

# Uncovering Knowledge Management Practices in Organisations

Visvanathan Naicker

University of the Western Cape, Cape Town, South Africa

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## Keywords

Knowledge management, knowledge management culture, organisational learning, knowledge management strategy, knowledge management status, knowledge management problems

## Abstract

*An increasing number of organisations have accepted the importance of managing their company's knowledge in a more structured manner. There have been many knowledge management projects that have been introduced, some which have been successful, but many have failed as well. Knowledge management can be introduced in the culture of the company, which then becomes paramount when the company deals with national and international markets. However, there are concerns as to how to measure the benefits of a Knowledge Management (KM) strategy and its concomitant initiatives on the performance of the company. This paper discusses findings from an empirical investigation amongst 51 organisations.*

*A mixed methods approach was used to capture the data using a previously validated questionnaire. The questionnaire was adapted to suite the requirements of this particular study. The findings suggest that by providing effectual information systems infrastructure knowledge can be captured, transformed and disseminated to organisations. Investment in business information systems supports knowledge sharing and interpersonal interaction and therefore facilitates knowledge management processes and strategies.*

*The importance of this contribution is that it offers suggestions to design a KM approach by means of a new framework emanating from the findings. Finally, contributing to the theoretical analysis and findings from the empirical investigation, this article concludes with suggestions that may assist organisations to address their barriers.*

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## Introduction

It has been accepted that knowledge has become essential company resources and assets. Organisations are now aware of the competitive advantage in transforming their employees' tacit knowledge into organised explicit knowledge (Soley & Pandaya 2003). Technological tools such as applications based on KM databases, the Internet and groupware technologies are readily available to support the increasing use of KM processes. It is increasingly accepted that knowledge is looked upon as the most important resource within a company (Lopes *et al.* 2005). Hence, many organisations are starting to invest in technological innovations.

By doing so, organisations may achieve a competitive advantage by acquiring and developing knowledge into expertise. The research problem that this study addresses is that KM means different things to management within different industries. In addition, KM is often associated with huge capital investments in Information Technology with little or no return on the investment. Managing the knowledge flow is only one aspect of KM. Challenges are experienced when it comes to managing the people aspect and the knowledge creation components add different dimensions to KM.

There are presently many KM frameworks adding to the KM literature. However, only a few of them are compliant with the systems thinking concept. Moreover, very few explain how knowledge is created and how other components should be managed or linked to the KM system. Organisations are now becoming more responsive for better business processes to effectively address their clients' demands and changes in the market place.

According to (Hansen *et al.*, 1999&Iftikhar 2003) believe that knowledge is extracted from the person who developed it and thereafter reused for various purposes within the company. In addition, these scholars state that the primary purpose of knowledge is to transform tacit knowledge into storable explicit knowledge. Therefore; KM is central to this and is recognised as an integral part of an organisations' strategy to improve business performance (Hansen *ET al.*1999& Iftikhar2003).

It is further suggested by Nonaka (1995)that Japanese firms are successful in their efforts towards KM because it has played a significant role in promoting their innovations. The Japanese firms are able to create new knowledge and use it to produce successful products and technologies (Nonaka1995).Subsequently, KM has become an important topic for both research and practice.

Furthermore, Wilson (2002) claims that the first mention of KM were in 1986, which continued until 1996. Between 1996 and 2002, Wilson (2002) states that there was an exponential growth in the number of papers that were written on KM.The implementation of KM has increased in recent years. According to an Industrial Development Corporation survey in 2002, 90% of fortune 500 organisations have started formal KM programs. However, there seems to be a growing need for a better understanding of the fundamentals of successful KM programs. The problem for most organisations is that the implementation of KM initiatives has often been unplanned without a strategy for performance measurement (Griffiths 2008).A major concern in the implementation of KM strategies is the assessment of the impact. Nevertheless, a (KM) initiative can be developed to improve the performance of this task and then its impact could be evaluated.

The evaluation of KM is important to establish whether the company's investment has paid off in terms of increased performance within the company. Conversely, changes in performance are difficult to measure because of uncontrollable factors that exist within the company. Zhu (2004) professes that KM is a loose set of ideas, practices and tools centering the creation, communication and utilisation of the organisations' knowledge. In a non-technical language, KM strives to make the most of its current knowledge and in order to generate an understanding, incremental awareness and the spreading of new knowledge in the process brings about company learning. Furthermore, Zhu (2004) states that KM is becoming the most universal management concept across organisations.

Many of the new business models that are emerging in the global economy have its core in the basic activity of the modern value chain namely: knowledge management. Therefore, during recent times, terms like digital economy, information society and knowledge society have escalated as areas of interest and research in academic and company settings (Evangelista*et al.* 2010).

This article is based on research in the area of KM strategies and practices in South Africa. The organisations that were researched came from diverse business sectors incorporating large and small enterprises. The idea behind this research was to understand how employees view technology and KM within their organisations. The process of analysis makes it possible for tacit knowledge to share so that we can underpin the interaction between individuals and organisations within an environment. Organisations must consider the role of all members and their sub-networks as it appears that much of the knowledge in organisations is tacit or hard to articulate (Nonaka&Takeuchi1995). The research questions, which have been addressed in this study concern the nature of the processes being identified, the interplay between external and internal factors (the context) that influence these processes and the resources required knowledge management to be accomplished.

The research addressed by this study is as follows. Firstly, how do employees respond with regard to KM and its principles? Secondly, what role does KM play in the creation of knowledge based organisations? Thirdly, do firms gain a strategic advantage through the use of KM? Finally, the last objective of this study was to establish the level of importance managers give to the concept of KM within their firms.

In the following section, the literature review with its sub-sections are presented, the research model is presented and its theoretical foundation. The research methodology is discussed, followed by a discussion of the empirical results and the implications. Finally, the conclusion, a summary of the key findings and suggestions for future research are presented.

## Literature review

### Knowledge Management problems

As recognised by Iftikhar (2003) knowledge is an expensive commodity which if managed properly becomes an advantage to the company. Moreover, an important caveat noted by Iftikhar is that the fiercest struggle in the workplace of the future may be for the hearts and minds of employees in addition to that of its clients. Iftikhar (2003) states that organisations invest in their knowledge assets by recruiting educated people and then training them. By securing a knowledgeable workforce, the company can gain a competitive advantage by retaining and managing the in-house knowledge (Gray 2001& Neve 2003).Scholars have argued that knowledge including factors such as intuition, wisdom, experience and social networking is hard to gain but can be easily lost (Coakes 2000; Vakola 2000; Iftikhar2003).Moreover, specific applications of knowledge to work have been explored by industry practitioners (Collison &Parcell2001). Knowledge Management is a topic that has been getting much attention from consultancy firms as well as the academic realm in that Wilson (2002) argues that most renowned academic institutions have shied away from the topic based on the fact that knowledge (i.e. *what a person knows*) cannot be managed (*which is in direct conflict to what this paper is suggesting*) and only information can be managed.

On the other hand, Wegner (2004) postulates that KM is a key contributor to company performance and strategic direction if managed well and having technological processes implemented to compliment KM. Therefore, KM could complement and enhance other company initiatives such as total quality management, business process re-engineering and company learning and providing a new and urgent focus to sustain a competitive position(Wegner 2004).

According to (Trigg 2000&Neumann 2011) the transition of KM has become more evident. Moreover, worldwide communities have become networked through the internet and knowledge has been recognised as having a tangible value. In addition, the world's financial markets are struggling with the concept that knowledge represents a greater competitive advantage than traditional resources such as equipment, capital and labour(Trigg 2000).In a similar vein, Laudon & Laudon (2012) concur that KM systems has evolved along a number of different paths. They state that presently the KM field is highly diverse, complex and in some instances confusing.

### **Knowledge management status**

Horwitch (2002) describes KM as the creation extraction, transformation and storage of the correct knowledge in order to design better policy, modify action and deliver results. Another explanation by (Holm 2001&Peltoniemi 2007)state that KM is getting the right knowledge on the right time to the right people and helping people to create knowledge to share and act on that knowledge.KM has become one of the fastest growing areas of corporate and government software expenditure. During the past decade, there has been an explosive growth in research on KM in many organisations. According to Kruger and Johnson (2008) KM is fairly institutionalised in South African organisations and their findings indicated that there was a significant growth in KM, which occurred during the past five years. Cater & Scarbrough (2001) and Peltoniemi (2007) advocate that KM is an attempt by management to actively create, communicate and exploit knowledge as a resource for the company.In addition, they argue that if managers can better understand the issue of the sharing of knowledge by employees, they would be better equipped to pursue the new opportunities presented by KM.

Because of such opportunities, a number of developing organisations have turned to KM in an attempt to strengthen and leverage their knowledge and improve their impact. Research by Ferguson, Huysman &Soekijad (2010) provide further justification for this move, as they perceive KM as organisational practices that facilitate and structure knowledge sharing and learning. Cater and Scarbrough (2001) view KM where it involves centralising knowledge that is currently scattered across the company into a more explicit form where everyone may have access to it in relation to their business need. Hence, there are two pivotal KM strategies: codification where knowledge is carefully codified and stored in databases, and access that could be achieved by all within the company (McElroy 2000).Gumbley (1998) and Papoutsakis (2007)state that employees have to be persuaded to part with their knowledge for the benefit of the company so that it may be stored and processed. Furthermore, personal knowledge and expertise accounts for the value of the people working in the company (Gumbley 1998&Papoutsakis 2007).

### **Knowledge management culture**

According to (Kahal 1994; Soley & Pandya 2003)if international business dealings are ignorant of cultural differences, then it isnot only unfortunate but also bad for business. Based on (Kahal 1994; Soley & Pandya 2003)views, questions should be raised as to how much knowledge organisations possess regarding culture. Sadly, many organisations have failed to address this. Cultural issues have always created problems for organisations. The general pattern seems to be a lack of understanding and knowledge sharing, thus bringing culture under the spotlight. Thus, Gupta & Govindarajan (2000) proposed a set of training notes on the use of organisational culture in achieving KM success.

KM includes the way that organisations function, communicate, analyse situations, come up with new ideas and develop new ways of doing business (Carrillo *et al.* 2003).

Moreover, due to the diversity in management structures, KM can also involve issues of culture, values and skills. As suggested by previous studies a supportive culture is essential for the successful implementation of KM initiatives (Gopal & Gagnon 1995; Soley & Pandya 2003). Organisations have realised that in order to foster a supportive KM culture for their staff, drivers of KM projects must be able to appreciate and recognise the value of KM initiatives (Alavi 1997; Gopal & Gagnon 1995; Soley & Pandya).

### Knowledge management strategy

Knowledge within the business context can fall within the spectrum of tacit (implicit) knowledge and explicit (codified) knowledge (Blackler 1995; Fowler & Pryke 2003). Tacit knowledge is stored in people's heads and is difficult to share. Explicit knowledge is captured or stored in a company's manuals, procedures, and databases and documented as information (Al-Hawamdeh 2003). Accordingly, company knowledge is a mixture of explicit and tacit knowledge and the role of KM is to influence the different types of knowledge so that it improves business processes becomes available as a company asset (Davenport *et al.* 1998; Lopez *et al.* 2004). From a strategic business point of view, Wong (2000) avers that the resource based strategy paradigm emphasizes distinctive company specific and thus hard to imitate assets, skills and knowledge. Furthermore, proponents of resource-based theory suggest that knowledge-based advantages are difficult to imitate when the reasons for superior performance cannot be identified or controlled (Dierick & Cool 1989; Lippman & Rumelt 1982).

Wu & Lin (2009) argue that knowledge resources are not only unique but could also provide a valuable link to a competitive advantage to a business, if it is efficiently and effectively utilised. They go on to say that the fundamental determinant of how KM is effectively executed is through the organisations' competitive strategy. According to the KM literature, it defines knowledge in very broad terms including tacit and explicit aspects of a company's knowledge. Furthermore, KM is potentially difficult to define and measure because it is complex, multi-dimensional, and process-oriented (Iftikhar 2003). In addition, KM affects supplier and customer relationships as well. In addition, Gyensare & Asare (2012) state that when organisations explore and strategically manage their intangible assets efficiently and effectively – it is referred to as Knowledge Management. This research was conducted to investigate what practices South African organisations were using to ensure effective knowledge transfer within their organisations

### Objectives of the research

- The objectives of this study were:
- To investigate and discuss the **status** of knowledge management and its impact in South African organisations.
- To investigate whether **culture** has an effect on South African organisations.
- To examine and analyse the provisions organizations utilise to overcome the KM **problems** of contemporary business practices.
- To identify the main KM **strategies** associated with South African organisations and suggesting solutions based on primary research.
- To investigate whether **technology** can overcome KM problems found in South African organisations.
- The purpose is to identify the foundation that supports KM within South African organisations. It is within this framework and based on a quantitative approach that the South African scenario on KM is presented.

## General hypothesis

Certain cultural, technological, strategy and company problems could impede South African organisations' from conducting business in local and international markets. This could be due to a lack of knowledge sharing within the company or between the local and the international partners. It could be argued that particular attention needs to be focused on the lack of preparation and expertise on the part of the South African organizations. The most prominent of these was studied in relation to their effect on the South African organisations. The cultural, technological, strategy and company problems were investigated. Moreover, some attributes have a major influence whilst others do not have any consequences at all. This research identifies and studies the main variables that South African organisations should have on KM and how it is captured. Hence, a general hypothesis is presented:

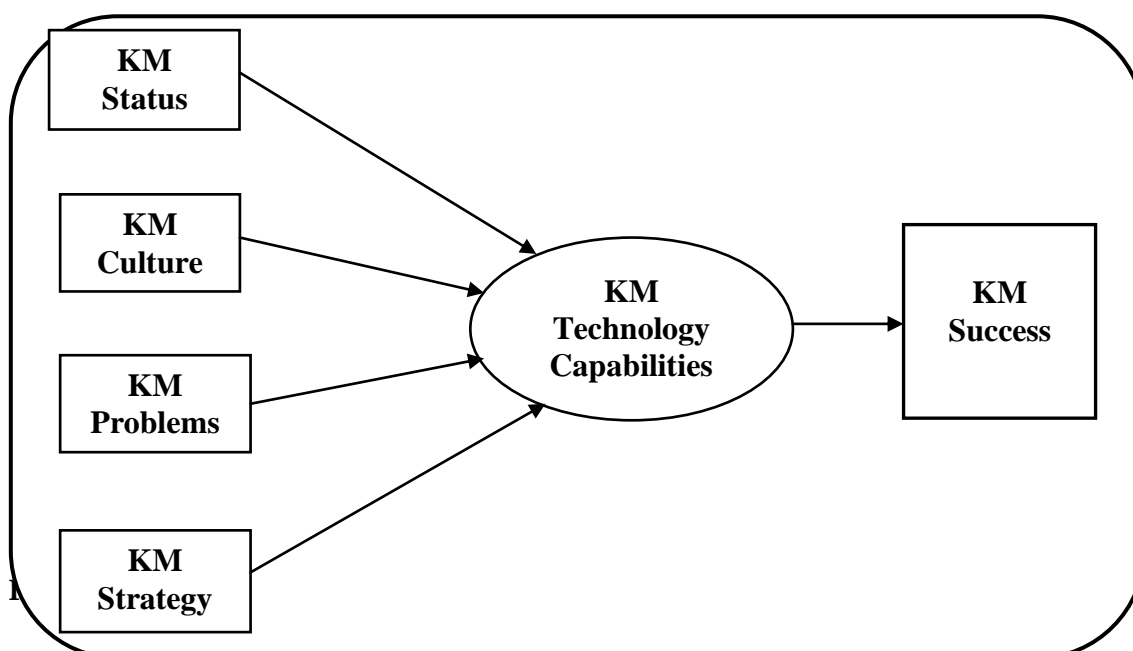
Certain cultural, technological, strategy and company problems could affect South African organisations in local and international markets and if it is not taken seriously, could result in misunderstandings that may result in lost time, money and further business collaboration.

## The research framework

According to (Spender 1996 & King 2003) knowledge-based views of the company are an outcome of knowledge creation, explication, communication and application. Therefore, the researcher hypothesised that KM objectives should be derived from KM technology capabilities.

In addition to KM culture, problems, strategies and the company's status of KM, common benchmarks of KM success includes innovativeness, coordination, time-to-market, adaptability and responsiveness to changes (Gold *et al.* 2001).

The research framework (see Figure 1) applies the theory of technology capabilities in explaining KM success. These structures take the form of company norms, culture, strategy and corporate policies.



## Methodology

A random sample of 100 organizations in the Western Cape business district was selected to participate in this study. The participants targeted in the respective businesses to complete the questionnaire were the Chief Information Officers, IT managers and, in firms where these positions did not exist, the most senior IT person was targeted. Hence, the unit of analysis was managers and IT professionals actively involved in KM and who have had sufficient training and experiences with KM. The questionnaire was derived from well-validated portions of some surveys that have been used in the past (Alive & Leander 1999).

The respondents were requested to complete the questionnaire individually. The questionnaire contained 20 questions consisting of short questions, multiple choices, open-ended, dichotomous as well as opinion type questions. It was calculated that it took approximately 30 minutes to complete the questionnaire. Fifty-one usable responses were received which provided a response rate of 51%. The questionnaire tapped into the respondents' perceptions of KM cultures, KM problems, KM strategies and technological issues, which could overcome the KM issues found in South African businesses.

A mixed methods approach was used for data collection. The study was furthermore limited to provide an in-depth view on how firms perceive KM and how it would influence their daily operations. The qualitative approach was used to answer questions about the complex nature of phenomena, often with the purpose of describing and understanding the phenomena from the respondent's point of view (Leedey & Ormond 2005).

## Findings

### Demographics

The profile of the sample was observed in terms of the respondents' occupation, experience with KM, the importance of KM in relation to their daily working patterns, and their role in KM activities. Respondents who have completed the questionnaire can be described as being working within a firm with a minimum of 5 years of experience in KM. In many instances, they expressed some curiosity towards KM but took a more tentative position on taking responsibility for KM within their firms. It may be reasonable to expect some non-response bias in those who were less interested in KM and may be expected less likely to respond.

The data was first captured onto an excel spreadsheet as excel enables ease of capture. After some typographical errors were discovered, a second entry (double entry) was necessary to ensure that the data was correctly captured. Once this procedure was completed and the data verified to be correct, it was imported into SAS v9 for further analysis. Because the questionnaire contained both ordinal and nominal data, it was somewhat challenging to use all the responses to the questionnaire to address the aims and objectives of the study. At this point, a summary of the responses to each of certain questions (namely question1 and 2; question4 to question12 and question16) are undertaken. For example, (see Table 1) for question1, there were  $23/49 = 46.94\%$  who answered with a '4' (Growth Stage).

**Table 1:** Frequencies for status

Q1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	7	14.29	7	14.29
2	6	12.24	13	26.53
3	13	26.53	26	53.06
<b>4</b>	<b>23</b>	<b>46.94</b>	49	100.00

More interesting questions are those where respondents could 'tick all that apply', such as Question3 (i.e. *what are the problems regarding knowledge management in your company?*) Where there are 6 parts. It was presumed that there would be interest in knowing the proportion of times each part was ticked, which parts had the highest (and lowest) proportion of ticks, and which pairs of questions were significantly different.

Calculating the proportions was straightforward. Testing for significant differences was more complicated since each subject responded to each of the 6 parts. The analysis conducted here was done using generalised linear models to account for the dependency among responses by the same subject.

Specifically, the Genmod procedure in SAS v9 was used for the analysis. Since there were many pair wise comparisons to be made, an adjustment for multiple testing was used. The Tukey-Kramer adjustment was used. Pairs of options were deemed to have significantly different proportions of responses when the adjusted p-value is less than 0.05. The reasoning behind this was that one could see cases that might be 'close' to significant; the output contains pairs with p-values less than 0.10.

From the output for question 3 below part 5 (i.e. *Poor sharing of knowledge in the organization*) was selected most often (40.8% of the time) while part 1 (*Lack of Information*) was selected least often (only 4.1% of the time). However, the only pairs with adjusted p-values less than 0.05 are parts 1 and 5 and parts 1 and 4. Parts 1 and 2 were close to meeting the significance level with  $\text{adj}p = 0.0542$ . This means that even though (to the naked eye) the response rate for part 5 (40.8%) and part 3 (18.4%) might 'appear' to be different, based on the sample size the difference is not significant at the 0.05 (adjusted) level.

**Table 2:** Ranking of 6 parts of question3

Obs	Part	Percent
<b>1</b>	<b>5</b>	<b>0.40816</b>
2	4	0.36735
3	2	0.26531
4	6	0.22449
5	3	0.18367
<b>6</b>	<b>1</b>	<b>0.04082</b>



**Table 3:** Ranking of 6 parts of Question3 - The Genmod Procedure

Source	DF	Chi- Square	Pr > ChiSq
Part	5	24.27	0.0002

Score Statistics for Type 3 GEE Analysis

**Table 4:** Significant differences between parts for Question3

Obs	No	Effect	part	part	Estimate	StdErr	zValue	Probz	Adjmnt	Adjp
1	1	part	1	2	2.1384	0.7581	2.82	0.0048	Tukey-Kramer	0.0542
3	1	part	1	4	2.6134	0.7647	3.42	0.0006	Tukey-Kramer	0.0083
4	1	part	1	5	2.7854	0.7678	3.63	0.0003	Tukey-Kramer	0.0039

Similarly, for question13 (i.e. *which of the following technologies have your company implemented?*), part 1 was selected most often (91.8%) and part 11 least often (4.1%). However, parts 1 and 3 are not significantly different. Part 11 differs significantly from 1, 3, 2, and 8 but not the other parts.

**Table 5:** Ranking of 11 parts of Question13

Obs	part	percent
1	1	0.91837
2	3	0.69388
3	2	0.61224
4	8	0.61224
5	4	0.36735
6	9	0.36735
7	6	0.28571
8	5	0.24490
9	7	0.16327
10	10	0.16327
11	11	0.04082

**Table 6:** Ranking of 11 parts of Question13 - The Genmod Procedure

Source	DF	Chi- Square	Pr > ChiSq
Part	10	42.69	<.0001

Score Statistics for Type 3 GEE Analysis

**Table 7: Significant differences between parts for Question13**

Obs	No	Effect	Part	Part	Estimate	StdErr	zValue	Probz	Adjustment	Adjp
1	1	part	1	2	-1.9636	0.4935	-3.98	<.0001	Tukey-Kramer	0.0034
3	1	part	1	4	-2.9640	0.5810	-5.10	<.0001	Tukey-Kramer	<.0001
4	1	part	1	5	-3.5464	0.5690	-6.23	<.0001	Tukey-Kramer	<.0001
5	1	part	1	6	-3.3367	0.6037	-5.53	<.0001	Tukey-Kramer	<.0001
6	1	part	1	7	-4.0545	0.6070	-6.68	<.0001	Tukey-Kramer	<.0001
7	1	part	1	8	1.9636	0.4935	-3.98	<.0001	Tukey-Kramer	0.0034
8	1	part	1	9	-2.9640	0.5383	-5.51	<.0001	Tukey-Kramer	<.0001
9	1	part	1	10	-4.0545	0.6070	-6.68	<.0001	Tukey-Kramer	<.0001
10	1	part	1	11	-5.5774	1.0154	-5.49	<.0001	Tukey-Kramer	<.0001
13	1	part	2	5	-1.5828	0.3564	-4.44	<.0001	Tukey-Kramer	0.0005
14	1	part	2	6	-1.3730	0.3798	-3.62	0.0003	Tukey-Kramer	0.0134
15	1	part	2	7	-2.0909	0.4824	-4.33	<.0001	Tukey-Kramer	0.0007
18	1	part	2	10	-2.0909	0.4550	-4.60	<.0001	Tukey-Kramer	0.0002
19	1	part	2	11	-3.6138	0.8467	-4.27	<.0001	Tukey-Kramer	0.0010
20	1	part	3	4	-1.3619	0.4187	-3.25	0.0011	Tukey-Kramer	0.0450
21	1	part	3	5	-1.9443	0.3870	-5.02	<.0001	Tukey-Kramer	<.0001
22	1	part	3	6	-1.7346	0.3901	-4.45	<.0001	Tukey-Kramer	0.0005
23	1	part	3	7	-2.4524	0.4515	-5.43	<.0001	Tukey-Kramer	<.0001
25	1	part	3	9	-1.3619	0.3980	-3.42	0.0006	Tukey-Kramer	0.0261
26	1	part	3	10	-2.4524	0.5112	-4.80	<.0001	Tukey-Kramer	<.0001
27	1	part	3	11	-3.9753	0.8101	-4.91	<.0001	Tukey-Kramer	<.0001
34	1	part	4	11	-2.6134	0.8224	-3.18	0.0015	Tukey-Kramer	0.0566
37	1	part	5	8	0.3821	0.3821	4.14	<.0001	Tukey-Kramer	0.0017
42	1	part	6	8	0.3564	0.3564	3.85	0.0001	Tukey-Kramer	0.0055
46	1	part	7	8	2.0909	0.4259	4.91	<.0001	Tukey-Kramer	<.0001
47	1	part	7	9	1.0905	0.3615	3.02	0.0026	Tukey-Kramer	0.0898
50	1	part	8	9	-1.0004	0.3140	-3.19	0.0014	Tukey-Kramer	0.0552
51	1	part	8	10	-2.0909	0.4259	-4.91	<.0001	Tukey-Kramer	<.0001
52	1	part	8	11	-3.6138	0.8467	-4.27	<.0001	Tukey-Kramer	0.0010
54	1	part	9	11	-2.6134	0.8224	-3.18	0.0015	Tukey-Kramer	0.0566

Analyses of questions 15 and 17 results are displayed in the Appendix. Commencing from page 6, the Appendix contains a series of questions where the responses are on a 7-point ordinal scale. Provided is the mean and median scores for each part of the question. As above, tests were conducted to see if there were significant differences in the responses across parts. Generalised linear models for Ordered Multinomial Data were used for analyses.

For question 17 (i.e. *Please rate the knowledge provided to your company government or industry associations based on a scale of 1-7 where 1 is very poor and 7 is excellent.*), there are only three parts. Part 2 has the highest mean score (4.73) while part 3 has the lowest mean (4.31). These two are significantly different (adjusted  $p = 0.0078$ ) but neither is significantly different from part 1. For question 17, part 8 has the highest mean (6.00) and part 4 has the lowest mean (4.04). Part 8 is significantly different from parts 4, 6, and 9. Part 4 is significantly different from all other parts except part 9.

### Data analysis for hypothesis testing

In order to add some numerical values to the framework, one needs to have a measure of each quantity. For example, for each respondent a person would need to know the value of 'Status', the value of 'Culture', the value of 'Problems', and the value of 'Strategy' as depicted in Figure 1 above. Moreover, one would then need to assign a value to 'KM Technology Capabilities' and determine whether there was KM 'success' or not. Given those values, one might look at the correlation between measures of 'Status', 'Culture', 'Problems', and 'Strategy' and the measure of 'Technology Capabilities'. Also, one might go further and look at a multiple regression analysis with 'Technology Capabilities' as the response variable and the other four variables as predictors.

In looking for a relationship between the four 'predictors', constructs and the outcome variable (i.e. question 13), it seemed more feasible to measure the variables on a continuous scale or preferably on an ordinal scale. Most of the predictor variables were nominal (categorical) in nature. For Technology capabilities, it would not make sense to look at individual responses because there were too many parts to the question relative to the number of respondents. It was found reasonable to count the number of items ticked, assuming that the more that were ticked equated to the higher the level of technology capabilities. This count was considered ordinal in nature. It should also be noted that an assumption was made that all items were of equal importance in measuring 'Technology Capability'.

A similar process was followed for items in question3 and question14i.e. a higher number ticked corresponded to a higher number of problems. Given the limitations described above, the only analysis that seems appropriate was a series of tests looking for a relationship between each of the eight 'predictor' variables and the (ordinal) outcome variable question13. Three of the predictor variables (questions 1, 3, and 14) may be considered as ordinal and hence the relationship with question 13 can be examined by using Spearman's Rank Correlation. For the remaining categorical predictor variables, relationships were examined using the Kruskal-Wallis test in conjunction with question13. This can be thought of as a non-parametric one-way analysis of variance to compare the mean count on question13 for each of the nominal categories of the predictor variable. In view of the fact that eight tests were done, a more stringent level of significance of 0.01 was appropriate rather than the usual 0.05 level. In the findings below are the Spearman correlations between question13 and the ordinal predictor variables. The correlation with question1 is 0.37737 (p-value for testing  $Rho=0$  is 0.0075). This correlation is significantly different from zero at the 0.01 level. It was only the Status variable that had a significant relationship with the intermediating variable -Technological Capabilities.

Spearman Correlation Coefficients, N = 49 Prob >  r  under H0: Rho=0 [Question 13]	
Question 1	<b>0.37737</b>
Status	<b>0.0075</b>
Question 3	-0.09132
Problems-Q3	0.5326
Scores on Q13 for each level of response to Question1	

**Table 8:** Analysis Variable:Q13 Technological Capabilities

The MEANS Procedure							
Status	Obs	N	Mean	Median	Std Dev	Minimum	Maximum
1	7	7	<b>2.7143</b>	2.0000	0.9512	2.0000	4.0000
2	6	6	<b>3.3333</b>	2.5000	2.5820	1.0000	7.0000
3	13	13	<b>4.6154</b>	4.0000	2.0631	1.0000	8.0000
4	23	23	<b>5.2174</b>	5.0000	2.5218	1.0000	10.0000

The other two correlations were not significantly different from zero. Since there was a significant relationship for question1, researchers look at the mean responses on question13 for each category of question1. For those 7 responding with question1=1, the mean number of items ticked on question13 was 2.71. Those ticking categories 2, 3, and 4 had mean values on question13 of 3.33, 4.62, and 5.22 respectively. The increasing values of the means are consistent with the positive correlation observed.

**Table 9:** Analysis Variable:Q3 Technological Capabilities

Culture-q10	Obs	N	Mean	Median	Std Dev	Minimum	Maximum
1	10	10	4.6000	4.5000	2.3190	1.0000	8.0000
2	19	19	<b>5.2105</b>	5.0000	2.2750	2.0000	10.0000
3	10	10	<b>3.6000</b>	2.5000	2.9515	1.0000	10.0000
4	8	8	3.6250	3.5000	1.9955	1.0000	7.0000
5	2	2	4.5000	4.5000	0.7071	4.0000	5.0000

Results of Kruskal-Wallis test for Question13 and Question10			
Obs	Name1	Label1	Value1
3	P_KW	Pr > Chi-Square	<b>0.3172</b>

Following that table is the p-value for the Kruskal-Wallis test for comparing the responses. For question 10, the mean responses go from 3.60 for question10=3 to 5.21 for question 10=2. The differences are not significant ( $p=0.3172$ ). None of the variables are significant at the 0.01 level, although question 12 ( $p=0.0435$ ) and question16 ( $p=0.0280$ ) are 'close'.

## Discussion and analysis

Each leading question in the questionnaire had the option for 'Any further comments' and a section was included for further probing when the data collectors sensed that they could probe deeper without causing any discomfort to the respondents. The analyses for the qualitative data searched for trends and patterns in the data and the most common comments are summarised below.

Respondents acknowledged that they are well acquainted with KM and confirm that it is in a growth stage in their respective organisations. Call centers being intensive knowledge users' organisations respondents affirmed that KM is a strategic part of their business because providing accurate advice to customers is the key asset for their industries, making KM becoming part of their organisations' philosophy and culture. Furthermore, respondents confirmed that it takes time for employees to gain the relevant knowledge for customer service and satisfaction and the biggest issues that their organisations faced was employee turnover, with its consequence of loss of knowledge. As a result, organisations have to start the same procedure of training new staff.

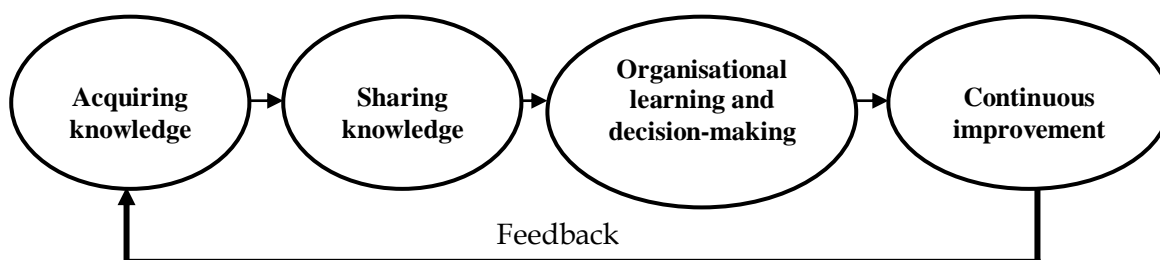
Respondents stated that there was a lack of rewards or recognition for knowledge transfer and those technical problems were one of the main causes for the unsuccessful implementation of KM. They argue that KM was part of their organisations' philosophy and their business practices; therefore, they did not require new implementations of KM, but want to ensure that knowledge and IT tools were kept up to date for successful KM initiatives.

The findings indicate that organisational values influence the way in which they use KM. This is especially relevant in intensive, knowledge-handling organisations where customer satisfaction is at the function of the employee level. Customer satisfaction has become the focal point in many organisations and the professionalism in conjunction with the accuracy of knowledge delivered to them is important for business success.

It was evident that strong information technology systems provides the essential infrastructure for effective KM practices in organisations and facilitates the global sharing of knowledge within the organization. Furthermore, respondents confirmed that their organisations' cultures are supportive towards knowledge sharing, innovation, knowledge creation. This is because their management performance depends on how the managers enable the customer' representatives to receive updated knowledge via the KM system and that they understand how-to deliver this knowledge to their customers.

Some common responses to the question *'what are the problems regarding KM in your company?'* were that it was fundamental to have an understanding of whether the organizations were having problems with KM from a lack of information, information overload, re-inventing the wheel and loss of crucial knowledge due to key employees leaving the company.

Insightful responses included that employees do attend training courses sponsored by their organisations to further skill themselves and to then improve their contributions to their jobs. Yet, after returning from these courses, the majority failed to contribute the newly acquired knowledge within their respective jobs. This has resulted in some organisations not receiving the required return on investment in their staff when there were no discernible correlations between knowledge gained and transferred to the industry. In addition, many organisations have implemented strategies to promote KM such as *'retain-attract-develop'*. This strategy looks at organisations retaining its current knowledge base through its employees as it recognises that the correct employees are a huge asset to its success. Therefore, their retention is non-negotiable. The findings did not provide support for the three constructs namely *'KM Culture'*, *'Problems in KM'* and *'KM Strategy'*. This gap however did lead to the development of a new framework, which may increase the use of KM within South African organisations. The framework, see Figure 2 is explained below.



**Figure 2:** KM process in a KM system

*Acquiring knowledge* is the knowledge obtained from resources, which are internal or external to an organisation, which may be hired or purchased (Hsieh *et al.* 2004).

Knowledge is acquired to learn and to make informed decisions for problems, which exist in organisations. In some organisations that are acquiring knowledge, it may come from data that has been extracted from systems and it could be from experts in the field. Empowering employees with new knowledge can only make them better decision makers. Acquiring knowledge has a key success factor for employee involvement an empowerment as the individual will have to involve them in becoming involved to acquire the necessary knowledge needed. This has an indirect effect on continuous improvements because the more relevant, up-to-date knowledge is acquired by an individual, the greater the chance for improvements to take place in the business. Hence, acquiring knowledge has a direct effect on sharing knowledge.

*Sharing knowledge* comes from the effect of acquiring knowledge. When one acquires knowledge, it would only be helping to the organisation as a whole when it is shared. The reason for sharing the knowledge acquired is to assist the organisations make more informed decisions, which may lead to benefitting the business. The greater the network of an organisation is, the greater the sharing with knowledge and therefore the greater the possibility to correct decision-making. An individual may have plenty of knowledge but if it is not shared then this knowledge does not mean much for the business as it will not be able to be used by other employees. This informs one that a KM system that has been implemented with a purpose of achieving a goal is already the first goal achieved to develop an effective KM system. Key success factors that may be tried here are trust and an open information systems infrastructure. With this in place, it then makes sharing of knowledge much easier. Sharing knowledge has a direct effect on organizational learning.

*Organisational learning and decision-making* occur when an organisation has made mistakes and failed to reach certain objectives. From these mistakes and failures, learning can take place. If the organisation implements the lesson learned to make better decisions going forward, then this is called organisational learning. Senior management needs to promote the culture of learning in their organisations and to set the example for the rest of the company to adopt this culture. Rowley (2000) describes organisational learning as 'Facilitates the learning of all its members, and continuously transforms itself'. It is evident because of learning one develops new bodies of theories (Baskerville & Dulipovici 2006). At this stage the organisation has now acquired the knowledge shared the knowledge and now the learning needs to take place in the company. The key success factors relating to this concept are learning cultures, teamwork and senior management leadership and commitment. All learning has a direct effect on continuous improvement.

*Continuous improvement* is possible when learning takes place in an organisation and the staff members continue to learn. Because of this continuous learning process, constant improvements take place. Moreover, organisations need to learn from their mistakes and improve in order to enable the business to survive and grow. Continuous improvement is an ongoing effort to improve processes or services. Furthermore, continuous improvements from the organisation will not only help it become successful but also provide it with a competitive advantage. At the end of this process, after the improvement has been implemented, the

organisation would have thus learnt from the improvement. Therefore, it makes the process a cyclic and one may postulate that continuous improvement has a direct effect on acquiring knowledge. Continuous improvement means a never-ending cycle and therefore one can deduce that each concept either has a direct or indirect effect on the other.

One can deduce that the framework (see Figure 2) shows us the relationships the four concepts identified in the framework and the process of knowledge in KM systems. The finding of this study therefore provides one with a deeper and greater understanding of KM. It has helped us to view the process and understanding of organisations that use KM systems. Moreover, it also supports the new framework formulated to an extent and provides one with the steps followed by organisations to start using KM.

## Conclusion

Organisations are making the transition from managing data to management of knowledge. This is inevitable in the digital age in which organisations compete for survival. It is therefore imperative for organisations to stay abreast of the type of knowledge that is lacking in the organisation and adapt the KM strategies to optimally service the organisations' purpose. The research aimed at determining what practices organisations were using to ensure effective knowledge transfer within the organization. Four constructs were measured and only the 'Status' of KM emanated as a significant predictor to Organisational capabilities, which in turn may lead to successful KM implementations. It was discovered that many organisations relied heavily on their employees taking responsibility for their own knowledge, yet had no processes in place to establish whether the knowledge was current and correct. The importance of KM is clear to many organisations and the leaders search for the main reasons and factors for being successful in KM systems design and implementation through their organisations.

This study has provided insights into the KM strategies and practices of various industries in a few South African organisations. Evidence suggests that these organisations can justify strong strategic emphasis on KM and a concomitant significant investment of resources in the pursuit of competitive advantage. Management practices and philosophies of these organisations create a culture of knowledge sharing but need to focus on how to reward this knowledge sharing for better KM strategies implementation. We may conclude that some organisations do use KM systems and that they are in the introduction or growth stage. This article has presented an ongoing research which investigates factors to ensure the effectiveness of KM. A framework (see Figure 2) was developed from the literature and the findings from the investigation in this study.

Notwithstanding the above, much work needs to be done. Our understandings of employees are somewhat human resource driven in that it is more related to decision-making and knowledge-intensive work. There is very little deep-rooted theory of knowledge that is applicable to business or daily life. Organisations should manage knowledge effectively by having the ability to link it properly with enterprise strategy, tactics and daily operations. Moreover, simultaneously recognising that in most organisations people and their behaviours contribute much more to the success of the enterprise than the assets that are conventionally targets of management focus. It was found that organisations must adopt greater people-centric perspectives of knowledge. In order to be viable, constant learning is recommended which in turn results in innovative thinking. Technology can only go to a certain point. It can only provide an organisation with the reasoning man has built into it. However, it does not have the

ability of innovation. People are the intelligent beings that create and act on new opportunities and their energies must be harnessed in order to ensure progress in KM.

The ability to capture and harness knowledge management has become critical for organisations as they seek to adapt to changes in the business environment. Successful knowledge management solutions reflect the way individuals and organisations have managed and shared. KM solutions are built on content and collaboration technologies which enable individuals, teams and organisations to collaboratively make better decisions faster and act on those decisions to create more value from core competencies. These results however may differ in particular industries or organisations.

## Recommendations

KM protects intellectual assets from decay and enhances decision making through adding value and intelligence. Therefore, KM should be managed in organisations so that employees can get access to it and to lead to the enhanced productivity. Organisations should have a means in which they are able to retrieve knowledge by providing good salaries if someone knows the job well and is willing to share their tacit knowledge with other colleagues in the workplace. The employees may be supported by a system capable of matching their needs with knowledge available within the organisation. Furthermore, organisations should treat their employees equally so that nobody feels superior to the other.

KM systems are sometimes difficult to implement successfully and they do not always provide value after they are installed. Organisations should provide appropriate management capital to make these systems successful by rewarding knowledge sharing, promoting communities of practice and a knowledge culture. This could be achieved by designing appropriate taxonomies for organising knowledge. Furthermore, proper planning, the development of appropriate measurements of benefits and staged rollouts may increase the chances of success for KM projects. In addition, organisations need to customize their KM systems as per the business processes per functional department because having too much knowledge that is unrelated to that particular department makes decisions more complicated. Organisations have to consolidate knowledge and provide consistent performance indicators that are regarded as the critical steps the organisations can take to improve the speed and quality of decision-making.

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