Enablers of South African Knowledge Management Maturity: Issues, Principles and Policies

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Recommended Citation  
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Abstract Prior studies suggest that certain issues, principles and policies are related to the successful institutionalisation of Knowledge Management (KM). This article examines the role these three factors play in the establishment of KM and report on an empirical study conducted in 86 South African based organizations.

On average, knowledge is regarded by respondents as a strategic corporate resource and KM is considered as one of the top five internal priorities of organizations. In support of the concern that maturity models are biasing KM institutionalisation towards the technological domain, findings support the argument that endeavours in KM, directly supported by ICT, are easier to implement and/or better managed and institutionalised, than endeavours that require a human component to succeed. The findings confirm that there is agreement within organizations for hybrid KM environments that include technology and people. There is a strong element of testing the ground before full commitment and implementation of KM. KM maturity can therefore be seen to be a derivative of commitment and willingness, more than the implementation of technology.

Keywords Knowledge Management, Knowledge Management Maturity, Knowledge Management Issues, Principals, Policies and Strategies.

INTRODUCTION

Knowledge Management (KM) means different things to different people with some authors suggesting that KM is in itself a fallacy (Wilson 2002), while other researchers suggesting KM is the most strategically significant resource of the firm (Zach 1999, Snyman and Kruger 2004). Davenport, (1999), in contemplating the value Knowledge Management (KM) adds to an organization, proposes that companies should refrain from embarking on detailed KM tactics, and as a point of departure should rather focus on the identification of high-level KM principles. At a higher conceptual level, Earl (2001), proposes that fundamental issues are prerequisites to the success of KM. According to Earl (2001), the ability to manage intellectual assets as routine processes is the biggest success factor behind technocratic-, economic- and behavioural schools of KM thought. In contrast, Taylor-Small and Tatalias (2000) view KM from a two-dimensional perspective. Taylor-Small and Tatalias, contest that this first dimension is built on a second higher-order dimension, consisting of elements that enable or influence knowledge creation activities. According to Taylor et al., these elements include the formulation of strategy, measurement, policy, content, process, technology and culture.

Gupta and Govindarajan (2000), in debating what specifically makes the transfer of knowledge successful, argue that the success of KM is mostly the result of the perception of knowledge value, while Logan (2001) points out that KM is enabled by robust business and human processes and depends on a compelling technology environment. In contrast, Davenport, Thomas and Cantrell (2002) propose that it is primarily the design of the workplace that influences the performance of knowledge based organizations.

Viewed holistically, all address the same fundamental issues and concerns. These authors are emphasize that before any endeavours in KM can commence, organizations should explicitly recognize that knowledge is of strategic importance and there must be a conscious drive towards establishing a culture of knowledge sharing. The line of reasoning corresponds to an argument put forward by Ndlela and du Toit (2001), maintaining that “people are the key component of knowledge management; hence the type of culture existing in the enterprise is crucial to the success of knowledge management (p. 152)”.

A lot of confusion surrounding the difference between Information Technology (IT), Information Management (IM) and Knowledge Management (KM) originated from the cycle of transferring data into information and information into knowledge. In rendering information to make KM possible, IT systems are often perceived as being KM systems. According to Kazimi, Dasgupta and Natarajan (2004) and Gallagher and Hazlett (2004) it is this reliance on technology that resulted in KM maturity models being derived from the Software Engineering Institute's Capability Maturity Model (CMM).

Kruger and Snyman (2005) argue that as the focus remains on technology, KM is still in its infancy. As far as global companies is concerned, Dous and Davenport (2005) plus Voelpen, (2005), in
proposing Siemens “ShareNet” system as a benchmark for the global transfer of KM, argue that although “knowledge-sharing systems have been implemented in various global companies during the last few years, many of them have failed because they were limited to technical solutions and did not consider the organizational and cross-cultural factors that are necessary to make a knowledge sharing platform successful (Dous & Davenport, 2005:09)”. In reverse engineering Google’s innovation machine, Davenport (2008) reports that Google’s founders and executives have moved beyond technical solutions to also consider other aspects of the knowledge-work environment. Even though some global companies might be starting to consider organizational and cross-cultural factors, seldom has the maturity of KM been assessed from a strategic/managerial, rather than a technological perspective.

Beyond identification of KM issues, principles and policies, literature is yet to supply empirical evidence of the ability of ordinary organizations to implement KM successfully. The aim of this paper is to address this issue and report on the maturity of smaller organizations to identify and institutionalise principles, policies and strategies as enablers to KM.

The intent of this article is therefore to move past theoretical propositions and investigate KM maturity in different organizational groupings. The contribution of this paper is to address these often neglected, but still extremely important research questions that follow:

- Are there certain “issues”, “principles” and “policies” that can be considered enablers to KM?
- Is there a correlation between the establishment of KM “issues” and the implementation of KM?
- Are endeavours in KM, directly supported by ICT easier to implement and/or better managed than endeavours that require a human component to succeed?
- Does KM differ between organizational groupings?

MANAGEMENT IN A MULTICULTURAL ENVIRONMENT: THE SOUTH AFRICAN SCENARIO

Deep rooted political and social requirements to integrate cultures, not in a manner where one culture dominates while others become extinct over time (Prime, 1999), make the South African environment unique in many aspects. Challenged to amalgamate Western cultures with African cultures, the South African environment portrays a model for businesses of the future. The South African environment offers continued change, diversity and even elements of silent intolerance and conflict (Finestone and Snyman, 2005).

Communication, which is a major element of knowledge-sharing and the vesting of KM maturity, is often severely hampered when having to deal with 11 official languages (Prime, 1999). White South Africans predominantly adhere to Western Culture preferring an explicit style of communication such as written commitments (i.e., contracts), as the main indication of trust. In contrast, Black African cultures are more implicit in their manner of communication where oral communication is preferred (King, Kruger and Pretorius, 2007).

Strongly linked to the previous point, is the way South African organizations are managed. Three management styles (Euro-centric, Afro-centric and Synergistic Inspirational) directly or indirectly influenced the successful institutionalization and growth in KM. The Euro-centric approach, a predominantly western value system, emphasises characteristics such as individualism and self-centeredness (Prime, 1999). Due to the impact of colonialism and apartheid, the Euro-centric approach is still dominant in South Africa. Oppressive policies of the past instilled a lack of trust in all that is alien or foreign in the Black African cultures. Previous disadvantaged groups still consider Euro-centrism as an extension of oppression, arguing that Euro-centrism lead to a socialization of people along race and ethic lines. (King, Kruger and Pretorius, 2007).

The second management approach, an Ubuntu-based system, embraces Afro centricity, which basically, encourages the use of home base in dealing with challenges whether internal or external to the organization. Ubuntu-thinking is considered inclusivist oriented in contrast to the Euro-centric or exclusivist approach. Ubuntuanism is opposed to individualism and rather embraces collectivism, which emphasises the social unit (Prime, 1999).

The third approach, Synergistic Inspirational, embraces both of the previous management approaches mentioned earlier. It involves amalgamation of time honoured African management practices, principles and philosophies with Western management methods.

The South African environment therefore provides a clairvoyant perspective to western industry on business confronted by challenges to merge different cultures. In practice, due to the legacy left by previous oppressive policies, most South African organizations are in a transition stage somewhere
between Eurocentric, Synergistic Inspirational and Afrocentric management styles. Due to policies such as redistribution of wealth, affirmative action and black economic empowerment, government departments, service industries, and basic resources such as construction, building materials and mining are more lenient towards the Afrocentric and Synergistic Inspirational management style. This is primarily due to a large percentage of these institutions senior managers these days being representative of previously disadvantaged population groups. In contrast financial institutions, education, pharmaceuticals, ICT and the automotive industry, organizations for the most part still under the control of western institutions, predominantly still support the Eurocentric management style.

**METHODOLOGY AND DATA COLLECTION**

In an attempt to bring conceptual coherence between IM, IT and KM, Kruger and Snyman (2007) designed a questionnaire consisting of six (6) sections, constituting (101) descriptive questions. What sets this questionnaire apart from other KM maturity questionnaires is that it not only assesses IT and IM, but also focuses on the ability of organizations to identify and institutionalize KM principles. This questionnaire is specifically appealing in the sense that it can shed light on the readiness or maturity of organizations to institutionalise KM.

Due to restrictions such as sensitivity, confidentiality and availability of information, preliminary research attempts showed an unwillingness of organizations to participate in the intended research. This problem was overcome by incorporating a research component into the curriculum of Master of Business Administration (MBA), Master of Information Technology (MIT) and Master of Commerce (MCom) students of a large urban university in South Africa. Since most of these students were active practitioners (97%), and considered “senior” with regard to academic achievement as well as work experience, they became suitable surrogates to participate in the research project.

After numerous lectures and discussions dealing with data, information, knowledge, and KM, senior practitioners used the KM Maturity Assessment Questionnaire (KMMAQ) by Kruger and Snyman (2007) to critically evaluate the KM Maturity of their own organization or with one that they were deeply familiar. Due to a number of restrictions and ethical concerns raised, only volunteering practitioners and volunteering organizations were allowed to participate in the study. In total 178 senior practitioners from nine (9) industry groupings participated in the research the questionnaire to three organizational levels (strategic, middle/management and operational) in their respective organizations.

The decision regarding the selection of organizational groupings were guided by organizational sectors as prescribed by the Johannesburg Stock Exchange (JSE) and guidelines provided by McGregor Business and Financial Analysis (BFA). BFA supplies real-time and historical fundamental information on South African listed companies, top unlisted companies, local and international economic data as well as international financial indicators and currency exchange data. As seen in Table 1, the selection of organizational groupings led to a fairly even distribution of the total population under investigation with Government (Gov) representing the highest population (18.43%), and Automotive and Transport (Tran) representing the smallest population (4.38%).

<table>
<thead>
<tr>
<th>Type</th>
<th>Abbreviation</th>
<th>Sample</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automobiles/Transport</td>
<td>Trans</td>
<td>19</td>
<td>4.38%</td>
</tr>
<tr>
<td>Banks and Insurance</td>
<td>Fin</td>
<td>44</td>
<td>10.14%</td>
</tr>
<tr>
<td>Chemicals, Pharmaceuticals</td>
<td>Chem</td>
<td>29</td>
<td>6.68%</td>
</tr>
<tr>
<td>Construction, Building Materials to Mining</td>
<td>Build</td>
<td>27</td>
<td>6.22%</td>
</tr>
<tr>
<td>Consulting, Auditing, to Service Delivery</td>
<td>Service</td>
<td>56</td>
<td>12.90%</td>
</tr>
<tr>
<td>Consumer Goods to Utilities</td>
<td>Goods</td>
<td>58</td>
<td>13.36%</td>
</tr>
<tr>
<td>Education</td>
<td>Edu</td>
<td>47</td>
<td>10.83%</td>
</tr>
<tr>
<td>Government</td>
<td>Gov</td>
<td>80</td>
<td>18.43%</td>
</tr>
<tr>
<td>IT to Telecommunications</td>
<td>ICT</td>
<td>74</td>
<td>17.05%</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td></td>
<td><strong>434</strong></td>
<td><strong>99.99%</strong></td>
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Table 1: Industry Grouping

The study sample consisted of interviewing 434 employees from 86 South African based organizations within the nine industry groupings. Interviews conducted across the three managerial levels, led to a fairly even distribution, where Operational Personnel totalled 143 (32.95%), Middle Management 158 (36.41%) and Senior Management 133 (30.65%). The sample chosen was therefore not only representative of the managerial levels present in organizations, but due to the diversity of
organizations participating in the study, the sample population also consisted of individuals from diverse backgrounds and cultures.

Data collected by means of the structured KMMAQ was thereafter meticulously transferred to a rating system. All statistical calculations were verified by the Bureau for Statistical and Survey Methodology (Statomet). Statomet is a facility that focuses on the scientific design and management of research. Statomet provides statistical advice on all aspects of research design and management. However, human understanding and interpretation, both important factors contributing to valid knowledge (Cornford & Smithson, 2004), meant that the interpretation of results, as compared to the analysis of results, had to be done in a more subjective and “interpretive” manner.

The analysis that follows consists of the descriptive statistics used for each question. Statistics established the basic measures of the response variable for every question covering aspects pertaining to ICT and IM. Unless specifically stated, all findings are evaluated from a positive response basis (i.e., “Yes, definitely” & “Yes, but not significantly”). Where the probability of exceeding the norm (p-value) was found to be less than 0.05, the decision rule was to reject the null hypothesis at a 5% level of significance.

DISCUSSION, RESULTS & FINDINGS

In order to extract comparable and meaningful findings from within the KM maturity questionnaires, Kruger and Snyman (2007) utilized a four-point Likert scale to express the degree of agreement with the posed questions. This maturity rating system was designed to calculate an overall KM maturity score based on multiple sections and expressed as values or percentages. The KM maturity sections were calculated as follows:

- **Cover Page: Demographics, q.1 - 4 (Max score = 0)**
- **Section 1: ICT Management, q.5 - 9 (Max score = 20)**
- **Section 2: Information Management, q.10 - 28 (Max score = 76)**
- **Section 3: KM Issues (Principles, Policy, Strategy), q.29 - 52 (Max score = 88)**
- **Section 4: Implementation of KM, q.53 - 84 (Max score = 94)**
- **Section 5: Ubiquities Knowledge, q.85 - 103 (Max score = 76)**
- **Section 6: Assessment of KM Growth, q.104: (Max score = 4).**

The overall KM maturity was calculated by adding the scores achieved in the six (6) individual sections together (20 + 76 + 88 + 94 + 76 + 4) for a total of 358 points.

**Note:** Although the questionnaire by Kruger and Snyman (2007) address the total spectrum of KM maturity, this article primarily only focuses on the findings of Sections 3 (KM Issues) and 4 (Implementation of KM). (Full details of all statistical analysis done as well as a summary of all results obtained are on request, available from the authors).

In total, 434 employees in 86 organizations participated in the study. The average score of Section 3 for an organization’s ability to establish KM Issues (principles, policies and strategies), was 51.75%. The findings suggest a definite trend towards the successful establishment of KM Issues and the Implementation of KM. Industries achieving higher than average scores in the identification of KM Issues (Build 61.15%, Fin 57.85% and Services 59.8%) also achieved higher than average scores in the Implementation of KM (53.47%, 48.18%, and 50.58%). The converse is also true where industries (ICT 53.19%, Chem 46.82%, Gov 47.28% and Edu 45.45%) achieving lower scores in the
The establishment of KM issues also achieving lower than average scores in institutionalisation of KM (44.63, 44.27, 44.14, and 40.28, Table 2, Figure 1). The exception to the rule is the Automotive and Transport (Trans) grouping achieving a below average score in the establishment of KM issues (45.33%) and an above average score (50.11%) regarding the level of KM maturity reached.

Table 2: KM Issues, Implementation of KM, & KM Maturity BY Industry Grouping

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<tbody>
<tr>
<td>45.33</td>
<td>57.85</td>
<td>46.82</td>
<td>61.15</td>
<td>59.8</td>
<td>49.00</td>
<td>45.45</td>
<td>47.28</td>
<td>53.19</td>
<td>51.75</td>
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</table>

With regards to the establishment of KM Issues, organizations are aware of the power of knowledge where knowledge is seen as a strategic corporate resource (q.29 - 83.83%), and KM is regarded as one of the top five internal priorities of organizations (q.30 - 64.20%). Slightly more than half of interviewees (q.31 - 53.94%) indicated that KM is supplying a direct input to the strategic management process, although not yet of a significant nature.

The question regarded by most respondents (“Yes, definitely” & “Yes, but not significantly”) to be important goals in motivating the establishment of formal KM practices are: improving work efficiency and/or productivity by sharing knowledge within organizations (q.32 - 84.76%), decentralization of authority (q.33 - 67.90%), releasing information more rapidly and making it more widely available to staff (q.34 - 79.91%), promoting lifelong learning (q.35 - 79.91%), improving transparency (q.36 - 75.29%), and relationships and trust (q.37 - 77.19%), and making up for loss of knowledge (q.38 - 68.36%).

Most respondents (q.40 - 75.29%) positively indicated that there is agreement within their organizations for hybrid KM environments that include technology and people. These organizations have taken a conscious decision to invest in KM (q.39 - 69.75%). There is only moderate commitment from top management to establish formal KM functions (q.42 - 57.91%), identify high ranking knowledge champions (q.41 - 53.81%), improve work processes (q.44 - 56.71%), and gaining involvement from employees regarding knowledge sharing exercises (q.45 - 53.47%).

When posed with the question of whether the decision was taken by top management to judge people according to their ability to share knowledge (q.43), most respondents argued negatively, with only 8.35% strongly agreeing (“Yes, definitely”), while 25.52% responding that although such a decision was taken, the decision was not taken at a significant level.

Forty four point two four percent (44.24%) of respondents indicated that their organizations have a KM Strategy in place (q.47). Similarly, 42.86% of respondents indicated that a clearly defined KM Policy is in place (q.46), while 31.34% are under the impression that KM Policy has been communicated to staff (q.48). Of the 192 respondents (44.24%) who answered positively about having a clearly defined KM Strategy (q.49), 85.28% indicated that their KM Strategy includes IM aspects, 80.52% (q.50) that it includes ICT aspects, 71.00% (q.51) that it incorporates human resource aspects and 61.80% (q.52) that it includes organizational aspects such as communities of practice, decentralization of authority and networks.

There is a strong indications that organizations are slow in starting and driving KM. Using the Friedman Test followed by Multiple Comparison Testing, a statistically significant difference between understanding the power of knowledge, reasoning and motivation behind establishing formal KM activities (q.29, q.32 to q.39, q.42); the starting of and driving endeavours in KM (q.41, q.43), and the institutionalisation of KM endeavours (q.53 to q.61).

The Friedman test was used to test the null hypothesis that the mean of t, h1 and h2 are equal. \[t = \text{sum (q.29, q.32 to q.39, q.42)}*100/48\] (representing an understanding of the power of KM), \[h1 = \text{sum (q.41, q.43)}*100/8\] and \[h2 = \text{sum (q.53 to q.61)}*100/36\] (representing the institutionalization of KM). Since the p-value at 0.0000 was smaller than 0.05 the null hypothesis that the mean of h1, h2 and t are the same, was rejected.

IMPLEMENTATION OF KNOWLEDGE MANAGEMENT

The average KM score for this maturity Section 4 was 46.50%. The respondents wanted an opening up of bureaucratic divisions (q.53 - 48.03%), the creation of a central coordinating unit for KM (q.54 - 43.72%), the appointment of a chief knowledge officer with executive status (q.55 - 25.00%), and the
establishment of incentive schemes for knowledge sharing (q.60 - 21.76%) all trended towards the negative.

Endeavours such as reorganization of offices (q.56 - 51.27%), the establishment of informal networks (q.57 - 57.34%), the institutionalisation of training and mentoring programmes (q.58 - 68.36%), and communication with suppliers (q.61 - 67.76%) all achieved positive scores, while findings indicated that at these endeavours are not yet of a significant nature.

Although small in percentage, many respondents (q.62 - 39.67%) are under the impression that the overall responsibility for KM resides with top management. A smaller percentage (23.47%) believe that the responsibility for KM resides with the information technology team (q.62), while 19.25% are of the opinion that the responsibility resides with a special KM unit (q.62). The smallest percent (8.69%) is of the opinion that the responsibility for KM resides with the human resources management team (q.62), while –some (8.92% believe it resides with some “other” organizational group (q.62).

When asked the question, “In your organization staff members spend an increased amount of time on the following activities”, answers strongly indicated that technology-enabled endeavours such as information sharing by electronic devices (q.66 - 87.44%) and the presentation of projects and activities, (q.65 - 71.23%) being preferred above endeavours such as information meetings (q.63 - 68.82%), peer review/quality reviews (q.64 - 50.69%), or the building of databases (q.67 - 60.09%).

The majority of respondents indicated that good work practices have been outlined and updated on a regular basis in organizational guidelines and training manuals (q.70 – 66.82% and q.68 - 60.79%). However, only 48.25% are of the opinion that best practices (q.69) are being outlined and updated on a regular basis.

Responses were indifferent concerning factors such as: focusing more strongly on information and communications technology than on people and organizational matters (q.78 - 46.64%), resistance of certain groups against KM (q.80 - 50.23%), the making available of documents spontaneously (q.81 - 51.29%), and access to sensitive and/or confidential information (q.83 - 50.00%), contribute to difficulties in implementing KM practice. Respondents, however, indicated that lack of time or resources to concretely share knowledge on a day-to-day basis (q.79 - 74.71%) and difficulty in capturing an employee’s undocumented knowledge or know-how (q.82 - 82.52%) strongly contribute to experiencing difficulty in implementing KM practices.

Regarding the implementation of a knowledge-sharing culture, slightly more than half (53.36%) of all interviewed respondents indicated that they consider the sharing of knowledge to be good for their careers (q.75), with 50.12% indicating that documents are made available spontaneously (q.77). Only 35.03% of all respondents indicated that staff members spontaneously organize knowledge events such as meeting with staff from other divisions/departments (q.76).

Organizations scored low with regard to measuring the progress made in the implementation of KM practices in organizations. A lowly 24.71% of all those interviewed indicated that their organization makes use of indicators to assess the implementation of KM practice (q.71), 29.63% use scorecards (q.72), while 41.40% use written or oral feedback from staff on achievement in KM (q.73). Only 37.96% indicated that comparisons are made between their and peer organizations (q.74).

Findings suggest that there is an element of “testing the ground” before full engagement in KM. Examples of this can be found in answers supplied to Section 4 of the questionnaire where the establishment of incentive schemes for knowledge sharing (q.60 - 21.76%) and the appointment of a Chief knowledge officer (q.55 - 25.00%) and the opening of bureaucratic divisions (q.53 - 48.03%) failed lower than endeavours for establishment of informal networks (q.57 - 57.34%), institutionalisation of training and mentoring programs (q.58 - 68.36%) and reorganization of offices (q.56 - 51.27%). The survey results indicate that endeavours requiring large changes to organizational structures and real and dedicated commitment from top management are less supported than endeavours that require smaller changes to organizational structures, less commitment and fewer resources. The above-mentioned argument is strongly supported by the finding of q.79, where 74.71% of all interviewed respondents were of the opinion that there is a lack of time and resources to concretely share knowledge on a day-to-day basis.

Possibly the lack of a genuine commitment from top management and/or the inability of top management to successfully sell the benefits of KM impacted negatively on the establishment of a knowledge sharing culture within organizations. As mentioned earlier, just over half (53.36%) of all interviewees indicated that they consider the sharing of knowledge to be good for their careers (q.75), and only 50.12% indicated that documents are made available spontaneously (q.77). In emphasis of this point, slightly more than half (50.23%) of all interviewees also indicated that there is resistance in certain groups of staff to the implementation of KM practices (q.80).

There is a definite preference to share information by electronic devices (q.66 - 87.44%), above the sharing of knowledge in a personal manner. When it comes to the domain of personal knowledge sharing, “presentations of project and activities” scored the highest (q.65 - 71.23%), “informal
meetings” came in second (q.63 - 68.82%) with peer review/quality reviews being the least preferred method (q.64 - 50.69%). Capturing employees’ undocumented knowledge (q.82 - 82.52%) was perceived to be the most difficult with regard to the implementing of KM practice. In comparing the difference in the mean score of questions q.63 to q.65 (people orientated) with scores obtained in q.66 and q.67 (technology orientated), it was found that that there is a definite inclination towards using technology rather than sharing knowledge and information in a personal manner. In using the Univariate Procedure the difference in mean score between People (p) = mean (q.63 + q.64 + q.65)/3, and Technology (t) = mean (q.66 + q.67)/2 were determined. A Signed Rank Test for location was done. With a p Value < .0001 this test indicated that there is a statistically significant difference between the means of “people” and “technology”. Finally DIFFTP Analysis (DIFFTP = t - p) indicated a (stronger) inclination towards “technology” than towards “People” since the mean of the DIFFTP (t-p) was a positive 0.412.

Findings indicated that KM activities between organizations and its customers (q.59 - 81.71%) scored higher than internal knowledge sharing endeavours such as opening up bureaucratic divisions (q.53 - 48.03%), the creation of a central co-ordinating unit for KM (q.54 - 43.72%), the appointment of a chief knowledge officer (q.55 - 25.00%), reorganization of offices (q.56 - 51.27%), establishment of informal networks (q.57 - 57.34%), institutionalization of training and mentoring programmes (q.58 - 68.36%) and the establishment of incentive schemes (q.60 - 21.76%). A possible explanation for this phenomenon could be that interviewees considering endeavours such as communication with customers to strongly depend on e-commerce and/or ICT initiatives. As indicated earlier many organizations are more comfortable with applying ICT and technology than to embark on endeavours heavily dependent on the culture set by top management, and/or the satisfaction of intangible criteria. This line of reasoning is supported by the finding of q.84 where 42.89% of respondents indicated that knowledge and information management is not a top priority in the modernization programme of their organization.

**Knowledge Management Maturity by Industry Grouping**

Due to the structure of the questionnaire, captured data also enabled the analysis of KM maturity for different organizational types, as applicable to South African Industries (Table 3/Figure 2). The industry sector that achieved the highest overall knowledge management maturity score was the Resources sector, with a total score of 199.33/358 or 55.67%.

<table>
<thead>
<tr>
<th>Industry Group</th>
<th>Growth %</th>
<th>KM Maturity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automotive/Transport</td>
<td>52.63</td>
<td>49.58</td>
</tr>
<tr>
<td>Financial/Banking</td>
<td>48.83</td>
<td>53.29</td>
</tr>
<tr>
<td>Pharmaceuticals</td>
<td>47.41</td>
<td>46.90</td>
</tr>
<tr>
<td>Resources</td>
<td>69.44</td>
<td>55.67</td>
</tr>
<tr>
<td>Consumer Goods</td>
<td>54.62</td>
<td>49.87</td>
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<tr>
<td>ICT</td>
<td>48.55</td>
<td>49.06</td>
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<td>Education</td>
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<td>42.45</td>
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<tr>
<td>Service</td>
<td>61.16</td>
<td>51.22</td>
</tr>
<tr>
<td>Government</td>
<td>49.37</td>
<td>46.39</td>
</tr>
</tbody>
</table>

**Table 3/Figure 2: Organizational Grouping and Maturity Growth**

Resource organizations not only recorded the highest growth in maturity over the past five years (69.44%), but also achieved the highest percentages in sections 2 (Information Management – 71.49%), 3 (Principles, Policy, Strategy – 61.15%) and 4 (Implementation of KM) of the questionnaire. Operational, middle- and senior management rated overall maturity in a similar manner at 52.82%, 57.46% and 56.23% respectively.
The organization type that achieved the second highest overall score was the financial sector with a total score of 190.79/358 or 53.29%. In comparison to other industries, the financial industry obtained high scores in Sections 2 (Information management – 68.03%) and 3 (the formulation of KM issues, policy and strategy – 57.85%) with slightly above average scores in Sections 4 (Implementation of KM – 48.18) and 5 (Ubiquities Knowledge – 32.08%). Even though all managerial levels forwarded similar scores regarding the management of ICT (Section 1), score differences occurred regarding the management of information (Section 2; operational personnel - 59.37%, middle managers - 74.53% and senior managers - 71.42%), and the formulation of KM issues, policy and strategy (Section 3; operational personnel – 52.34%, middle managers – 55.84% and senior managers – 66.15%).

The third highest score was achieved by organizations in the Service delivery grouping with an overall score of 183.64/358 or 51.22%. These organizations recorded high scores in Sections 3 (the formulation of KM issues, policy and strategy), and 4 (Implementation of KM) and moderate scores in Sections 1 (ICT management), and 2 (Information management), and extremely low scores in Section 5 (Ubiquities Knowledge) of the maturity questionnaire. Maturity growth in this sector is high at 61.16%. Of interest is that score difference between the different maturity sections is marginal with operational personnel, middle managers and senior managers deciding on a fairly similar overall maturity scores (operational – 50.85%, middle management – 50.54% and senior management – 52.67%).

Organizations within the Goods grouping received the fourth highest maturity score, obtaining an average score of 178.55/358 or 49.87%. Although organizations in this sector achieved just above average to just below average scores in Sections 1, 2, 3, and 4 of the maturity questionnaire, they received the third highest score regarding knowledge management growth (54.62%) and the second highest score in Section 5 (Ubiquities Knowledge – 34.25%). Similar to service organizations, the score difference between the different maturity sections is marginal over most maturity sections with operational personnel, middle managers and senior managers deciding on a fairly similar overall maturity scores (operational – 49.30%, middle management – 47.90 and senior management – 52.51%).

Automobiles/Transport organizations received the fifth highest score, totalling an average score of 177.52/358 or 49.58%. An interesting finding is that these organizations scored the lowest average score (45.33%) in Section 3, formulation of knowledge management issues, policies and strategies. In comparison scores achieved in Sections 1 (ICT management - 78.42%), 2 (Information management) and 4 (Implementation of KM – 50.11%) are moderate, with the highest score obtained in Section 5 (Ubiquitous knowledge – 35.94%) for all sectors covered. Review of the scores forwarded by the different managerial levels indicate that the low score achieved in maturity Section 3 (formulation of knowledge management issues, policies and strategies) is primarily due to operational managers scoring this section at 36.75%, compared to scores of 48.48% and 50.00% forwarded by middle and senior managers. This difference in score is repeated in the scores forwarded by operational personnel and managers regarding the implementation of KM (Section 4) where managers allocated scores of 57.09% and 53.95%, and operational personnel 38.65% respectively.

Due to the nature of their business, ICT organizations scored high in Section 1 (ICT management) of the questionnaire, achieving an average score of 78.85%. Subsequent maturity levels follow a trend similar to the average maturity score achieved by all industries, become incrementally smaller as the level of maturity increases. Senior managers in ICT organizations, at 60.0%, rated the overall maturity to be considerably higher than the rating attributed to middle management (46%) and operational personnel (43%). Of interest is that the bulk of the differences in scores between top, middle and operational personnel are vested primarily in the scores allocated to Sections 2, 3 and 4 of the questionnaire, i.e. information management, formulation of knowledge management issues, policies and strategies and the implementation of knowledge management.

Chemical and Pharmaceutical organizations achieved an overall maturity score of 168.00/358 or 46.9%. Apart from Section 2 (Information management) scores achieved in all sections of the questionnaire are lower than the average score achieved per maturity section by all organizational groupings interviewed. An interesting observation is that although senior managers in this industry scored the overall maturity at 55%, operational personnel at 44% rated the overall maturity slightly higher than middle management did at 43%. The low score attributed to middle management is primarily due to middle managers perceiving level 3 (formulation of knowledge management issues, policies and strategies) to be inadequate.

The governmental sector achieved an overall maturity score of 166.11/358 or 46.39%. Government departments achieved scores over all maturity levels (except Section 5) considerably lower than the average score obtained by all participating organizations. However, an interesting finding is that growth of maturity over the past 5 years at 49% are moderate compared to other groupings.
Educational institutions not only received the lowest maturity score of all groupings interviewed (152/358 or 42.45%), but also forwarded the lowest maturity scores over nearly all maturity levels. Growth of maturity over the past five years was also the lowest of all organizational sectors interviewed, receiving a score of 42.02%. Senior managers rated growth in KM at 44.23% and the overall maturity at 47.55%, middle management rated growth in KM at 44.44% and overall maturity at 39.86% while operational personnel rated growth in KM at 37.5% and maturity at 41.44%.

LIMITATIONS
A limitation of the study was the focus on a single country’s industrial base, South African. Replicating this study in other developing as well as developed countries would be most informative. It must be acknowledged that the management of knowledge, in all its complexity, constitutes much more than the issues identified in this research. As the body of knowledge evolves, the line of reasoning proposed and the associated questionnaire must be updated and revised on a regular basis. The use of the Likert scale, used in the KM maturity questionnaire may not have appropriately captured all data. Of interest for future research would be to repeat the experiment and change the description of the incision points used, and/or alter the number of incision points used. This study may therefore be viewed as a “pilot study” to provide insights. As an example, more research is needed to determine the significance of some enablers over others in some industries. Such a longitudinal study should span a number of years and be inclusive of additional industries, within different managerial and strategic settings.

The use of a four point Likert scale, used in the KM Maturity Questionnaire may not have sensitive enough. Expanding the number of possible responses might offer a more nuanced analysis of trends.

CONCLUSION
Literature suggests that there are certain “issues”, “principles” and “policies” that can be considered “enablers” of KM. This study collaborates the literature findings in the South African context. Findings indicate that “issues”, “principles”, “policies” and even “strategies” regarding formal KM practices are well institutionalised in South African industry. Not only do organizations agree that setting the stage for KM is of extreme importance, but knowledge is also regarded as a strategic corporate resource.

KM maturity differs vastly between different industry groupings. An interesting observation is that in industries prone towards Afrocentric and Synergistic Inspirational management styles KM growth was higher than in industries lenient towards the Eurocentric management style. However, this trend is not supported by the overall KM maturity score achieved. This hint at the possibility that it is more the case of certain industries catching-up, than the case of Afrocentric and Synergistic Inspirational management styles are outperforming the Eurocentric management style.

Within most organizations surveyed, respondents indicated that there is a definite trend towards the successful establishment of KM issues and the implementation of KM. Industries achieving higher than average scores in the identification and Implementation of KM Issues, achieved higher than average score in the implementation of KM. The converse was also found where industries achieving lower scores in the establishment of KM Issues also achieving lower than average scores in Institutionalisation of KM. Due to the diversity of industry groupings, these findings are applicable to organizations examining the role enablers to KM play in the establishment of KM Maturity. This study may therefore be viewed as a “pilot study” to provide a baseline and insight into future research of IM for enabling KM.

IMPLICATIONS
The results reported here strengthen concern that the Software Engineering Institute's Capability Maturity Model is biased in measuring KM Maturity. Findings indicate that there is a tendency to favour endeavours in KM, directly supported by IT, above endeavours than require human intervention and/or a human component to succeed.

An interesting observation is that there is only moderate commitment from top management to establish formal KM functions. This strengthens concern that lack of commitment from top management’s side, and/or inability of top management to sell the benefits of KM are impacting negatively on the establishment of a knowledge sharing culture. A long-term development plan, strongly supported by top management, that address the identification and establishment of KM Issues.
or success factors, might prove to be quite valuable in the continued quest to manage knowledge successfully.

REFERENCES


