# Determining the Value of Knowledge Management: A South Africa Perspective

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**ABSTRACT**

Beyond critique of current maturity models, the research literature has neglected to supply empirical evidence of the value Knowledge Management (KM) holds for organizations. Specifically, not much is known regarding KM in developing economies. The majority of studies, in common with other emergent business philosophies, are for the most part focused on large organizations of developed economies, where readily available implementation resources are an underlying assumption. This paper will address this issue and assess the correlation between KM Maturity as a measure of successful institutionalization of KM and Organizational Performance (OP) in a developing economy. From a large urban South African University engaged in numerous collaboration programs with industry, the authors have gained insight into KM Maturity and Organizational Performance (OP) of three industry groups, over a five-year period. Findings supported the hypothesis that companies reporting higher OP also recorded higher KM Maturity and vice versa. In comparison to peer organizations within their respective industries, findings indicate that there are conditions were companies that achieved higher OP scores recorded lower KM Maturity scores and vice versa. Apart from speculating which industry factors skewed performance figures, statistical analysis could not clarify why the correlation between growth in KM Maturity and growth in OP is not easily noticeable and/or non-existent. Due to the South African scenario being considered a benchmark for developing economies characterized by continued change, diversity and even elements of silent intolerance and conflict, this study may therefore be viewed as a "pilot study" to provide a baseline and insight into future research of KM for enabling OP.

**Keywords**- Knowledge Management, Knowledge Management Maturity, Organizational Performance

**Classifications** - Research Paper

## 1. INTRODUCTION

Literature is being inundated with papers focusing on either defending or refuting Knowledge Management's (KM) contribution to organizational success. As an example, authors such as Kazimi, Dasgupta and Natarajan (2004: 1), questioned "Why is it that a concept [KM] so powerful has not delivered what it was supposed to?" while Salojarvi, Furu and Sveiby (2005), showed with studies conducted in Finnish small and medium-sized enterprises (SMEs) that there definitely is a relationship between sustainable growth and KM activities. KM studies for the most part focused on a small population or a single case. The majority of studies, in common with other emergent business philosophies, are for the most part focused on large organizations of developed economies, where readily available implementation resources are an underlying assumption (Moffet and McAdam, 2006). This is likely due to new management philosophy and technology first being implemented in large, first world organizations and KM being no exception in this regard (Sanghani, 2008). Not much is known regarding KM in developing economies (Sanghani, 2008), especially how mature organizations are utilizing KM. For KM to reach acceptance and understanding, more comprehensive studies in organizations of different sizes and in different economic sectors are drastically needed (Beijerse, 2000; Sanghani, 2008).Viewed holistically, much work remains to be done both theoretically and empirically before KM can be regarded with explanatory power that exceeds other frameworks (Salojarvi, Furu & Sveiby, 2005).

Kruger and Snyman (2005) contest that even if knowledge has perceived value, it means nothing in a business sense. For knowledge to have real value it must be shared, applied, and influence change (e.g., knowledge must lead to organizational growth and profitability). Knowledge is complex and requires a number of managerial processes to institutionalize and/or apply it. Knowledge is called different things by different people and probably does not have the same meaning under all conditions. In this context, authors such as Von Krogh, Nonaka and Aben

(2001), state that the key resource for achieving sustainable competitive advantage and superior profitability is not knowledge in all its complexity, but more specifically the application of knowledge in a managerial sense.

The exploration and exploitation of knowledge is a managerial activity according to Zack (1999) with a strategic cycle of consolidation, imitation and innovation that must over time lead to organizational growth and profitability**.** Darroch and McNaughton (2002), quoting the work of Fahey and Prusak (1998), plus Grant (1996), and Teece (1998), came to basically the same conclusion. Although Darroch and McNaughton (2002) agree with Von Krogh, Nonaka and Aben (2001) that certain KM processes and output leads to growth and profitability, these authors disagree about which processes can truly be considered the enablers. Building on the work of Darroch and McNaughton (2002), Kruger and Snyman (2005) concluded that the key to determining the value of KM does not rest in trying to assess the extent KM is leading to different forms of output, but to determine the extent strategies built on knowledge reasoning are leading to growth and profitability. What each of these authors emphasize is that in order for knowledge to foster strategic output, different KM processes need to be institutionalized with some processes cyclical in nature addressing a strategic perspective and some processes relating more to an innovative perspective. The relationship between strategy formulation, knowledge exploitation and knowledge exploration is therefore encapsulated within a tightly woven net of decision making, where knowledge drives strategy, and strategy in turn drives KM (Tiwana, 2000).

By looking at the financial statements of organizations, it is revealed that financial ratios do not determine the value of knowledge and KM. According to Armistead and Meakins (2002:49) the value of knowledge "results from the way in which it is used in the firm's processes in the production of products and services." Firms therefore gain advantage from using the capabilities that arise from knowledge assets in ways which are difficult for others to imitate or replicate, as well as the intellectual property associated with the assets." According to Laudon and Laudon (2004), this non-quantifiable value of knowledge refers to the ability of knowledge to positively affect the efficiency and effectiveness of other resources. In this sense, knowledge and Information and Communication Technologies (ICT) fulfill similar functions in an organization

with both containing non-quantifiable value to an organization that cannot be calculated easily (Armistead and Meakins, 2002). Wessels (2003:1) argues that there are "no specific methodologies that can be used to calculate the value knowledge and knowledge management systems add to an organization." According to Wessels (2003), the ability of firms to measure the value of knowledge and KM remains problematic despite some serious efforts to produce generic frameworks.

Frustrated by how to measure KM's value, Snyman and Kruger (2004) proposed that organizations needed to look beyond the role that knowledge plays in the process of strategy formulation to look at the role strategy plays in KM. Statements such as "a deepening of the analysis of manager's interest on knowledge is critical to understand how KM can contribute to improve strategies formulation" by Carneiro (2000:10) represent a point of departure in the quest to prove that KM adds profound value to an organization. What is important is the realization that although knowledge enables strategy, endeavors in KM should be the result of the strategic management process as reported by Tiwana (2000:103) when stating that "Knowledge must drive strategy, and strategy in turn must drive KM." Therefore, the value proposition of KM (being reflected over time in the organizations bottom line), and the interdependency between knowledge strategy and KM (knowledge drives strategy and strategy in turn drives KM) in conjunction with the value proposition of strategy (to add value to the performance of the organization), presents an interesting hypothesis. Therefore, our hypothesis is that the institutionalizations of knowledge via a formal managerial process must reflect on OP over time.

### 1.1 Research Aim

The aim of this article is to assess if there is any correlation between formal KM Maturity (as a measure and the successful institutionalization of KM endeavors), and Organizational Performance (OP).

## 2. MEASURING PERFORMANCE IN RELATION TO KM MATURITY

By including abstract components such as culture, processes and communities, Kruger & Snyman (2007) proposed a questionnaire consisting of six sections and 104 personalized questions to test and assess the institutionalizations of KM Maturity from within a strategic/managerial, rather than from a technological perspective. In order to extract comparable and meaningful findings, Kruger and Snyman (2007) utilized a four-point Likert scale to express the degree of agreement with the posed questions. This Maturity Rating System (MRS) 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)

What sets this questionnaire apart from other KM Maturity questionnaires is that it not only assesses ICT and Information Management (IM) as enablers to KM, but also focuses on the ability of organizations to identify and institutionalize KM principles as prerequisites to the successful exploitation and exploration of knowledge. The questionnaire appealed to the researchers primarily because all of the proposed questions were benchmarked against a survey developed by the Public Management Service (PUMA) of the Organization for Economic Co-operation and Development (OECD) originally adapted from work done by Statistics Canada for private firms. In this context, the questionnaire opens the door to relating OP to KM Maturity. In presenting the institutionalization of knowledge as percentages, comparisons can be made to OP percentages[1].

[1] The quest to empirically test whether or not KM positively correlates to organizational performance necessitate that data captured with regard to KM as well as data captured with regard to organizational performance be analyzed to the extent where findings are presented in comparable formats (i.e., apples must be compared to apples).

Challenged to amalgamate Western cultures with African cultures, the South African environment presents a unique perspective with regards to global development. In essence, the South African scenario provides a model for businesses of a future full of continus change, workforce diversity and elements of silent intolerance and conflict (Finestone and Snyman, 2005). South African organizations are in a transition stage somewhere between Eurocentric or "developed" (western value system, emphasising individualism and self-centeredness), Synergistic Inspirational (amalgamation of time honoured African management practices, principles and philosophies with Western management methods) and Afrocentric (collectivism, with an emphasis on the social unit) or "Developing" management styles (Prime, 1999). This study therefore provides a valuable baseline data set which can support further studies of both local and global scope and significance.

In the quest to determine criteria for successfully relating tangible measurement criteria (organizational growth and profitability ratios) to KM Maturity scores, an iterative process of inductive review and refinement resulted in the formulation of a Performance Assessment Tool (PAT) and a Performance Assessment Rating System (PARS). Different opinions expressed in literature surrounding how to measure OP were meticulously scrutinized, and adapted for utilization in a measurement matrix. Primary sources for this measurement matrix were the works of Kaplan and Norton (1992, 1996, 2001), Schneiderman (2004), Neely, Adams and Kennerley (2002), Pearce and Robinson (2005) and Thompson, Strickland and Gamble (2005) (see Appendix A).

In validating the applicability of the PAT to measure OP, concerns were expressed with regards to: (1) the inclusion of only primary stakeholder needs, thus neglecting the claims of other influential stakeholders; (2) ratio's not geared for, or not applicable to all industries; and (3) the possible unavailability of "data" to populate ratios. After numerous revisions and alterations, the final performance assessment tool consist of eight (8) sections (Profitability, Liquidity, Leverage, Shareholder Satisfaction, Growth, Intangible Value, Customer Satisfaction, Employee Satisfaction) each containing ratios projected over a five-year period. This tool was

benchmarked with accountants and business analysts from McGregor-BFA[2] resulting in a number of enhancements being made. In addition to testing the satisfaction of primary stakeholders, the assessment tool also test the satisfaction within the community and industry where the organizations are active. All ratios are compared to industry averages and all ratios are projected over a five (5) year period in order to ensure accurate benchmarking. The PAT consists of eight (8) sections with 14 questions (Appendix A) where Likert-type scales were used for expressing organizational performance as 10% below, similar to, or 10% above the industry average. Analogous to the MRS, the PAT enabled the calculation of an organizational performance score expressed as values or percentages for a selected period of time.

Note: All Instruments, Questionnaires, Statistical Analysis and Summary Results are available on request from the authors.

## 3. METHODOLOGY AND DATA COLLECTION

Most purely theoretical research is banished to academic realms. Some reasons might include unwillingness on the part of individuals and organizations to participate or an unwillingness of practitioners to share information especially regarding strategic entities. The measurement of OP is typically the end result for the managerial cycle of planning and organizing (Pearce and Robinson, 2005; Thompson, Strickland and Gamble, 2005). Data in most cases are historical in nature. The decision was therefore taken not to determine OP via data contained within companies financial, annual and director's reports, nor to try and gain access to data via structured interviews, by rather to use quantitative secondary data contained within reports compiled by business and financial analysts. Not only is data contained within analysed reports thoroughly audited, but industry averages are also provided allowing a comparative analysis. Also, data supplied by business and financial analysts are extremely reliability and guarded from bias or error by the researcher. However, the use of data supplied by business and financial analysts placed a limitation on the scope of this study. Data with regards to the performance of

[2] McGregor-BFA supplies business and financial analysis information on all Johannesburg Stock Exchange Listed Companies.

small, medium and large private or proprietary companies are non existent (e.g., only listed company information is supplied by financial analysts such as McGregor-BFA).

Emphasis was not placed on achieving total representation in determining a 'usable population' (population size that is applicable to both Secondary Data Analysis [performance assessment] and evaluative [KM Maturity assessment and performance assessment] research), but rather on purposefully selecting a usable and obtainable population for comparative purposes. Strongly guided by the classification index supplied by the Johannesburg Stock Exchange (JSE) handbook July-December 2005 (Profile's Stock Exchange Handbook, 2005), organizations of similar size and similar operations were purposely selected for the research to be undertaken. The selection process was influenced by the willingness of organizations to participate in the study. Finally, nine large companies from within the financial, basic resources and ICT industries were selected for research purposes.

## 4. DISCUSSION, RESULTS & FINDINGS

Due to the study being interpretive by nature, analysis of data consisted of either standard statistical techniques and/or qualitative methods. Data collected by means of the structured KM Maturity questionnaire and financial reports were meticulously transferred to either the KM MRS (i.e., questionnaire), or the PARS (i.e., financial and growth indicators). Finally, all data captured were digitilized through keyboard entry. In order to ensure a clean and error-free data set, the process of data capturing was closely monitored to ensure minimal data capturing errors. Newly imported data was checked for capturing errors via standard validation checks as applied by the University. Checks included frequencies, marginal, checks for missing values, checks for range of values, etc. After the verification process was completed, all data collected were carefully prepared for tabular and graphic presentation, analysis and interpretation. The computer software used for analysis and modeling was SAS version 8, from the SAS Institute. All graphs and figures were created using Microsoft Excel 2003.

In total, nine companies of similar sizes (large organization), from within the Financial, Resource and ICT industries were targeted for analysis. Due to policies such as redistribution of

wealth, affirmative action and black economic empowerment, companies were chosen to be either leaning towards the Afrocentric, Synergistic Inspirational or Eurocentric management style of management. The following section provides historical information on the nine targeted organizations of the three industry groups.

Financial Group: Company A was formed in 1998 following the merger of the financial services interests of Anglo American Corporation and RMB Holdings Ltd. Company A is a integrated Financial Services group whose activities include Retail, Corporate and Investment Banking Services, Health and Property Insurance and Asset Management. The group has banking subsidiaries in Botswana, Namibia, and Swaziland, and also operates in Dublin, London, and Australia. Company A supports a Synergistic Inspirational management style.

Company B is one of South Africa's largest providers of personal banking and financial services. The group is well established as a Financial Services group and was formed in 1991. Company B has an established infrastructure, a complete range of Retail and Corporate Banking, Insurance and Financial Products and Services as well as extensive local and international networks. Company B supports an Eurocentric management style.

Company C is a leading Financial Services organisation that focuses mainly on the high end margin of the market. Company C was established in 1958 and is a public listed company on the JSE and is considered the second largest insurance company in South Africa. Company C consists of many business units that targets specific sectors of the market accordingly. Within these business units Company C develops, markets and administers a wide range of Investment, Retirement, Health and Risk Products and services individuals. The clients are primarily in the middle and upper income and high net worth segments spread across a broad geographic and demographic base throughout South Africa. Company C supports an Afrocentric management style.

Resource Group: Company D is a global leader in mining and the second largest producer of platinum worldwide. Operations comprise 13 shafts and a concentrator and smelter complex, mineral processes, and base metals and group metal refineries.

Company E came into existence in 2001, due to a major unbundling of its parent company (a South African government-owned resources company) in 2001. It boasts a portfolio of world-class assets spanning three continents rich in mineral resources, Africa, Asia and Australia. The company is focused on four key commodities, iron ore, coal, heavy minerals and base metals.

Company F comprises diversified fuel, chemical and related manufacturing and marketing operations. The core operations are complimented by coal-mining operations and oil and gas exploration and production. Committed to an expanding globalization programme, Company F has chemical manufacturing and marketing operations in Africa, Europe, Asia-Pacific and the Americas.

Company G is a global leader in mining and natural resource sectors. It is the world's largest platinum producer. Company G is a major global company with mining operations being conducted in Africa, as well as South and North America plus Australia. The company has its own precious metals and base metals refinery. Company D mostly supports an Eurocentric management style while Companies E, F and G support predominantly Afrocentric and Synergistic Inspirational management styles.

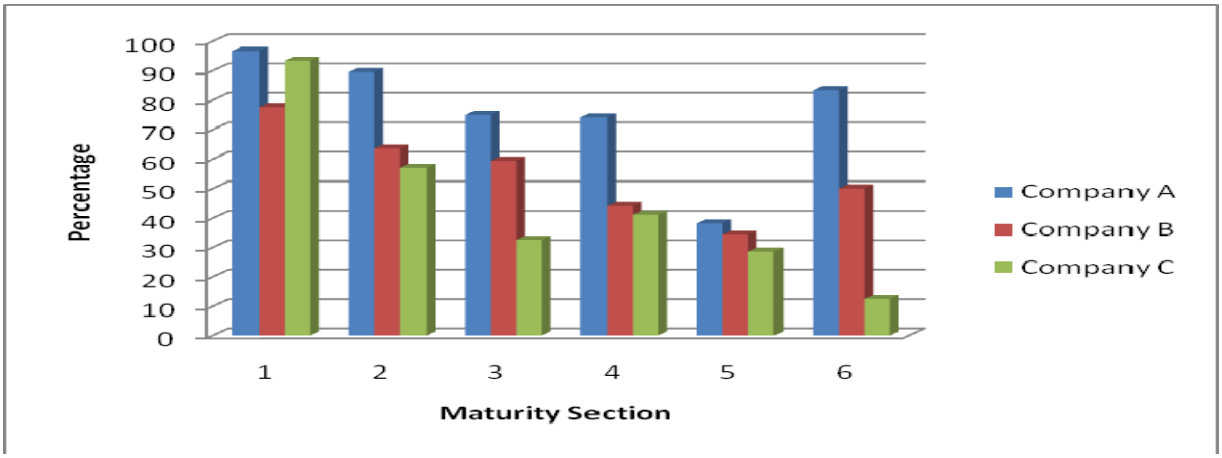
ICT Group: Company H is an African focused holdings company that invests in the telecommunications industry, providing telecommunications infrastructure including mobile, fixed line, satellite and Internet services. Company H's mobile sector hosts the second largest mobile telecommunications network operator in South Africa. Company H supports an Afrocentric management style.

Company I is the largest communications services provider on the African continent based on operations revenue and assets. Company H's business consists of a fixed-line segment and a mobile segment. In joint venture with Vodafone and VenFin, the mobile segment hosts the largest mobile telecommunications network operator in South Africa with a market share of approximately 56%. Company I support a Synergistic Inspirational management style (a combination of Eurocentric and Afrocentric management styles).

## 4.1 Overview of the KM Maturity of targeted organizations by Industry Group

### 4.1.1 KM Maturity: Financial Group

Company A achieved an overall KM Maturity score of 71.2% at the end of 2005 (Figure 1 and Table 1). Company A's KM growth of 46.6% over the five years, was considerably higher than the scores recorded by Companies B and C. By the end of 2005, Company B achieved an average KM Maturity score of 51.8%. Growth of KM Maturity in Company B over the five years can be considered moderate at 20%. In contrast to Companies A and B, Company C reported a maturity score of 151/354 or 42.7%, considerably lower than the average maturity scores obtained by Companies A and B over the same period.




| | Sum of All Scores (Average) | Growth in KM Maturity (Section 6) |
|---|---|---|
| **Company A** | | 3.33-1=2.33 |
| **Score:** | 252.0/354 | (2.33/3)*60 |
| **Percentage:** | **71.2%** | **46.6%** |
| **Company B** | | 2.0-1 =1.0 |
| **Score:** | 183.4/354 | (1/3)*60 |
| **Percentage:** | **51.8%** | **20%** |
| **Company C** | | 0.50-1=-0.5 |
| **Score:** | 151.1/354 | (-0.5/3)*60 |
| **Percentage:** | **42.7%** | **-10%** |

**Figure 1 and Table 1: KM Maturity of Financial Group (2005)**

**Note**: The Sum of All Scores (KM Maturity) is calculated by adding the scores of the first five maturity sections together with a Maximum Score (20 + 76 +88 + 94 + 76) totaling 354. Growth in KM maturity is calculated by using the formula: Growth in KMM (over all 5 maturity sections) = ((Score achieved in Section 6 (assessment of KM Growth -1)/Maturity Max)) * Max Score achievable.

In 2001, Company A and C boasted fairly similar KM Maturity scores of 48.6% and 47.4% respectively (Table 2). Company B, started with a slightly lower maturity score of 43.2%. In contrast to Companies A and B recording growth in KM Maturity of 46.6% and 20.0% respectively, Company C recorded a decline of 10% in KM Maturity over the same period. On average, Company A recorded a KM Maturity score of 59.9%, Company B was 47.5% and Company C was 45.1%.

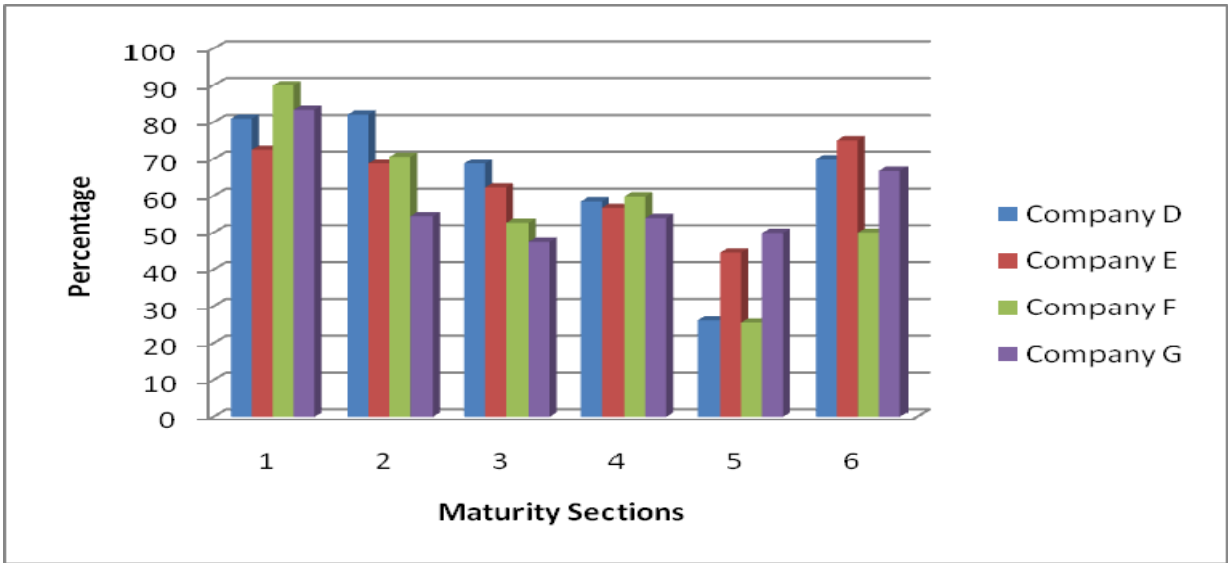
| | **KMM Score 2001** | **KMM Score 2005** | **KM Growth 2001 -2005** | **KM Maturity Avg. Score** |
|---|---|---|---|---|
| **Company A** | 48. 6% | 71.2% | 46.6% | 59.9% |
| **Company B** | 43.2% | 51.8% | 20.0% | 47.5% |
| **Company C** | 47.4% | 42.7% | - 10.0% | 45.1% |

**Table 2: KM Performance of Financial Group (2001-2005)**

**Note**: KMM Score (Start value) = End Value/(Growth +1). The Average KM Maturity Score over time is calculated as the sum of the number of values in the series, divided by the number of values in the series (i.e., the arithmetic mean).

### 4.1.2 KM Maturity: Resource Group

Company D achieved an overall KM Maturity score of 60.3%, followed by Companies E, F, and G at 58.9%, 54.7% and 52.6% respectively (Table 3 and Figure 2).




| | Sum of All Scores (Average) | Growth in KM Maturity (Section 6) |
|---|---|---|
| **Company D** | | 3.2-1=2.2 |
| **Score:** | 213.6/354 | (2.2/3)*60 |
| **Percentage:** | **60.3%** | **44%** |
| **Company E** | | 3.0-1=2.0 |
| **Score:** | 208.6/354 | (2.0/3)*60 |
| **Percentage:** | **58.9%** | **40%** |
| **Company F** | | 2.0-1=1.0 |
| **Score:** | 193.6/354 | (1/3)*60 |
| **Percentage:** | **54.7%** | **20%** |
| **Company G** | | 2.7-1=1.7 |
| **Score:** | 186.1/358 | (1.7/3)*60 |
| **Percentage:** | **52.6%** | **34%** |

**Figure 2 and Table 3: KM Maturity of Resource Group (2005)**

Company F started with a KM Maturity of 45.5% (Table 4). This is slightly higher than the maturity scores of 42.1%, 41.9% and 39.3% achieved by Companies E, D and G respectively. Company F could not sustain this advantage, recording a growth in KM Maturity of only 20.0%. This is considerably lower than the 44.0%, 40.0% and 34.0% recorded by Companies D, E and G respectively, and resulted in Companies D, E, and G gaining or surpassing the end score recorded by Company F in 2005. Due to high average growth figures achieved over the period 2001-2005, Company D recorded a score of 51.1%, which was slightly higher than the 50.5% and 50.1% recorded by Companies E and F respectively. Company G gained in KM performance

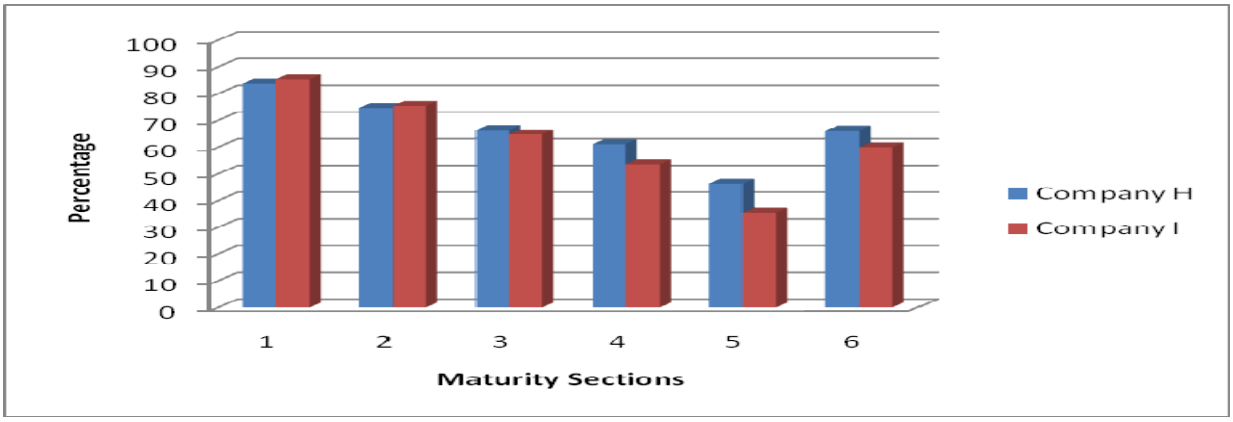
on Company F when looking at the average score of 46.0%, but it still recorded a maturity score lower than the score reported by Company F at 50.1%.

| | KMM Score 2001 | KMM Score 2005 | KM Growth 2001 -2005 | KM Maturity Avg. Score |
|---|---|---|---|---|
| **Company D** | 41.9% | 60.3% | 44.0% | 51.1% |
| **Company E** | 42.1% | 58.9% | 40.0% | 50.5% |
| **Company F** | 45.5% | 54.7% | 20.0% | 50.1% |
| **Company G** | 39.3% | 52.6% | 34.0% | 46.0% |

**Table 4: KM Performance of Resource Group (2001-2005)**

### 4.1.3 KM Maturity: ICT Group

Company H achieved a KM Maturity score of 63.5%, compared to the score of 59.0% reported by Company I (Figure 3 and Table 5).



| | Sum of All Scores (Average) | Growth in KM Maturity (Section 6) |
|---|---|---|
| **Company H** | | 2.7 -1 = 1.7 |
| **Score:** | 224.9/354 | (1.7/3) * 60 |
| **Percentage:** | **63.5%** | **34%** |
| **Company I** | | 2.4 -1 = 1.4 |
| **Score:** | 208.9/354 | (1.4/3) *60 |
| **Percentage:** | **59.0%** | **28.0%** |

**Figure 3 and Table 5: KM Maturity of ICT Group (2005)**

At 47.4% and 46.1% respectively, Companies H and I started with fairly similar KM Maturity scores in 2001 (Table 6). Both, Companies H and I recorded moderate growth in KM Maturity of 34% and 28% respectively over the five years, ending with KM Maturity scores of 63.5% and 59.0% respectively in 2005. Company H slightly outperformed Company I on average at 55.5% vs. 52.6% over the period 2001-2005.

| | KMM Score 2001 | KMM Score 2005 | KM Growth 2001 -2005 | KM Maturity Avg. Score |
|---|---|---|---|---|
| **Company H** | 47.4% | 63.5% | 34.0% | 55.5% |
| **Company I** | 46.1% | 59.0% | 28.0% | 52.6% |

**Table 6: KM Performance of ICT Group (2001-2005)**

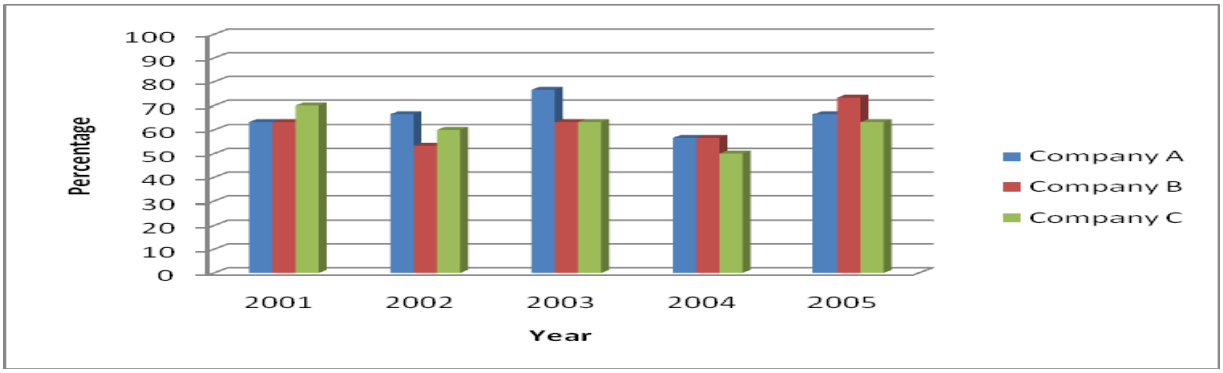
### 4.2 Summary of the OP by targeted organization

The next sections supply a short summary of the major findings with regard to the OP of the nine (9) targeted organizations.

#### 4.2.1 OP: Financial Group

Over the five-year period between 2001 and 2005, Company A achieved an average performance score of 66.0% and average year-on-year growth in performance of 3.0%. Similarly, Company B achieved an average performance figure of 62.0% coupled to 5.5% year-on-year growth in performance. In contrast, Company C recorded an average performance of 61.3% with a decline in performance of 0.8% (Table 7). Of interest here is that Company A's performance follows a

sharp rise over the period 2001-2003, with a drastic decline in performance in 2004. Company A's performance regained somewhat of the loss ground, ending with a performance of 66.7% in 2005. In comparison to Company A, Company B's performance was more sporadic over time, with an extreme increase in performance for 2005 to a five-year high of 73.3%. Starting with 70.0%, Company C's performance followed a downward spiral from 2001 with improvements in performance between the years 2002 and 2003 and especially between the years 2004 and 2005. An interesting observation is that Companies A, B and C all had severe declines in performances over 2004, while Company B recorded the biggest increase in performance during 2005. This indicates that some occurrence in the industry over the period 2004 to 2005 is offsetting the performance of the organizations under investigation. A possible explanation for this phenomena could be that during 2004 rumors of a possible acquisition of Company B dampened all sentiment surrounding the banking industry and to a lesser extent the insurance industry in South Africa. Consequently, the successful and positive conclusion of the acquisition of Company B by a major international banking consortium in early 2005 led to an influx of billions of pounds into the South Africa banking sector. This, according to the JSE Handbook (2005), had an extremely positively influence on the performance figures recorded especially Company B, and to a lesser degree Companies A and C in the year 2005.




| | ’2001 | ’2002 | ’2003 | ’2004 | ’2005 | Avg. |
|---|---|---|---|---|---|---|
| **Company A** | | | | | | |
| **Score:** | 63.3% | 66.7% | 76.7% | 56.7% | 66.7% | 66.0% |
| **Growth:** | | 5.4% | 15.0% | -26.1% | 17.5% | 3.0% |
| **Company B** | | | | | | |
| **Score:** | 63.3% | 53.3% | 63.3% | 56.6% | 73.3% | 62.0% |
| **Growth:** | | -15.8% | 18.8% | -10.6% | 29.5% | 5.5% |
| **Company C** | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Score:** | 70.0% | 60.0% | 63.3% | 50.0% | 63.3% | 61.3% |
| **Growth:** | | -14.3% | 5.5% | -21.0% | 26.6% | -0.8% |

**Figure 4 and Table 7: Company OP of Financial Group (2001-2005)**

Note: Average Score represents the Arithmetic mean[3] of the score values presented for 2001-2005, while the Average Growth[4] presents the Arithmetic mean of the year-on-year growth scores for the period 2001-2005 (i.e., the growth scores for the years 2001-2002, 2002-2003, 2003-2004, and 2004-2005 added together, divided by the four growth years).

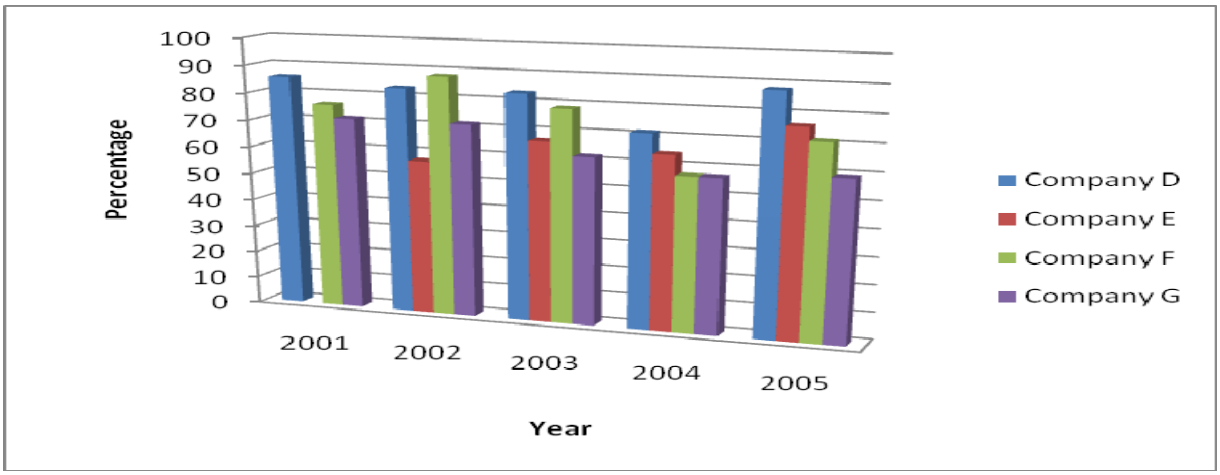
### 4.2.2 OP: Resource Group

On average, Company D outperformed both Companies E, F and G, achieving a performance score of 82.4%, compared to performance scores of 66.1%, 74.3% and 64.3% reported by Companies E, F and G respectively (Figure 5 and Table 8). Of interest is that Company E recorded the highest growth in performance (10.6%) follow by growth figures of 1.6%, 0.6% and -4.2%, respectively boasted by Companies D, F and G. Company E recorded improvement in performance over the period 2002-2003, with a small decline in performance in 2004. In 2005, Company E's performance improved dramatically, ending with a performance figure of 76.2%. In comparison to Company E, Company F's performance was more sporadic over time. Starting of with high performance figures of 76.2%, 88.1% and 78.6% in 2001, 2002 and 2003 respectively but declined in 2004 to a low of 57.1%. This figure was followed by an increase in performance in 2005 to 71.4%. Holding steady between 2001 and 2002, Company G's

[3] The Arithmetic mean is relevant when several quantities are added together to produce a total. The arithmetic mean answers the question, "if all the quantities had the same value, what would the value have to be in order to achieve the same total?"

[4] In order to take into account the intermediate values of the series 2001-2005, growth in performance is calculated on a yearly basis by using the formula: (end value divided by the start value) minus 1. This is derived from the Compounded Annual Growth rate formula. The result is multiplied by 100 to express it as a percentage. For example Growth in performance of Company A between the years 2001 and 2002 is calculated as ((66.7/66.3) – 1) *100 = +5.4%.

performance started to follow a downward spiral, although there were slight improvements in performance between the years 2004 and 2005.



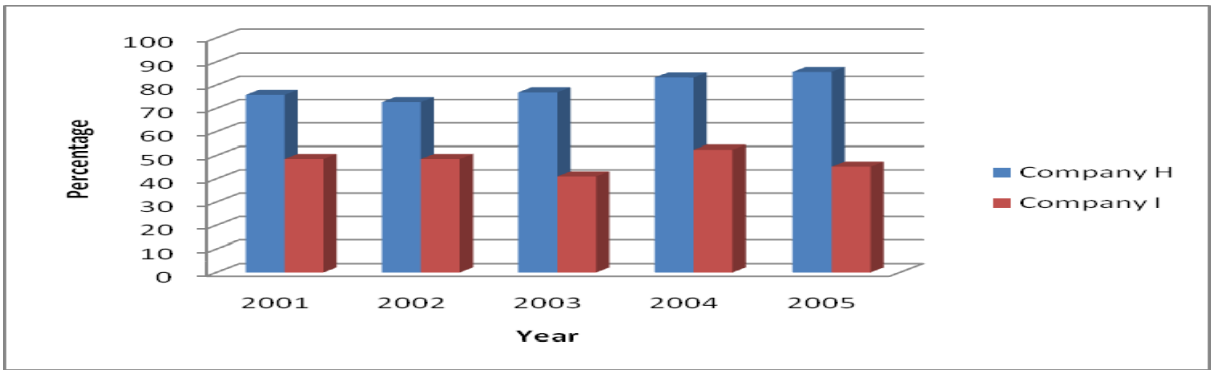

| | 2001 | 2002 | 2003 | 2004 | 2005 | Avg. |
|---|---|---|---|---|---|---|
| **Company D** | | | | | | |
| **Score:** | 85.7% | 83.3% | 83.3% | 71.4% | 88.1% | 82.4% |
| **Growth:** | | -2.8 | 0% | -14.3% | 23.4% | 1.6% |
| **Company E** | | | | | | |
| **Score:** | | 57.1% | 66.7% | 64.3% | 76.2% | 66.1% |
| **Growth:** | | | 16.8% | -3.6% | 18.5% | 10.6% |
| **Company F** | | | | | | |
| **Score:** | 76.2% | 88.1% | 78.6% | 57.1% | 71.4% | 74.3% |
| **Growth** | | 15.6% | -10.8% | -27.4% | 25.0% | 0.6% |
| **Company G** | | | | | | |
| **Score:** | 71.4% | 71.4% | 61.9% | 57.1% | 59.5% | 64.3% |
| **Growth:** | | | -13.3% | -7.8% | 4.2% | -4.2% |

**Figure 5 and Table 8: Company OP of Resource Group (2001-2005)**

### 4.2.3 OP: ICT Group

On average, Company H outperformed Company I, achieving a performance score of 78.8%, and year-on-year growth in performance of 3.2% (Table 9 and Figure 6). In contrast, Company I boasted an average performance score of 47.1% and an average year-on-year growth figure of -0.4. Of interest is that Company H's performance follows a steady rise between the periods 2002-2005. In comparison to Company H, the performance of Company I was more sporadic

over time, with a decrease in performance (41.0%) in 2003, followed by a increase in performance (52.4%) in 2004 and a decrease in performance (45.2%) in 2005.




| | 2001 | 2002 | 2003 | 2004 | 2005 | Avg. |
|---|---|---|---|---|---|---|
| **Company H** | | | | | | |
| **Score:** | 75.8% | 72.7% | 76.9% | 83.3% | 85.7% | 78.8% |
| **Growth:** | | -4.1% | 5.8% | 8.3% | 2.9% | 3.2% |
| **Company I** | | | | | | |
| **Score:** | 48.5% | 48.5% | 41.0% | 52.4% | 45.2% | 47.1% |
| **Growth:** | | 0% | -15.5% | 27.8% | -13.7% | -0.4% |

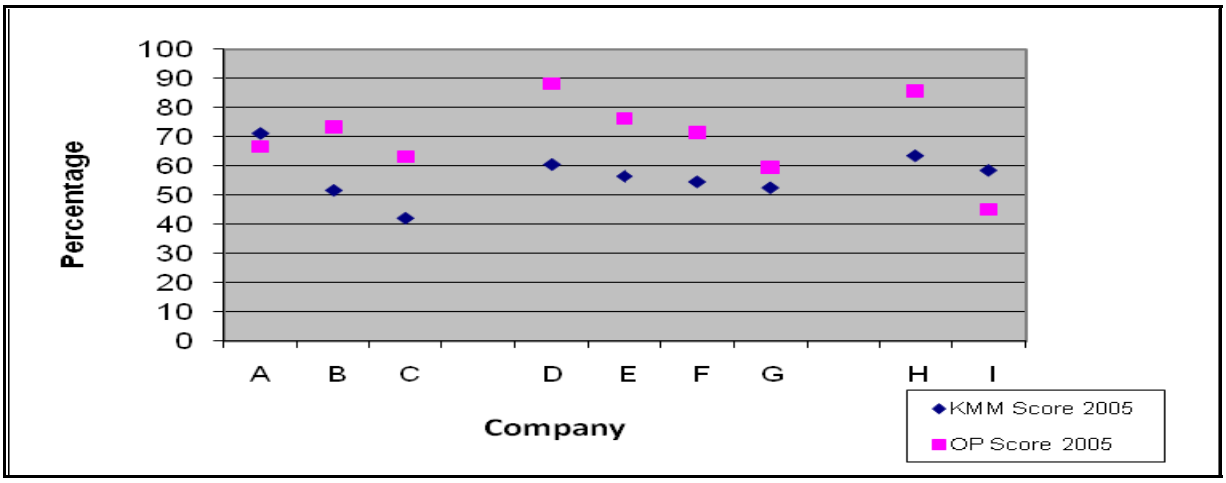
**Figure 6 and Table 9: Company OP of ICT Group (2001-2005)**

## 4.3 Analysis of KM Maturity and OP of targeted organizations by Industry Group

### 4.3.1 KM Maturity and OP scores (2005)

As it relates to the end of the period under review, findings strongly support the argument that companies that boast higher scores in KM Maturity also boast higher scores in OP (Figure 7 and Table 10). The exception to the rule being the performance score reported by Company B (73.3%) in the financial Group being higher than the performance score reported by Company A (66.7%). A possible explanation for the high performance score reported by Company B at the end of the period, 2005, could be due to performances figures, especially over a short period of time, being subjected to factors such as restructuring, acquisitions, and takeover-bids. A definite point in case is the decline in performance figures of Companies A, B and C in 2004 and the rise

in performance results in 2005, all resulting from the acquisition of a major bank by a international banking consortium in 2004.



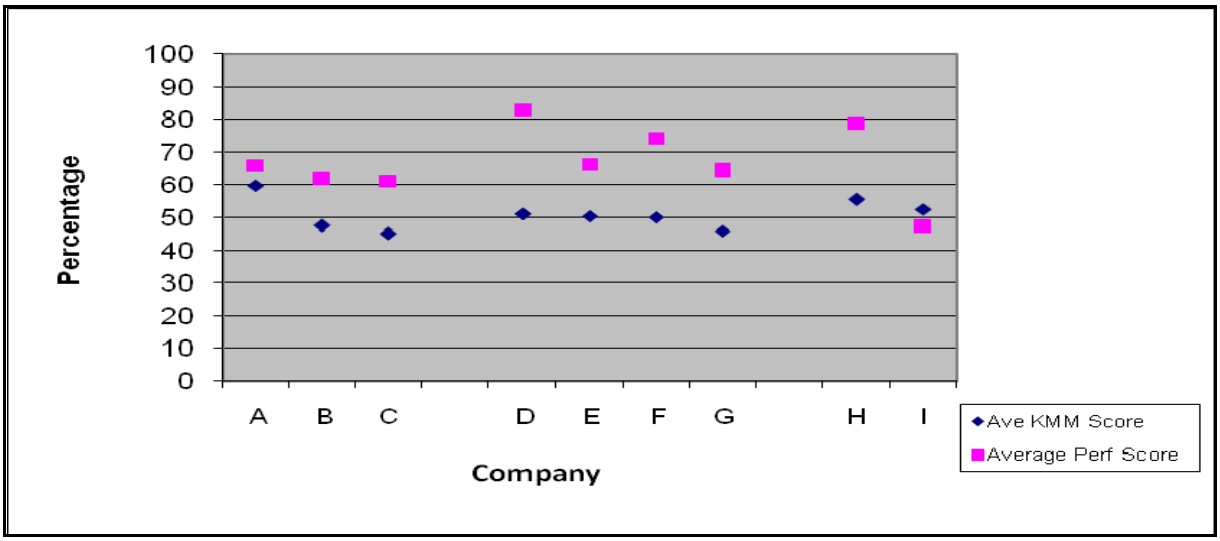

| | KMM Score 2005 | OP Score 2005 |
|---|---|---|
| **Financial** | | |
| Company A | 71.2 | 66.7 |
| Company B | 51.8 | 73.3 |
| Company C | 42.3 | 63.3 |
| **Resource** | | |
| Company D | 60.6 | 88.1 |
| Company E | 56.6 | 76.2 |
| Company F | 54.7 | 71.4 |
| Company G | 52.7 | 59.5 |
| **ICT** | | |
| Company H | 63.6 | 85.7 |
| Company I | 58.6 | 45.2 |

**Figure 7 and Table 10: KM Maturity and OP (2005)**

### 4.3.2 Average KM Maturity and OP scores (2001-2005)

Findings again favor the hypothesis that companies that boast higher figures in KM Maturity, on average over a number of years (2001-2005) also boast higher figures in OP (Figure 8 and Table 11). In this instance the exception to the rule being Company F, on average boasting a KM maturity score slightly lower than the score recorded by Company E, and boasting a higher OP score than the score recorded by Company E. A possible explanation for the discrepancies in

scores could be that this perspective on performance is also subjective to over-riding factors such as restructures, acquisitions and mergers, obit less than in the case of comparison of scores over one period (i.e., the end of the period). Arguably, the major unbundling of its parent company in 2001 impacted negatively on the performance score of Company E, since it relates to the beginning of the period under investigation. This played a significant role in the calculation of the average score achieved over the period 2002-2005, leading to the favoring of the "average" performance score of Company F over the "average" performance score of Company E. The argument that Company E in essence outperformed Company F in OP is strongly supported by the findings reported in the next sections of this paper.




| | KMM Score (Average) | OP Score (Average) |
|---|---|---|
| **Financial** | | |
| Company A | 59.9 | 65.9 |
| Company B | 47.5 | 62.0 |
| Company C | 45.1 | 61.3 |
| **Resource** | | |
| Company D | 51.1 | 82.4 |
| Company E | 50.5 | 66.1 |
| Company F | 50.1 | 74.3 |
| Company G | 46.0 | 64.3 |
| **ICT** | | |

| | | |
|---|---|---|
| Company H | 55.5 | 78.8 |
| Company I | 52.6 | 47.1 |

**Figure 8 and Table 11: Average KM Maturity and OP (2001-2005)**

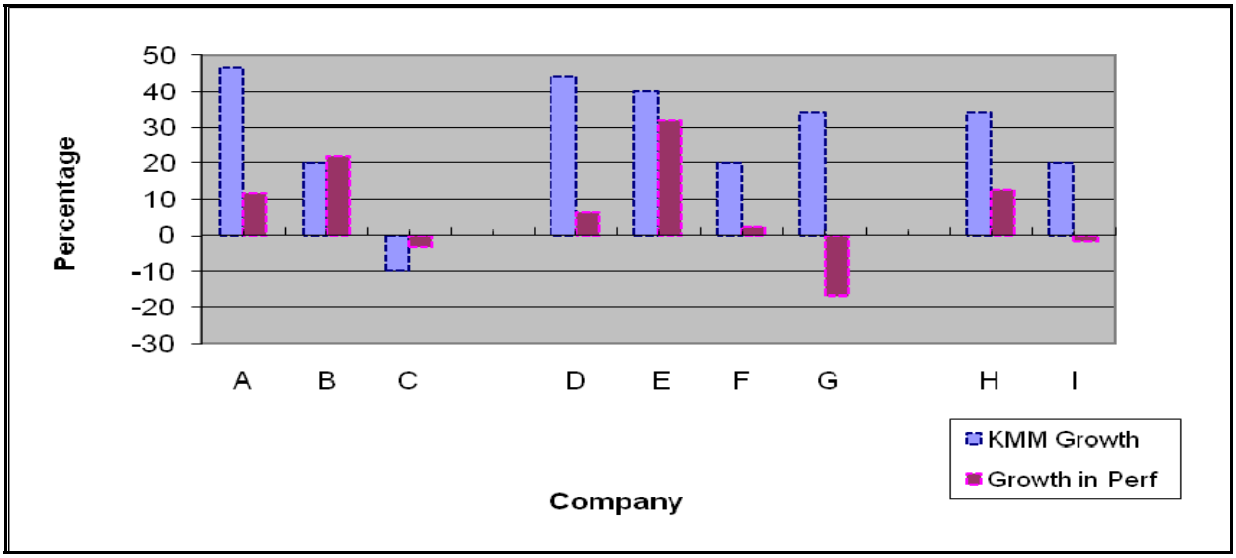
### 4.3.3 Growth in KMM and year-on-year Growth in OP scores (2001-2005)

Normally, a reliable indication of growth is the use of industry averages as a baseline in calculations (Pearce and Robinson, 2005; Thompson, Strickland and Gamble, 2005). This perspective on growth is extremely subjective based on the variances in scores obtained. In determining the amount of growth obtained over a period of time, (especially if there are large variances in scores obtained, and/or when all scores obtained in observations are of equal importance), the best way to calculate growth would be to derivative the sum of all the year-on-year growth rates of all the observations in the period under review. This limits the effect of one observation skewing the overall growth ratio calculated. Therefore, by evaluating the mathematical correlation between growth in KM Maturity and growth in OP primarily, from within the perspective of year-on-year growth[5], more insight can be gained in answering the question if there is indeed a correlation between growth in KM Maturity and growth in OP.

Seven out of ten times, the findings support the argument that companies that boast higher growth in KM Maturity also boast higher year-on-year growth in OP. This was also supported when OP growth was calculated using the industry average as a baseline for calculations (Table 12 and Figure 9). Exceptions to the rule were companies with lower KM Maturity growth posted higher growth in OP where Companies B and E, at 22.0% (5.5% per year) and 31.8% (10.6% per year) respectively over the period 2001-2005, posted higher growth in OP than Companies A and D at 11.9% (3.0 per year) and 6.3% (1.6% per year) respectively. Again, it can be argued that the successful acquisition of Company B by a major banking consortium in 2004, impacted

[5] Year-on-year growth calculations will be supported by findings where performance growth of companies where calculated by using the industry average as baselines for calculation purposes.

positively on the growth in performance of Company B in the Financial Group, offsetting the correlation between growth in KM Maturity and growth in OP to a large extent. The argument that the performance score recorded in 2004 skewed the overall perception of OP growth of Company B, is strongly supported by findings where organizations growth was analyzed from within the perspective of using the industry average as a baseline for performance growth calculations. These finding indicate that, on average Company A improved its performance in comparison to the industry by 5.1% over the period 2001-2005, while Company B declined in performance by 2.5%.




| 2001-2005 (%) | KMM Growth Total/Year | OP Growth Year-on-Year Total/Year | Gain/Loss |
|---|---|---|---|
| **Financial** | | | |
| Company A | 46.6 / 9.32 | 11.9 / 3.0 | 5.1 |
| Company B | 20.0 / 4.0 | 22.0 / 5.5 | -2.5 |
| Company C | -10.0 / -2.0 | -3.2 / -0.8 | -16.2 |
| **Resource** | | | |
| Company D | 44.0 / 11.0 | 6.3 / 1.6 | -6.3 |
| Company E | 40.0 / 10.0 | 31.8 / 10.6 | 18.0 |
| Company F | 20.0 / 5.0 | 2.4 / 0.5 | -3.7 |
| Company G | 34.0 / 8.5 | -16.9 / -4.2 | -13.4 |
| **ICT** | | | |
| Company H | 34.0 / 8.5 | 12.8 / 3.2 | 5.8 |
| Company I | 20.0 / 7.0 | -1.4 / -0.4 | -2.8 |

**Figure 9 and Table 12: Growth KMM and OP (2001-2005)**

The differences in growth scores achieved by Companies D and E in the Resource Group could possibly be contributed to the 80/20 rule[6] skewing the correlation between KM growth and year-on-year growth in OP. Notwithstanding higher growth in KM Maturity (44% or 11.0% on average per year for Company D compared to 40% or 10% on average per year for Company E), it is more difficult to improve on OP figures when performance levels are predominately above 80% (Company D), than to improve on performance figures above 60% (Company E). Of interest is that Company D (on average) maintained a performance figure of 22.2% per year above the industry average. Company E on average sustained a performance figure of only 3.6% above the industry average.

An interesting observation is that six out of the eight companies that recorded positive growth in KM Maturity also recorded positive (year-on-year) growth in OP. Exceptions to this are Companies C, G and I. In essence, Company C recorded negative growth in both KM Maturity and OP of -10.0% (-2.0% per year) and -3.2% (-0.8% per year) over the period 2001-2005. In contrast, even though Companies G and I recording positive growth in KM Maturity of 34% (8.5% per year) and 20% (7.0% per year) respectively, they reported negative growth in OP of -16.9% (-4.2% per year) and -1.6% (-0.4%) respectively. A possible explanation for the different trends in performance recorded by Companies G and I could be that notwithstanding moderate growth in KM Maturity, both companies recorded the lowest overall KM Maturity score of all companies interviewed in their respective groups. Also, Company I started off with significantly lower performance figures than Company H in the ICT industry. Regardless of the level of growth in KM Maturity, the level of KM Maturity sustained over the period 2001-2005 was not yet sufficient to aid in the quest to gain on the OP of peer organizations within these respective industries. In the case of Company F, it is of interest to note that Company F started off with the highest KM Maturity scores of all organizations in the Resource Group. Company F did not capitalize on the level of KM Maturity already reached. This resulted in Companies D and E

[6] 80% effort needed to improve the last 20% of performance.

surpassing Company F regarding the level of KM Maturity reached at the end of the period. The relatively "high" level of KM Maturity recorded at the start of the period, for a while positively impacted on Company F's OP. This argument is strongly supported by the finding that Company F's OP increased over the period 2001 to 2002 and started to decline over the period 2003 to 2004.

## 5 CONCLUSION

Challenged to amalgamate Western cultures with African cultures, the South African environment portrays a model for global businesses development. The study set the stage for investigating diversity in concept and implementation for OP and KM in environments where readily available implementation resources are not an underlying assumption. The value of this study is to benchmark an understanding of KM for enabling OP, as it relates to deversified and developing economies. This study may therefore be viewed as a "pilot study" to provide a baseline and insight into future research of KM principles for enabling OP in developing economies.

While investigating diversity in South Africa, it was argued that three dominant modes of management exist. In organizations prone towards Afrocentric and Synergistic Inspirational management styles (synonymous to developing economies), KM and OP growth was higher than in industries leaning towards the Eurocentric management style (more applicable to developed economies). This may hint of companies catching-up rather than the case of Afrocentric and Synergistic Inspirational management styles outperforming the Eurocentric management style.

By evaluating the relationship between KM Maturity and OP from within three "time dependent" perspectives, in an extremely diversified setting, insight could be gained to answer the aim of the research undertaken (i.e., Is there a correlation between KM Maturity and OP?).

As a point of departure, diagrammatic presentation of OP scores and KM Maturity growth over the period 2001-2005 revealed that in five out of the nine organizations (Companies A, B, C, E and H), there is a clearly noticeable correlation between KM Maturity and OP, especially

regarding growth in both entities over the period under investigation. In certain instances, the correlations were not easily noticeable[7] and/or were non-existent[8].

From within a mathematical perspective, in comparing the correlation between growth in KM Maturity and year-on-year growth in OP, it was revealed that six out of the eight companies that recorded positive growth in KM Maturity also recorded positive (year-on-year) growth in OP. In a similar manner it was established that the company recording negative growth in KM Maturity also recorded negative (year-on-year) growth in OP.

Findings supported the hypothesis that companies that recorded higher OP also recorded higher KM Maturity and/or companies that recorded lower OP also recorded lower KM Maturity. However, in comparison to peer organizations within their respective industries, findings indicate that there are conditions were companies that achieved higher OP scores reported lower KM Maturity scores and/or conditions where company that achieved lower OP scores, reported higher KM Maturity scores. Unfortunately, apart from speculating at industry factors negatively skewing performance figures, mathematical evaluation could not clarify with certainty why in certain instances the correlation between growth in KM Maturity and growth in OP is not easily noticeable and/or were non-existent.

## 6 LIMITATIONS

A limitation of the study was the focus on a single developing country's industrial base, South African. The baseline data presented here can therefore inform other empirical studies that investigate the perceived 'enablement' afforded by KM in OP, as it relates to developing economies.

A possible explanation for differences between OP scores and KM Maturity scores could be the result of "time dependent" perspectives all carrying inherent limitations. Organizational performance figures, especially over a short period of time can be skewed by factors such as

[7] Companies D and I.

[8] Companies F and G in the Resource Group.

inflation, interest rates, exchange rates, tax policies as well as the level of performance prevailing at the commencement of the term under review. Methods such as Exponential Growth Rate, Geometric Growth Rate, Least-squares Growth Rate and even Compounded Annual Growth Rate are not suitable methods for the calculation of OP growth. This necessitate that the overall growth rate be calculated as a derivative of a number of growth rates calculated over short periods of time (i.e., the calculated growth rate between observations). This allows the overall growth rate to be calculated as the sum of the growth rates of succeeding observations. With all observations carrying equal weight, this approach limits but does not nullify the effect of one observation that negatively skews the overall growth ratio. In contrast, growth in KMM is a succession of phases (i.e., a form of compounding where phases build on the achievements of previous phases).

Replicating this study in other developing as well as developed countries would therefore be most informative. In order to nullify the effect of single observations skewing findings, further studies should span a greater number of years. Future studies should probe the significance of cultural differences (e.g., race, age, ethnicity, gender) and management modes. This is needed to further define the meaning of these terms and the implications of such insights on KM adoption to leverage KM for organizational innovation/advancement and performance.

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**APPENDIX A:** Performance Assessment Tool (PAT)

## GENERAL PERFORMANCE

**Profitability**:

1. **Net Profit Margin:** The measurement of the percentage of each sales rand remaining after all expenses, including taxes, have been deducted. The net profit margin is a commonly cited measure of the firm's success with respect to earnings on sales**. Positive ratio.**

| | **< 10% Average** | **Industry Avg.** | **> 10% Average** |
|---|---|---|---|
| **Score** | **1** | **2** | **3** |

2. **Return on Investment** (ROI) (Net income/Total assets): After tax profits per dollar of assets; this ratio is also called Return on Assets – ROA). **Positive ratio.**

| | **< 10% Average** | **Industry Avg.** | **> 10% Average** |
|---|---|---|---|
| **Score** | **1** | **2** | **3** |

3. **Return on Shareholders Equity** (ROE) (Net income/Total stockholder's equity): After tax profits as a percentage of stockholders investment in the firm. **Positive ratio.**

| | **< 10% Average** | **Industry Avg.** | **> 10% Average** |
|---|---|---|---|
| **Score** | **1** | **2** | **3** |

**Liquidity**:

4. **Current Ratio** (Current assets/current liabilities): The extent to which a firm can meet its short-term obligations. **Positive ratio**.

| | **< 10% Average** | **Industry Avg.** | **> 10% Average** |
|---|---|---|---|
| **Score** | **1** | **2** | **3** |

5 **Quick Ratio** ((Current Assets – Inventory)/Current Liabilities)): The extent to which a firm can meet its short-term obligations without relying on the sale of inventories. **Positive ratio**.

| | **< 10% Average** | **Industry Avg.** | **> 10% Average** |
|---|---|---|---|
| **Score** | **1** | **2** | **3** |

**Leverage:**

6. **Debt-to-Total-Assets Ratio** (Total debt/Total assets): The percentage of total funds that are provided by creditors. The higher the ratio, the greater the amount of other people's money being used in an attempt to generate profits, i.e. the greater the risk (especially if interest rates increase). **Negative ratio.**

| | **< 10% Average** | **Industry Avg.** | **> 10% Average** |
|---|---|---|---|
| **Score** | **1** | **2** | **3** |

7. **Debt-to-Equity Ratio** (Total debt/Total stakeholder equity): The percentage of total funds provided by creditors versus the percentage provided by owners. **Negative ratio.**

| | **< 10% Average** | **Industry Avg.** | **> 10% Average** |
|---|---|---|---|
| **Score** | **1** | **2** | **3** |

**Shareholders (Securities market ratios):**

8. **Earnings per Share** (EPS) (Net income/Number of shares of common stock outstanding): Earnings available to owners of common stock. **Positive ratio.**

| | **< 10% Average** | **Industry Avg.** | **> 10% Average** |
|---|---|---|---|
| **Score** | **1** | **2** | **3** |

9. **Earnings Yield**: The earnings yield indicates the current income-producing power per ordinary share at the current market price. **Positive ratio.**

| | **< 10% Average** | **Industry Avg.** | **> 10% Average** |
|---|---|---|---|
| **Score** | **1** | **2** | **3** |

10. **Dividend Yield**: The actual cash flow shareholders receive. **Positive ratio.**

| | **< 10% Average** | **Industry Avg.** | **> 10% Average** |
|---|---|---|---|
| **Score** | **1** | **2** | **3** |

**Growth:**

11. **Sustained Growth** (Return on Assets x Pretension Rate) **Positive ratio.**

| | **< 10% Average** | **Industry Avg.** | **> 10% Average** |
|---|---|---|---|

| Score | 1 | 2 | 3 |
|---|---|---|---|

**Intangible Value/Assets**

12. **Value of Intangible Assets** (Price / Share © divided by Book Value / Share, or Number of Shares Issued x Current Share Price)/Net Book Value): Difference between Value of a company' market capitalization. **Positive ratio.**

| | < 10% Average | Industry Avg. | > 10% Average |
|---|---|---|---|
| Score | 1 | 2 | 3 |

**Customer Satisfaction:**

13. **Accounts Receivable/Turnover**: The number of times accounts receivable are turned over per year. **Positive ratio**.

| | < 10% Average | Industry Avg. | > 10% Average |
|---|---|---|---|
| Score | 1 | 2 | 3 |

**Employee Satisfaction**

14. **Profit per Employee** (Net profit/Number of employees): Good appreciation of how your company's ability to produce and generate profits develops. **Positive ratio.**

| | < 10% Average | Industry Avg. | > 10% Average |
|---|---|---|---|
| Score | 1 | 2 | 3 |

**Note**: **< 10% Average** = More than 10% below industry average.
**Industry Avg.** = Between 10% above or 10% below industry average.
**> 10% Average** = More than 10% above industry average.