the respondents, 74% have more than five years' experience with the organisation and 47% have been in their current position for more than three years. Of the 74 responses, 54% had a higher degree or diploma.

4.6 Research Results - Industry Comparison Benchmark

Using the framework of KS research as illustrated in Figure 4-1 as an outline for the measuring instrument, detailed questions were designed to address each of the components of the framework of KS. For a detailed construct of the measuring instrument, please refer to Annexure A – Construct of the Questionnaire

Table 6-1

Table 4-3 Demographic Characteristics of Respondents

Characteristic	Number (N)	%
Age		
41 to 50	24	32%
31 to 40	22	30%
51 to 60	18	24%
21 to 30	9	12%
> 60	1	1%
Department		
Engineering (Maintenance)	23	32%
Finance & Administration	13	18%
Operations, Raw Material Handling & Dispatch	11	15%
Research & Development	8	11%
Procurement & Stores	5	7%
Projects	4	5%
Human Resources	3	4%
Marketing, Sales & Distribution	3	4%
IT	2	3%
SHEQ	1	1%
Direct Reports		
None	35	49%
1 to 2	11	15%
3 to 5	11	15%
6 to 8	6	8%
9 to 11	4	6%
More than 11	5	7%
Exposure to Environment		
Less than one year	6	8%
1 to 3 years	9	13%
3 to 5 years	4	6%
5 to 10 years	18	25%
More than 10 years	35	49%
Job Experience		
Less than one year	10	14%
1 to 3 years	18	25%
3 to 5 years	11	15%
5 to 10 years	23	32%
More than 10 years	10	14%
Job Grade		
C-Lower	24	33%
C-Upper	24	33%
B-Lower	4	6%
B-Upper	1	1%
D-Lower	12	17%
D-Upper	3	4%
E-Lower	2	3%
E-Upper & F	2	2%
Level of Education		
Grade 10	5	7%
Grade 12	28	39%
Technology Degree	18	25%
Degree	8	11%
Honours Degree	7	10%
Master’s Degree	6	8%

4.6.1 Ratings and Calculations

Where Likert scales were used, the ratings as indicated in Table 4-4 and Table 4-5 were applied. The ratings were based on the least (1) to the most (5) potential positive outcome on KT. Some of the questions were stated in the negative and the ratings were therefore inversed. The affected questions are indicated in Table 4-6.

Table 4-4 Five Point Likert Scale Ratings

Response	Rating
Disagree	1
Somewhat Disagree	2
I do not know	3
Somewhat Agree	4
Agree	5

Table 4-5 Three Point Likert Scale Ratings

Response			Rating
Not Used at All	Not Helpful at All	Not Easy to Develop	1
Used Seldom	Somewhat Helpful	Somewhat Easy to Develop	2
Used Frequently	Very Helpful	Very Easy to Develop	3

Table 4-6 Questions with Inverse Ratings

Question Number	Detailed Question
Question 04	There is a strong sense of competition between myself and my colleagues.
Question 05	In my team each member performs better on their own.
Question 10	My supervisor would look badly upon me if I made a mistake
Question 10	Others may think less of me if I made a mistake
Question 10	Others will laugh at me if I shared my experience/knowledge
Question 11	I will only be willing to share my knowledge if the other person shared his/her knowledge in return
Question 12	If I shared all my experience/knowledge with others, I will be retrenched as I may no longer be needed
Question 12	If I shared all my experience/knowledge with others, the team will not need me any more
Question 12	If I shared all my experience/knowledge with others, they will be promoted instead of me
Question 12	If I shared all my experience/knowledge with others, they will become better than me
Question 12	Others will criticize me if I shared my knowledge or experience
Question 17	KT Practices Baseline: Self Experience

Assigning a rating to each response allowed the use of the statistical analysis on the categorical variables. It also allows for industry benchmarking enabling one to compare categorised results by comparing the statistical mean for a particular category across

multiple organisations. Individual questions were categorised and grouped into categories and subcategories as indicated in Annexure A.

The results were analysed in the following categories:

- General Organisational Factors
- Knowledge Transfer Practices
- Information and Communication Technology Proficiency

4.6.2 General Organisational Factors

As all these factors used a five point Likert scale, the results of each category can be compared with another. These results can also be compared to that of other organisations and industries to be able to benchmark them against each other. Table 4-7 indicates the mean result per category. As the industry norm has not yet been established, a comparison of the organisation's high and low results, relative to its mean were discussed in more detail. All variances of more than 20% from the mean were highlighted in the Table 4-7. The mean result for general organisational factors was 3.89 indicating a high perception of KS maturity (based on the five point scale used, a 3 would be average). Based on responses, the following observations can be made:

- The lowest result of 2.52 was for rewards and incentives as employees are not rewarded for KS activities although there is a high perception of management support (4.03) and a fairly high reward expectation (3.16).
- Teamwork value scored a mean of 3.05, which is much lower than the mean for the organisation due to the perception of some employees that they perform better on their own than in a group context. This could be due to the extent of specialised jobs in the organisation. This is corroborated by the low results on collectivism of 3.04, which indicate that employees are more focused on individual performance reports than team rewards.
- KT participation willingness was fairly average, although below the mean, but was mostly influenced by the low result on willingness to "appear in a video" of 2.58. This was offset by the high score on personality of 4.1, indicating potential evaluation apprehension or uncertainty regarding the use of this ICT method.
- Employees have a high learning value perception of 4.7 and also a high sharing experience (or practice) of 4.69.
- There is a high willingness (4.62) to share knowledge.

Table 4-7 Organisational Factors

Factor	Response Count	Mean Result
Environmental Factors	73	3.66
Cultural Characteristics	73	3.04
Collectivism	73	3.04
Organisational Context	73	3.49
Exposure to Environment	72	3.93
KS Encouragement	73	3.79
Management Support	73	4.03
Reward Expectation	73	3.16
Rewards & Incentives	73	2.52
Team Characteristics	73	3.86
Individual KS Activities	73	4.52
Management Empowerment	73	4.11
Reciprocal KS Expectations	73	3.68
Team Cohesiveness	73	4.36
Team Communication	73	4.05
Team Competitiveness	73	3.26
Teamwork Value	73	3.05
Individual Characteristics	74	3.73
Age Group	74	2.73
Age	74	2.73
Evaluation Apprehension	72	3.85
Organisational Value	72	3.32
Social Value	72	4.38
Impression Management	72	3.42
Management Impression	72	3.42
Personality	72	4.10
Ease of Communication	72	4.36
I am Outgoing	72	3.93
Leadership	72	4.01
KT Participation Willingness	67	3.35
Appearing in a Video of Your Presentation	67	2.58
Being Interviewed about Your Knowledge	67	3.73
Presenting Your Experience to Teammates	67	3.75
Motivational Factors	71	4.47
Justice	71	3.94
Reciprocal KS Expectations	71	3.94
Knowledge Ownership	71	4.65
Sharing Experience	71	4.69
Willingness	71	4.62
Perceived Benefits and Costs	71	4.72
Learning Value Perception	71	4.72
Perceived Benefits of KS	71	4.63
Sharing Value Perception	71	4.63
Trust	71	4.34
Team Capability Perception	71	4.44
Team Honesty and Trust	71	4.24
Perceptions	68	4.09
Evaluation Apprehension	68	3.75
Social Value	68	3.75
Interpersonal Trust	68	4.43
Team Honesty and Trust	68	4.43

Table 4 7 Organisational Factors (continued)

Factor	Response Count	Mean Result
Perceived Benefits and Costs	68	4.09
Knowledge Integrity	68	4.26
Learning Value Perception	68	4.37
Management Impression	68	3.84
Teamwork Value	68	4.36
The Discipline	67	3.85
Extent of Tacit Knowledge	67	3.85
Tacit Content	67	3.85
Grand Total	**74**	**3.89**

4.6.3 Knowledge Transfer Practices

When respondents were asked how much theoretical knowledge versus experience was required to perform their jobs, 72% of the respondents indicated that at least 60% experiential (tacit) knowledge was required to perform their jobs effectively as presented in Table 4-8. This highlights the importance of capturing and transferring tacit knowledge in this organisation.

Table 4-8 Perceived Tacit Knowledge Required for Job

Perceived extent of experience required for effective job execution	Response Percent	Response Count
20% Theoretical Knowledge - 80% Experience	25.4%	17
40% Theoretical Knowledge - 60% Experience	46.3%	31
60% Theoretical Knowledge - 40% Experience	19.4%	13
80% Theoretical Knowledge - 20% Experience	6.0%	4
100% Theoretical Knowledge - 0% Experience	3.0%	2

When respondents were asked what the comfort levels were with knowledge sharing using various media of KT, an average of 67% indicated that they were comfortable with presenting their experience in a written document, presentation or being interviewed. This indicates a positive willingness to participate in the process of KT, even using electronic media. As Table 4-9 indicates, when confronted with the possibility of appearing in a video, only 28% of the respondents were still comfortable. This correlates with the low scores achieved in Question 10 - Evaluation Apprehension as indicated in Table 6-2 in Annexure C. Employees may feel that the “mistakes” they make during their presentation will be made permanent through the use of a video recorder. When using electronic KM media, such as video recordings, care should be taken to reduce employees’ evaluation apprehension.

Table 4-9 KT Participation Willingness

Media	Very Uncomfortable	Somewhat Uncomfortable	I am not sure	Somewhat Comfortable	Very Comfortable	Response Count
Writing a document about your experience / knowledge (i.e. Microsoft Word or PowerPoint)	3%	21%	9%	33%	34%	67
Presenting your experience / knowledge to your teammates	7%	15%	10%	30%	37%	67
Being interviewed about your experience / knowledge	3%	21%	7%	37%	31%	67
Appearing in a Video of your presentation / interview	27%	30%	15%	15%	13%	67

Focusing more specifically on the perceived use of KT practices, Table 4-10 indicates that best practice, documented processes and on-the-job training are mostly used for KT in this company. This supports the background information regarding the ISO certification of the organisation. Except for on-the-job training, which may have some tacit knowledge transfer, the others are mainly focused on transferring explicit knowledge. As this was a three-point scale, achieving a result of 2 would be average. The result of 2.25 is therefore above average. Once these measuring tools are used more widely in industry, benchmarks for this industry can be established. The statistical sample standard deviation (Std.Dev) and the statistical sample variance (Var.) of the results were calculated to establish the extent to which responses varied from the mean. The standard deviation of less than one indicated that the results did not differ significantly from the mean. Establishing a baseline KT practices were done in question 17, the results of which are shown in this table. Questions 18 and 19 then aimed at establishing the knowledge transfer opportunity which is discussed more specifically in Chapter 0

Table 4-10 Baseline KT Practices

KT Practice	Count	Mean Result	Std. Dev Result	Var. Result	Mean Response	Mean Response Description
KT Practices Baseline						
After Action Reviews	67	2.30	0.65	0.42	2	Used Seldom
Best Practices	67	2.63	0.55	0.30	3	Used Frequently
Communities Of Practice	67	1.91	0.69	0.48	2	Used Seldom
Documented Processes	67	2.51	0.64	0.41	3	Used Frequently
Expert Interviews	67	1.94	0.74	0.54	2	Used Seldom
Internship	67	2.09	0.79	0.63	2	Used Seldom
Job Aids	67	2.39	0.63	0.39	2	Used Seldom
Mentoring	67	2.19	0.76	0.58	2	Used Seldom
On-The-Job Training	67	2.70	0.58	0.33	3	Used Frequently
Own Experience	67	1.88	0.81	0.65	2	Used Seldom
Total (Mean)	67	2.25	0.74	0.55	2	Used Seldom

4.6.4 Information and Communication Technology Proficiency

When employees were asked how much time they spent reading and using a personal computer, as indicated in Table 4-11, it was interesting to note that 66% of employees spend between 4 and 8 hours per day using a personal computer and 60% spend between 2 and 4 hours reading. The high level of personal computer use indicates a high proficiency in the use of ICT and therefore would enable the use of ICT for KM.

Table 4-11 Time Spent Reading and Using a Computer

Time	Reading		Computer	
	Response Percent	Response Count	Response Percent	Response Count
0 Hours	7.5%	5	7.5%	5
1 Hours	17.9%	12	6.0%	4
2 Hours	23.9%	16	11.9%	8
4 Hours	28.4%	19	22.4%	15
8 Hours	19.4%	13	43.3%	29
More than 10 Hours	3.0%	2	9.0%	6

Question 23 was aimed at establishing the extent to which various forms of ICT were used by employees. Table 4-12 highlights that business tools such as e-mail, Windows and Google received a high familiarity score whereas more than 50% of respondents were not familiar with social media and videoconferencing. The latter could easily be used for a quick winning strategy to capture employees' experiences on video or utilise collaborative tools as part of communities-of-practice interactions. Educating employees

on the use of these tools would be imperative in ensuring proper KM and KT, should these be used.

Table 4-12 Perceived ICT Proficiency

Answer Options	Very familiar	Somewhat familiar	Not familiar at all	Response Count
e-mail	97%	0%	3%	67
Google	82%	15%	3%	67
Windows	82%	15%	3%	67
Facebook	49%	21%	30%	67
Skype	18%	25%	57%	67
Twitter	15%	33%	52%	67

4.7 Research Results - KT Intervention Opportunity

Thus far we have only evaluated the organisation on its current KS maturity levels, based on the high level factors considered in Chapter 4.6. In this section we focus on the more specialised area of KT, not only the benchmark, but also the internally perceived opportunity of utilising some of the KT practices better. Question 17 established the perceived baseline KT practices used in the organisation as discussed under 4.6.3. Question 18 & 19 further explored the perceived opportunity to utilise these practices and assessed the perceived ease of application (or implementation) of these KT practices.

4.7.1 Ratings and Calculations

The responses of questions 17, 18 and 19 were rated using the scale as indicated in section 4.6.1. Using these KT perception ratings, and for each KT practice, the mean result rating was calculated. The mean result of each question was then used to perform the calculation as per Table 4-13. The result of this calculation produces the relative KT intervention opportunity. These results were then used to prioritise KT interventions to assess the highest KT intervention effectiveness.

Table 4-13 Calculation of KT Intervention Opportunity

Calculation	Source:
	The perceived opportunity to utilise (mean result of question 18)
Less:	The baseline rating (mean result of question 17)
Multiply by:	The ease of application (mean result of question 19)
=	**The KT intervention opportunity**

4.7.2 Knowledge Transfer Practices

Table 4-14 KT Practice Intervention Opportunity - Overall

Mean Responses					Stated in Response Description		
	Baseline	Opportunity to Utilise	Ease of Application	KT Intervention Opportunity	Baseline	Opportunity to Utilise	Ease of Application
Formal Training	**1.88**	**2.63**	**2.40**	**1.91**	Used Seldom	Very Helpful	Somewhat Easy to Develop
Mentoring	**2.19**	**2.79**	**2.61**	**1.51**	Used Seldom	Very Helpful	Very Easy to Develop
Expert Interviews	**1.94**	**2.60**	**2.25**	**1.51**	Used Seldom	Very Helpful	Somewhat Easy to Develop
Internship	**2.09**	**2.64**	**2.46**	**1.33**	Used Seldom	Very Helpful	Somewhat Easy to Develop
Communities Of Practice	**1.91**	**2.36**	**2.10**	**1.03**	Used Seldom	Somewhat Helpful	Somewhat Easy to Develop
After Action Reviews	**2.30**	**2.69**	**2.42**	**1.03**	Used Seldom	Very Helpful	Somewhat Easy to Develop
Job Aids	**2.39**	**2.72**	**2.45**	**0.85**	Used Seldom	Very Helpful	Somewhat Easy to Develop
On-The-Job Training	**2.70**	**2.91**	**2.78**	**0.57**	Used Frequently	Very Helpful	Very Easy to Develop
Best Practices	**2.63**	**2.85**	**2.52**	**0.52**	Used Frequently	Very Helpful	Very Easy to Develop
Documented Processes	**2.51**	**2.64**	**2.42**	**0.42**	Used Frequently	Very Helpful	Somewhat Easy to Develop
Total (Mean)	**2.25**	**2.68**	**2.44**	**1.07**	Used Seldom	Very Helpful	Somewhat Easy to Develop

Table 4-14 highlights the overall KT intervention opportunity by KT practice. It highlights the large opportunity for formal training, mainly as a result of the low baseline rating. Employees are of the perception that a large opportunity exists to utilise formal training better. In their opinion, it is somewhat easy to develop formalised training programs. Documented processes provide the lowest opportunity mainly as a result of the high baseline mean of 2.51. There is only a slight perceived increase in helpfulness of additional process documentation which therefore limits the KT intervention opportunity. This is as expected due to the mature state of the organisation's quality systems - refer to the organisation's ISO certification under Chapter 2. The calculated mean responses were restated in the original response description by rounding them to the nearest integer to give the reader an indication of the mean response per KT practice.

4.7.2.1 Implicit and Explicit KT Intervention Opportunity

When the responses collected are grouped by implicit and explicit practices (as depicted in Figure 3-2), the KT and KM objectives can more easily be defined. Using Table 4-15, it is clear that should management want to drive an implicit (tacit) KT and KM intervention, mentoring and expert interviews would be the most effective manner to achieve KT. If the need is more explicit knowledge, the most effective KT practice would be formal training.

Table 4-15 Implicit & Explicit KT Perception

Mean Responses					Stated in Response Description		
	Baseline	Opportunity to Utilise	Ease of Application	KT Intervention Opportunity	Baseline	Opportunity to Utilise	Ease of Application
Implicit	**2.19**	**2.66**	**2.44**	**1.16**	Used Seldom	Very Helpful	Somewhat Easy to Develop
Mentoring	2.19	2.79	2.61	1.51	Used Seldom	Very Helpful	Very Easy to Develop
Expert Interviews	1.94	2.60	2.25	1.51	Used Seldom	Very Helpful	Somewhat Easy to Develop
Internship	2.09	2.64	2.46	1.33	Used Seldom	Very Helpful	Somewhat Easy to Develop
After Action Reviews	2.30	2.69	2.42	1.03	Used Seldom	Very Helpful	Somewhat Easy to Develop
Communities Of Practice	1.91	2.36	2.10	1.03	Used Seldom	Somewhat Helpful	Somewhat Easy to Develop
On-The-Job Training	2.70	2.91	2.78	0.57	Used Frequently	Very Helpful	Very Easy to Develop
Explicit	**2.35**	**2.71**	**2.45**	**0.93**	Used Seldom	Very Helpful	Somewhat Easy to Develop
Formal Training	1.88	2.63	2.40	1.91	Used Seldom	Very Helpful	Somewhat Easy to Develop
Job Aids	2.39	2.72	2.45	0.85	Used Seldom	Very Helpful	Somewhat Easy to Develop
Best Practices	2.63	2.85	2.52	0.52	Used Frequently	Very Helpful	Very Easy to Develop
Documented Processes	2.51	2.64	2.42	0.42	Used Frequently	Very Helpful	Somewhat Easy to Develop
Total (Mean)	**2.25**	**2.68**	**2.44**	**1.07**	Used Seldom	Very Helpful	Somewhat Easy to Develop

4.7.2.2 KT Intervention Opportunity by Discipline

When the responses are analysed by discipline, management can focus on specific KT practices for the targeted disciplines. In Table 4-16 the top three and the bottom KT intervention opportunity rankings per discipline were listed. It is evident that the largest opportunity lays in the operations departments with expert interviews and after action reviews forming the most significant opportunities. On-the-job training may not achieve the desired results due to the maturity of this practice as illustrated by the baseline score. In the marketing discipline, the baseline mean of formal training is at the highest level. The opportunity to utilise this further is seen as lower than the baseline, causing the KT intervention opportunity to be negative. This may indicate that employees are over trained and under experienced - if the KT intervention opportunity is read with the high intervention opportunity of “expert interviews” and “internships” for the same discipline.

Table 4-16 KT Intervention by Discipline

Mean Response	Baseline	Opportunity to Utilise	Ease of Application	KT Intervention Opportunity
Operations, Raw Material Handling & Dispatch	**2.30**	**2.80**	**2.44**	**1.22**
Expert Interviews	1.86	2.86	2.43	2.50
After Action Reviews	2.07	2.71	2.57	1.79
Mentoring	2.14	2.93	2.36	1.79
On-The-Job Training	2.79	2.93	2.71	0.43
Administrative & Services	**2.16**	**2.61**	**2.31**	**1.07**
Mentoring	2.13	2.83	2.61	1.78
Internship	1.78	2.43	2.39	1.57
Formal Training	1.83	2.39	2.26	1.35
Documented Processes	2.48	2.48	2.30	0.09
Engineering (Maintenance)	**2.27**	**2.67**	**2.49**	**1.06**
Formal Training	1.67	2.76	2.57	2.95
Mentoring	2.29	2.71	2.76	1.19
Job Aids	2.38	2.76	2.52	1.10
On-The-Job Training	2.76	2.90	2.81	0.43
Marketing, Sales & Distribution	**2.35**	**2.75**	**2.50**	**0.90**
Expert Interviews	1.00	2.50	2.00	3.50
Internship	1.00	2.50	2.00	3.00
Mentoring	1.50	2.50	2.50	2.50
Formal Training	3.00	2.50	2.50	-1.00
Research & Development	**2.40**	**2.70**	**2.70**	**0.81**
Communities Of Practice	1.71	2.43	2.57	1.86
Formal Training	2.00	2.57	2.43	1.71
Internship	2.29	2.86	2.71	1.71
Documented Processes	2.71	2.71	3.00	0.00
Total (Mean)	**2.25**	**2.68**	**2.44**	**1.07**

4.7.2.3 KT Intervention Opportunity by Management Level

Table 4-17 shows responses by management level, with the top three and the bottom KT intervention opportunity per practice listed. From this it is evident that the largest KT intervention opportunity exists with middle management and thereafter senior management. The most effective KT practices in both cases are perceived to be mentoring. Middle management feels that there is an opportunity for formal training and internships whereas they have a perception that best practices are at a very high level, and therefore are not perceived to have any additional opportunities to utilise. Semi-skilled levels would appear to benefit most from expert interviews, formal training and mentoring, whereas there is almost no benefit in exploiting the documentation of processes further.

Table 4-17 KT Intervention by Management Level

Mean Responses	Baseline	Opportunity to Utilise	Ease of Application	KT Intervention Opportunity
Semi-Skilled	**2.30**	**2.68**	**2.52**	**0.99**
Expert Interviews	1.71	2.50	2.25	1.93
Formal Training	2.00	2.64	2.54	1.89
Mentoring	2.32	2.82	2.68	1.21
Documented Processes	2.50	2.57	2.39	0.18
Junior Management	**2.34**	**2.64**	**2.34**	**0.72**
Formal Training	1.90	2.62	2.38	1.81
Mentoring	2.19	2.71	2.43	1.24
Internship	2.05	2.62	2.24	1.14
On-The-Job Training	2.90	2.90	2.71	0.05
Middle Management	**2.11**	**2.79**	**2.50**	**1.69**
Mentoring	2.07	2.86	2.79	2.21
Formal Training	1.79	2.79	2.36	2.21
Internship	1.93	2.71	2.50	2.14
Best Practices	2.43	2.79	2.43	0.71
Senior Management	**2.00**	**2.58**	**2.23**	**1.25**
Mentoring	1.75	2.75	2.50	2.50
After Action Reviews	2.00	2.75	2.50	2.25
Expert Interviews	1.75	2.75	2.50	2.25
Documented Processes	2.50	2.50	2.00	0.00
Total (Mean)	**2.25**	**2.68**	**2.44**	**1.07**

4.8 Summary

This chapter explained how the empirical study was conducted, the measuring instrument was structured and how the data was gathered. It elaborated on the composition of the study population and highlighted reliability of the responses. The responses were then analysed with the following objectives:

(a) Performing general benchmark evaluations of the organisation's maturity, which are comparable with other organisations and industries. It measured the following dimensions: General Organisational Factors; Knowledge Transfer Practices and Information and Communication Technology Proficiency

(b) An evaluation of the potential KT intervention opportunities, measured against the benchmark as described above.

CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

In this chapter, conclusions regarding the theoretical and empirical objectives are made. The limitations of the research are emphasised and recommendations are made to the manufacturing organisation as well for future research.

5.2 General Conclusions

Chapter 4 provided discussions on the results of the research. In this chapter the conclusions on the findings made in chapter 4 will be highlighted.

The result of the organisation can be used as a first indicator of the status of knowledge transfer practices and knowledge sharing behaviour in a South African manufacturer. As the measuring tool was developed specifically for the objectives of this study, and tested within the one organisation, generalised South African and industry conclusions cannot be drawn. Once this measuring tool is used more widely in industry, benchmarks for this industry can be established.

5.2.1 Conclusions on the Organisation

Based on the measuring tool used, the organisation achieved a high score on all factors assessed. This indicates a very healthy KS environment with a high probability of KM intervention success. The following highlights some of the opportunities for improvement and some of the stronger characteristics of the organisation.

5.2.1.1 General Organisational Factors

The mean result for general organisational factors indicated a high perception of KS maturity. Employees are not rewarded for KS activities although there is a high perception of management support and a fairly high reward expectation. Some employees perceive that they perform better on their own than in a group context. This could be due to the extent of specialised jobs in the organisation. KT participation willingness was limited by the perceived evaluation apprehension or uncertainty regarding the use of video as an ICT media. Employees have a high learning value perception and a high willingness to share knowledge.

5.2.1.2 Knowledge Transfer Practices

The majority of respondents indicated that at least 60% experiential (tacit) knowledge was required to perform their jobs effectively. This highlights the importance of capturing and transferring tacit knowledge in this organisation. Best practice, documented processes

and on-the-job training are mostly used for KT in this organisation. Except for on-the-job training, which may have some tacit knowledge transfer, the others are mainly focused on transferring explicit knowledge.

5.2.1.3 Information and Communication Technology Proficiency

The results indicated that 66% of employees spend between 4 and 8 hours per day using a personal computer and 60% spend between 2 and 4 hours reading. The high level of personal computer use indicates a high proficiency in the use of ICT and therefore should enable the use of ICT for KM. Business tools such as e-mail, operating systems and Internet search engines received a high familiarity score whereas more than 50% of respondents were not familiar with social media and videoconferencing technologies.

5.3 Recommendations

5.3.1 Recommendations to the Organisation

Specific focus was placed on KT practices and the opportunities that there may be within the organisation to improve these KT practices, with a specific focus on implicit knowledge transfer. Based on the survey results, should management want to drive implicit (tacit) KT and KM interventions, mentoring and expert interviews would be the most effective manner to achieve implicit KT. In *Mentoring*, an experienced, skilled person (mentor) is paired with a lesser skilled or experienced person (protégé), with the goal of developing or strengthening the competencies of the protégé. The protégé will then record his learning through the use of ICT and for review by the mentor and subsequent storage in the KM system. *Expert Interviews* are sessions where one or more people who are considered experts in a particular subject, policy, or process meet with others to share knowledge. This KT practice could easily be recorded for the purposes of KM either through electronic documentation/presentation or through the use of video recording technologies.

Social media and videoconferencing technologies could easily be used for a quick winning strategy to capture employees' experiences on video or utilise collaborative tools as part of communities-of-practice interactions. Educating and familiarising employees on the use of these tools would be imperative in ensuring proper KM and KT, should these be used. The largest barrier in achieving this would be evaluation apprehension regarding the use of video recording technologies. This could be addressed by setting a few ground rules on "not criticising" employees for making presentation mistakes and senior management appearing in some of the initial recordings. These rules should not

undermine the quality of the subject matter, but should be alleviating any fear of embarrassment on the part of the presenter. When the responses were analysed by discipline, it was evident that the largest opportunity lays in the operations departments with expert interviews and after action reviews forming the most significant opportunities. *After Action Reviews* are a way to identify, analyse, and capture experiences, to determine what worked well and what needs improvement, in order for others to learn from those experiences. The results of the marketing discipline indicated that employees may be over trained and under experienced this creates the opportunity for the use of expert interviews and mentorship. When responses are analysed by management level, it is evident that the largest KT intervention opportunity exists within middle management and thereafter senior management. The most effective KT practices in both cases are perceived to be mentoring. As with any intervention initiative, results should be measured and frequently monitored. The measuring tool developed for this study can be used to achieve the intended monitoring which will then lead to the adaptation of intervention actions and to align them with the organisational objectives.

5.3.2 Recommendations for future research

The field of knowledge sharing, especially within the context of ICT, is a fairly new field of study. This limits the extent to which research can be used to facilitate the practical application of KS and KM interventions. This study attempted to establish a standardised measuring instrument, which could be used to benchmark an organisation and organisational disciplines against industry peers, but based on the limited research, the following needs to be researched further:

(a) Additional factors influencing positive KS behaviour need to be explored in order to confirm a holistic approach to KS behaviour.

(b) The interrelationship of the holistic knowledge sharing behaviour factors needs to be assessed.

(c) The measuring instrument needs to be used across multiple organisations to be able to give it an industry and discipline benchmarking benefit.

5.4 Achievement of the Objectives of the Study

This study was expected to assist organisations with the identification of intervention opportunities for implementing KM using ICT.

The primary objective of the study was achieved as the KT intervention opportunity, based on the perception that the most effective method of transferring knowledge at various

organisational levels, for the organisation and the scope of this study, was identified. The general organisational KT culture, its ICT proficiency and the factors which might constrain the effective transfer and management of knowledge were assessed and identified.

5.5 Summary

This study achieved its objectives by assessing the KS and KT practices of a manufacturing organisation and by enabling the possibility for industry benchmarks to be established through the use of the measuring instrument which was developed specifically for this research. South African and more specifically industry, assertions cannot be made at this time due to the limited scope of the research.

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ANNEXURES

ANNEXURE A – CONSTRUCT OF THE QUESTIONNAIRE

Table 6-1 Construct of the Questionnaire

Area	Factor	Question Number	Context
Environmental Factors	Cultural Characteristics	Question 04	Collectivism
	Organisational Context	Question 03	Exposure to Environment
		Question 04	KS Encouragement
			Management support
			Reward expectation
			Rewards & Incentives
	Team Characteristics	Question 04	Individual KS Activities
			Reciprocal KS Expectations
			Team competitiveness
		Question 05	Management empowerment
			Team cohesiveness
			Team communication
			Teamwork value
Individual Characteristics	Age group	Question 01	Age
	Education	Question 06	Level of Education
	Evaluation Apprehension	Question 10	Organisational Value
			Social Value
	Impression Management	Question 10	Management Impression
	Job Grade	Question 07	Job Grade
	Personality	Question 10	Ease of Communication
			I am outgoing
			Leadership
	Work Experience	Question 09	Job Experience
Motivational Factors	Justice	Question 11	Reciprocal KS Expectations
	Knowledge Ownership	Question 11	Sharing Experience
			Willingness
	Perceived Benefits and Costs	Question 11	Learning Value Perception
	Perceived Benefits of KS	Question 11	Sharing Value Perception
	Trust	Question 11	Team Capability Perception
			Team Honesty and Trust
Perceptions	Evaluation Apprehension	Question 12	Social Value
	Interpersonal Trust	Question 12	Team Honesty and Trust
	Perceived Benefits and Costs	Question 12	Knowledge Integrity
			Learning Value Perception
			Management Impression
			Teamwork value
The Discipline	Degree of Specialisation	Question 08	Direct Reports
	Discipline	Question 02	Department
			Department (Other)
	Extent of Tacit Knowledge	Question 16	Tacit Content
	Learning Preference	Question 13	Preferred Method
		Question 14	Practical Method
		Question 15	Computer-based Media
			Visual Media
			Written Media

ANNEXURE A – CONSTRUCT OF THE QUESTIONNAIRE (CONT.)

Area	Factor	Question Number	Context
ICT Proficiency	e-mail	Question 23	e-mail
	Facebook	Question 23	Facebook
	Google	Question 23	Google
	ICT Exposure	Question 22	ICT Exposure
	Questionnaire collection medium	Question 24	Collection Medium
	Reading Exposure	Question 21	Reading Exposure
	Skype	Question 23	Skype
	Twitter	Question 23	Twitter
	Windows	Question 23	Windows
KT Participation Willingness	Appearing in a Video of your presentation	Question 20	Appearing in a Video of your Presentation
	Being interviewed about your knowledge	Question 20	Being Interviewed about your Knowledge
	Presenting your experience to your teammates	Question 20	Presenting your Experience to your Teammates
	Writing a document about your Experience	Question 20	Writing a document about your Experience
KT Practices Baseline	After Action Reviews	Question 17	After Action Reviews
	Best Practices	Question 17	Best Practices
	Communities Of Practice	Question 17	Communities of Practice
	Documented Processes	Question 17	Documented Processes
	Expert Interviews	Question 17	Expert Interviews
	Internship	Question 17	Internship
	Job Aids	Question 17	Job Aids
	Mentoring	Question 17	Mentoring
	On-The-Job Training	Question 17	On-The-Job Training
	Own Experience	Question 17	Own Experience
KT Practical Application	After Action Reviews	Question 19	After Action Reviews
	Best Practices	Question 19	Best Practices
	Communities Of Practice	Question 19	Communities Of Practice
	Documented Processes	Question 19	Documented Processes
	Expert Interviews	Question 19	Expert Interviews
	Formal Training	Question 19	Formal Training
	Internship	Question 19	Internship
	Job Aids	Question 19	Job Aids
	Mentoring	Question 19	Mentoring
	On-The-Job Training	Question 19	On-The-Job Training
KT Practices Opportunity	After Action Reviews	Question 18	After Action Reviews
	Best Practices	Question 18	Best Practices
	Communities Of Practice	Question 18	Communities Of Practice
	Documented Processes	Question 18	Documented Processes
	Expert Interviews	Question 18	Expert Interviews
	Formal Training	Question 18	Formal Training
	Internship	Question 18	Internship
	Job Aids	Question 18	Job Aids
	Mentoring	Question 18	Mentoring
	On-The-Job Training	Question 18	On-The-Job Training

ANNEXURE B – THE QUESTIONNAIRE

Learning and Knowledge Transfer

Introduction

Dear colleague,

As part of my MBA studies, I'm researching perceptions around effective knowledge transfer in manufacturing companies such as yours. If you would you be so kind to assist us by completing the research questions in the pages following.

This link connects directly into an independent database, all responses will be treated anonymously and confidentially - you will not be asked to identify yourself.

There are 24 questions: The survey should take around 15 minutes to complete but may take longer depending on the amount of time taken to reflect on the questions.

The status bar at the top of the page will indicate your progress during the questionnaire, please complete the entire set of questions.

Read the questions carefully and give your honest opinion.

We would like to thank you for your participation in advance.

If I may be so bold as to ask to have it completed by 12:00 Monday 29 September.

Demographic Information

We require some demographic information to analyse the responses meaningfully. This information will not be used to identify you as an individual, but will be used to group responses with similar characteristics.

1. What is your age group?

- ◯ < 21
- ◯ 21 to 30
- ◯ 31 to 40
- ◯ 41 to 50
- ◯ 51 to 60
- ◯ > 60

2. Which department do you work for?

- ◯ Operations, Raw Material Handling & Dispatch
- ◯ Engineering (Maintenance)
- ◯ Projects
- ◯ Research & Development
- ◯ Finance & Administrative
- ◯ Marketing, Sales & Distribution
- ◯ Procurement & Stores
- ◯ Human Resources
- ◯ IT
- ◯ Other (please specify)

Environmental factors

ANNEXURE B – THE QUESTIONNAIRE (CONTINUED)

Learning and Knowledge Transfer

3. How long have you worked for your current company?

- ◯ Less than one year
- ◯ 1 to 3 years
- ◯ 3 to 5 years
- ◯ 5 to 10 years
- ◯ More than 10 years

4. Please indicate if you agree/disagree with the following statements....

Please mark each question with the most appropriate answer.

	Agree	Somewhat Agree	I do not know	Somewhat Disagree	Disagree
Management supports knowledge sharing in the organisation.	◯	◯	◯	◯	◯
If I share my knowledge and experience with the group I should be rewarded.	◯	◯	◯	◯	◯
If I share my knowledge and experience with the group the group should be rewarded.	◯	◯	◯	◯	◯
There is a strong sense of competition between myself and my colleagues.	◯	◯	◯	◯	◯
I am incentivised to share knowledge.	◯	◯	◯	◯	◯
Our organisation encourages new ideas and learning even if they fail.	◯	◯	◯	◯	◯
I find that if I share information or knowledge with team members or others in the organisation they return the favor by sharing some experiences/knowledge with me.	◯	◯	◯	◯	◯
I often share my knowledge and experience with others.	◯	◯	◯	◯	◯

5. Please indicate if you agree/disagree with the following statements....

	Agree	Somewhat Agree	I do not know	Somewhat Disagree	Disagree
My manager empowers me to make my own decisions (within reason).	◯	◯	◯	◯	◯
My team faces challenges together.	◯	◯	◯	◯	◯
In my team each member performs better on their own.	◯	◯	◯	◯	◯
As a team we communicate very well.	◯	◯	◯	◯	◯

Individual Characteristics

6. What is the highest level of education you have completed?

- ◯ Grade 7
- ◯ Grade 10
- ◯ Grade 12
- ◯ Technology Degree
- ◯ Degree
- ◯ Honours Degree
- ◯ Masters Degree
- ◯ Doctorate

ANNEXURE B – THE QUESTIONNAIRE (CONTINUED)

Learning and Knowledge Transfer

7. What is your current job grade? (Patterson Scale)

- ◯ B-Lower
- ◯ B-Upper
- ◯ C-Lower
- ◯ C-Upper
- ◯ D-Lower
- ◯ D-Upper
- ◯ E-Lower
- ◯ E-Upper
- ◯ F-Lower

8. How many people report DIRECTLY to you?

- ◯ None
- ◯ 1 to 2
- ◯ 3 to 5
- ◯ 6 to 8
- ◯ 9 to 11
- ◯ More than 11

9. How long have you been in your current position?

- ◯ Less than one year
- ◯ 1 to 3 years
- ◯ 3 to 5 years
- ◯ 5 to 10 years
- ◯ More than 10 years

10. Please indicate if you agree/disagree with the following statements....

	Agree	Somewhat Agree	I do not know	Somewhat Disagree	Disagree
I am outgoing	◯	◯	◯	◯	◯
I easily communicate with others	◯	◯	◯	◯	◯
Others listen to me	◯	◯	◯	◯	◯
Others may think less of me if I make a mistake	◯	◯	◯	◯	◯
My supervisor would look badly upon me if I make a mistake	◯	◯	◯	◯	◯
Others will laugh at me if I share my experience/knowledge	◯	◯	◯	◯	◯

Motivational Factors

11. Please indicate if you agree/disagree with the following statements....

	Agree	Somewhat Agree	I do not know	Somewhat Disagree	Disagree
There is a lot to gain by sharing knowledge and experience with others	◯	◯	◯	◯	◯
I would be willing to share my knowledge if I were given the opportunity and time to do so	◯	◯	◯	◯	◯
My team members are very capable	◯	◯	◯	◯	◯
My team members are honest, fair and walk in integrity	◯	◯	◯	◯	◯
Others will gain from the knowledge that I can share with them	◯	◯	◯	◯	◯
I have shared some of my experience/knowledge with others	◯	◯	◯	◯	◯
I will only be willing to share my knowledge if the other person shares his/her knowledge in return	◯	◯	◯	◯	◯

ANNEXURE B – THE QUESTIONNAIRE (CONTINUED)

Learning and Knowledge Transfer

Perceptions Related to Knowledge Sharing

12. Please indicate if you agree/disagree with the following statements....

	Agree	Somewhat Agree	I do not know	Somewhat Disagree	Disagree
Others will criticize me if I share my knowledge or experience	◯	◯	◯	◯	◯
Others will believe the knowledge that I have to share is true	◯	◯	◯	◯	◯
I can share my knowledge with my supervisor because I trust him/her	◯	◯	◯	◯	◯
I can share my knowledge with my co-worker because I trust him/her	◯	◯	◯	◯	◯
If I share all my experience/knowledge with others, I will be retrenched as I may no longer be needed	◯	◯	◯	◯	◯
If I share all my experience/knowledge with others, they will become better than me	◯	◯	◯	◯	◯
If I share all my experience/knowledge with others, they will be promoted instead of me	◯	◯	◯	◯	◯
If I share all my experience/knowledge with others, my supervisor will take notice and promote me	◯	◯	◯	◯	◯
If I share all my experience/knowledge with others, the team will become stronger	◯	◯	◯	◯	◯
If I share all my experience/knowledge with others, the team will not need me any more	◯	◯	◯	◯	◯

Method and Medium of Learning

13. Please choose your preferred method of learning.

◯ By yourself and on your own time

◯ In a group with scheduled classes

14. Which method of learning is the most practical in your job circumstances?

◯ By yourself and on your own time

◯ In a group with scheduled classes

15. Please rank your preferred medium of learning from most (1) to least (3) preferred.

☐	Written Documents such as .pdf, Word Documents, Excel Spreadsheets, etc.
☐	Visual training material (Video, Live Classroom, etc.)
☐	Computer-based (a combination of visual and written documents)

16. To perform your job effectively, how much theoretical knowledge versus experience is required?

◯ 0% Theoretical Knowledge - 100% Experience

◯ 20% Theoretical Knowledge - 80% Experience

◯ 40% Theoretical Knowledge - 60% Experience

◯ 60% Theoretical Knowledge - 40% Experience

◯ 80% Theoretical Knowledge - 20% Experience

◯ 100% Theoretical Knowledge - 0% Experience

Knowledge Transfer Practices

ANNEXURE B – THE QUESTIONNAIRE (CONTINUED)

Learning and Knowledge Transfer

17. How frequently did you use any of the following methods in the past to gain more experience/knowledge for your current job?

	Used Frequently	Used Seldom	Not Used at All
AFTER ACTION REVIEWS: These debriefings are a way to identify, analyse, and capture experiences, what worked well and what needs improvement, so others can learn from those experiences.	◯	◯	◯
BEST PRACTICES: The identification and use of processes and/or practices that result in excellent products or services.	◯	◯	◯
INTERNSHIP: Formal arrangements are made for an experienced person to pass along knowledge and skills to a novice.	◯	◯	◯
COMMUNITIES OF PRACTICE: Groups of individuals who share knowledge about a common work practice over a period of time, though they are not part of a formally constituted work team. Communities of practice generally cut across traditional organisational boundaries	◯	◯	◯
DOCUMENTED PROCESSES: A written or electronic record of a specific work process that includes steps in the process, key dates, relationship to other processes that come before and after (As can be found on the IMS system/intranet)	◯	◯	◯
EXPERT INTERVIEWS: Sessions where one or more people who are considered experts in a particular subject, policy, or process, etc. meet with others to share knowledge.	◯	◯	◯
JOB AIDS: These are tools that help people perform tasks accurately. They include things such as checklists, flow diagrams, reference tables, decision tree diagrams, etc. that provide specific information to the user and serve as a quick reference guide to performing a task. (As can be found on the IMS system/intranet)	◯	◯	◯
MENTORING: In mentoring, an experienced, skilled person (mentor) is paired with a lesser skilled or experienced person (protégé), with the goal of developing or strengthening competencies of the protégé.	◯	◯	◯
ON-THE-JOB TRAINING: An experienced employee teaches a new person how to perform job tasks.	◯	◯	◯
I EXPERIENCED IT FOR MYSELF: I received no assistance/guidance	◯	◯	◯

ANNEXURE B – THE QUESTIONNAIRE (CONTINUED)

Learning and Knowledge Transfer

18. Which of the following methods do you think would help you to perform better at your job?

	Very Helpful	Somewhat Helpful	Not Helpful at All
AFTER ACTION REVIEWS: These debriefings are a way to identify, analyse, and capture experiences, what worked well and what needs improvement, so others can learn from those experiences.	◯	◯	◯
BEST PRACTICES: The identification and use of processes and/or practices that result in excellent products or services.	◯	◯	◯
INTERNSHIP: Formal arrangements are made for an experienced person to pass along knowledge and skills to a novice.	◯	◯	◯
COMMUNITIES OF PRACTICE: Groups of individuals who share knowledge about a common work practice over a period of time, though they are not part of a formally constituted work team. Communities of practice generally cut across traditional organisational boundaries	◯	◯	◯
DOCUMENTED PROCESSES: A written or electronic record of a specific work process that includes steps in the process, key dates, relationship to other processes that come before and after (As can be found on the IMS system/intranet)	◯	◯	◯
EXPERT INTERVIEWS: Sessions where one or more people who are considered experts in a particular subject, policy, or process, etc. meet with others to share knowledge.	◯	◯	◯
JOB AIDS: These are tools that help people perform tasks accurately. They include things such as checklists, flow diagrams, reference tables, decision tree diagrams, etc. that provide specific information to the user and serve as a quick reference guide to performing a task. (As can be found on the IMS system/intranet)	◯	◯	◯
MENTORING: In mentoring, an experienced, skilled person (mentor) is paired with a lesser skilled or experienced person (protégé), with the goal of developing or strengthening competencies of the protégé.	◯	◯	◯
ON-THE-JOB TRAINING: An experienced employee teaches a new person how to perform job tasks.	◯	◯	◯
FORMAL TRAINING: Methodologies can include: classroom instruction, simulations, role-plays, computer or web-based instruction, small and large group exercises.	◯	◯	◯

ANNEXURE B – THE QUESTIONNAIRE (CONTINUED)

Learning and Knowledge Transfer

19. Considering the type of work that you do, which of the following methods would one practically be able to develop to transfer your experience to others.

	Very Easy to Develop	Somewhat Easy to Develop	Not Easy to Develop
AFTER ACTION REVIEWS: These debriefings are a way to identify, analyse, and capture experiences, what worked well and what needs improvement, so others can learn from those experiences.	◯	◯	◯
BEST PRACTICES: The identification and use of processes and/or practices that result in excellent products or services.	◯	◯	◯
INTERNSHIP: Formal arrangements are made for an experienced person to pass along knowledge and skills to a novice.	◯	◯	◯
COMMUNITIES OF PRACTICE: Groups of individuals who share knowledge about a common work practice over a period of time, though they are not part of a formally constituted work team. Communities of practice generally cut across traditional organisational boundaries	◯	◯	◯
DOCUMENTED PROCESSES: A written or electronic record of a specific work process that includes steps in the process, key dates, relationship to other processes that come before and after (As can be found on the IMS system/intranet)	◯	◯	◯
EXPERT INTERVIEWS: Sessions where one or more people who are considered experts in a particular subject, policy, or process, etc. meet with others to share knowledge.	◯	◯	◯
JOB AIDS: These are tools that help people perform tasks accurately. They include things such as checklists, flow diagrams, reference tables, decision tree diagrams, etc. that provide specific information to the user and serve as a quick reference guide to performing a task. (As can be found on the IMS system/intranet)	◯	◯	◯
MENTORING: In mentoring, an experienced, skilled person (mentor) is paired with a lesser skilled or experienced person (protégé), with the goal of developing or strengthening competencies of the protégé.	◯	◯	◯
ON-THE-JOB TRAINING: An experienced employee teaches a new person how to perform job tasks.	◯	◯	◯
FORMAL TRAINING: Methodologies can include: classroom instruction, simulations, role-plays, computer or web-based instruction, small and large group exercises.	◯	◯	◯

20. If your supervisor instructed YOU to share your knowledge or experience with your teammates/subordinates, which of the following would you be COMFORTABLE with?

	Very Uncomfortable	Somewhat Uncomfortable	I am not sure	Somewhat Comfortable	Very Comfortable
Writing a document about your experience/knowledge (i.e. Microsoft Word or PowerPoint)	◯	◯	◯	◯	◯
Presenting your experience/knowledge to your teammates	◯	◯	◯	◯	◯
Being interviewed about your experience/knowledge	◯	◯	◯	◯	◯
Appearing in a Video of your presentation/interview	◯	◯	◯	◯	◯

Exposure to ICT

ANNEXURE B – THE QUESTIONNAIRE (CONTINUED)

Learning and Knowledge Transfer

21. How much time do you spend reading books / documents per day? (This includes paper and electronic reading)

- ◯ 0 Hours
- ◯ 1 Hours
- ◯ 2 Hours
- ◯ 4 Hours
- ◯ 8 Hours
- ◯ More than 10 Hours

22. How much time do you spend on a computer per day?

- ◯ 0 Hours
- ◯ 1 Hours
- ◯ 2 Hours
- ◯ 4 Hours
- ◯ 8 Hours
- ◯ More than 10 Hours

23. How familiar are you with the following:

	Very familiar	Somewhat familiar	Not familiar at all
eMail	◯	◯	◯
Google	◯	◯	◯
Facebook	◯	◯	◯
Twitter	◯	◯	◯
Windows	◯	◯	◯
Skype	◯	◯	◯

24. How was this questionnaire completed?

- ◯ By myself - Online
- ◯ By myself - On paper
- ◯ Somebody assisted me

If you did not complete it online, please indicate why

ANNEXURE C – RESPONSE DETAILS

Table 6-2 Response Details

Question, Area and Factor	Count	Mean Result	Std. Dev Result	Var. Result	Mean Response	Mean Response Description
Question 01						
Individual Characteristics	74	2.73	1.01	1.02	3	41 to 50
Age group	74	2.73	1.01	1.02	3	41 to 50
Age	74	2.73	1.01	1.02	3	41 to 50
What is your age group?	74	2.73	1.01	1.02	3	41 to 50
Question 03						
Environmental Factors	72	3.93	1.35	1.81	4	5 to 10 years
Organisational Context	72	3.93	1.35	1.81	4	5 to 10 years
Exposure to Environment	72	3.93	1.35	1.81	4	5 to 10 years
How long have you worked for your current company?	72	3.93	1.35	1.81	4	5 to 10 years
Question 04						
Environmental Factors	73	3.50	1.40	1.96	3	I do not know
Cultural Characteristics	73	3.04	1.39	1.93	3	I do not know
Collectivism	73	3.04	1.39	1.93	3	I do not know
If I share my knowledge and experience with the group the group should be rewarded.	73	3.04	1.39	1.93	3	I do not know
Organisational Context	73	3.38	1.43	2.04	3	I do not know
KS Encouragement	73	3.79	1.19	1.42	4	Somewhat Agree
Our organisation encourages new ideas and learning even if they fail.	73	3.79	1.19	1.42	4	Somewhat Agree
Management support	73	4.03	1.04	1.08	4	Somewhat Agree
Management supports knowledge sharing in the organisation.	73	4.03	1.04	1.08	4	Somewhat Agree
Reward expectation	73	3.16	1.42	2.03	3	I do not know
If I share my knowledge and experience with the group I should be rewarded.	73	3.16	1.42	2.03	3	I do not know
Rewards & Incentives	73	2.52	1.52	2.31	3	I do not know
I am incentivised to share knowledge.	73	2.52	1.52	2.31	3	I do not know
Team Characteristics	73	3.82	1.30	1.69	4	Somewhat Agree
Individual KS Activities	73	4.52	0.87	0.75	5	Agree
I often share my knowledge and experience with others.	73	4.52	0.87	0.75	5	Agree
Reciprocal KS Expectations	73	3.68	1.26	1.58	4	Somewhat Agree
I find that if I share information or knowledge with team members or others in the organisation they return the favour by sharing some experiences/knowledge with me.	73	3.68	1.26	1.58	4	Somewhat Agree
Team competitiveness	73	3.26	1.39	1.95	3	I do not know
There is a strong sense of competition between myself and my colleagues.	73	3.26	1.39	1.95	3	I do not know

ANNEXURE C – RESPONSE DETAILS (CONTINUED)

Question, Area and Factor	Count	Mean Result	Std. Dev Result	Var. Result	Mean Respons	Mean Response Description
Question 05						
Environmental Factors	73	3.89	1.32	1.73	4	Somewhat Agree
Team Characteristics	73	3.89	1.32	1.73	4	Somewhat Agree
Management empowerment	73	4.11	1.25	1.57	4	Somewhat Agree
My manager empowers me to make my own decisions (within reason).	73	4.11	1.25	1.57	4	Somewhat Agree
Team cohesiveness	73	4.36	1.03	1.07	4	Somewhat Agree
My team faces challenges together.	73	4.36	1.03	1.07	4	Somewhat Agree
Team communication	73	4.05	1.19	1.41	4	Somewhat Agree
As a team we communicate very well.	73	4.05	1.19	1.41	4	Somewhat Agree
Teamwork value	73	3.05	1.39	1.94	3	I do not know
In my team each member performs better on their own.	73	3.05	1.39	1.94	3	I do not know
Question 10						
Individual Characteristics	72	3.90	1.18	1.38	3	I do not know
Evaluation Apprehension	72	3.85	1.18	1.40	2	Somewhat Disagree
Organisational Value	72	3.32	1.23	1.52	3	I do not know
Others may think less of me if I made a mistake	72	3.32	1.23	1.52	3	I do not know
Social Value	72	4.38	0.86	0.74	2	Somewhat Disagree
Others will laugh at me if I shared my experience/knowledge	72	4.38	0.86	0.74	2	Somewhat Disagree
Impression Management	72	3.42	1.25	1.57	3	I do not know
Management Impression	72	3.42	1.25	1.57	3	I do not know
My supervisor would look badly upon me if I made a mistake	72	3.42	1.25	1.57	3	I do not know
Personality	72	4.10	1.09	1.20	4	Somewhat Agree
Ease of Communication	72	4.36	1.01	1.02	4	Somewhat Agree
I easily communicate with others	72	4.36	1.01	1.02	4	Somewhat Agree
I am outgoing	72	3.93	1.29	1.67	4	Somewhat Agree
Leadership	72	4.01	0.91	0.83	4	Somewhat Agree
Others listen to me	72	4.01	0.91	0.83	4	Somewhat Agree
Question 11						
Motivational Factors	71	4.47	0.95	0.90	4	Somewhat Agree
Justice	71	3.94	1.41	2.00	2	Somewhat Disagree
Reciprocal KS Expectations	71	3.94	1.41	2.00	2	Somewhat Disagree
I will only be willing to share my knowledge if the other person shares his/her knowledge in return	71	3.94	1.41	2.00	2	Somewhat Disagree
Knowledge Ownership	71	4.65	0.72	0.51	5	Agree
Sharing Experience	71	4.69	0.69	0.47	5	Agree
I have shared some of my experience/knowledge with others	71	4.69	0.69	0.47	5	Agree
Willingness	71	4.62	0.74	0.55	5	Agree

ANNEXURE C – RESPONSE DETAILS (CONTINUED)

Question, Area and Factor	Count	Mean Result	Std. Dev Result	Var. Result	Mean Respons	Mean Response Description
I would be willing to share my knowledge if I were given the opportunity and time to do so	71	4.62	0.74	0.55	5	Agree
Perceived Benefits and Costs	71	4.72	0.76	0.58	5	Agree
Learning Value Perception	71	4.72	0.76	0.58	5	Agree
There is a lot to gain by sharing knowledge and experience with others	71	4.72	0.76	0.58	5	Agree
Perceived Benefits of KS	71	4.63	0.66	0.44	5	Agree
Sharing Value Perception	71	4.63	0.66	0.44	5	Agree
Others will gain from the knowledge that I can share with them	71	4.63	0.66	0.44	5	Agree
Trust	71	4.34	0.96	0.92	4	Somewhat Agree
Team Capability Perception	71	4.44	0.82	0.68	4	Somewhat Agree
My team members are very capable	71	4.44	0.82	0.68	4	Somewhat Agree
Team Honesty and Trust	71	4.24	1.08	1.16	4	Somewhat Agree
My team members are honest, fair and walk in integrity	71	4.24	1.08	1.16	4	Somewhat Agree
Question 12						
Perceptions	68	4.09	1.17	1.37	3	I do not know
Evaluation Apprehension	68	3.75	1.23	1.50	2	Somewhat Disagree
Social Value	68	3.75	1.23	1.50	2	Somewhat Disagree
Others will criticise me if I shared my knowledge or experience	68	3.75	1.23	1.50	2	Somewhat Disagree
Interpersonal Trust	68	4.43	1.00	0.99	4	Somewhat Agree
Team Honesty and Trust	68	4.43	1.00	0.99	4	Somewhat Agree
I can shared my knowledge with my co-worker because I trust him/her	68	4.43	1.00	0.99	4	Somewhat Agree
Perceived Benefits and Costs	68	4.09	1.18	1.38	3	I do not know
Knowledge Integrity	68	4.26	0.86	0.73	4	Somewhat Agree
Others will believe the knowledge that I have to share is true	68	4.26	0.86	0.73	4	Somewhat Agree
Learning Value Perception	68	4.37	0.86	0.74	2	Somewhat Disagree
If I share all my experience/knowledge with others, the team will not need me any more	68	4.37	0.86	0.74	2	Somewhat Disagree
Management Impression	68	3.84	1.35	1.82	3	I do not know
I can shared my knowledge with my supervisor because I trust him/her	68	4.44	1.07	1.15	4	Somewhat Agree
If I shared all my experience/knowledge with others, I will be retrenched as I may no longer be needed	68	4.34	1.03	1.06	2	Somewhat Disagree
If I shared all my experience/knowledge with others, my supervisor will take notice and promote me	68	2.43	1.20	1.44	2	Somewhat Disagree

ANNEXURE C – RESPONSE DETAILS (CONTINUED)

Question, Area and Factor	Count	Mean Result	Std. Dev Result	Var. Result	Mean Respons	Mean Response Description
If I shared all my experience/knowledge with others, they will be promoted instead of me	68	4.16	0.99	0.97	2	Somewhat Disagree
Teamwork value	68	4.36	0.96	0.91	3	I do not know
If I shared all my experience/knowledge with others, the team will become stronger	68	4.50	0.86	0.73	5	Agree
If I shared all my experience/knowledge with others, they will become better than me	68	4.22	1.03	1.07	2	Somewhat Disagree
Question 20						
KT Participation Willingness	67	3.35	1.40	1.97	3	I am not sure
Appearing in a Video of your presentation	67	2.58	1.38	1.91	3	I am not sure
Being interviewed about your knowledge	67	3.73	1.20	1.44	4	Somewhat Comfortable
Presenting your experience to your teammates	67	3.75	1.31	1.71	4	Somewhat Comfortable
Grand Total	**74**	**3.89**	**1.28**	**1.63**		