KNOWLEDGE MANAGEMENT MEASUREMENT IN SOUTH AFRICAN ORGANISATIONS

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ABSTRACT

This article explores the status of knowledge management (KM) measurement in South African organisations. KM has been advocated by some observers as the only way of maintaining a competitive advantage in today's global economy, but if KM is not to fade away as yet another 'management fad', it needs practical implementation models and measures to determine if it adds value. Considerable international research into KM models and measures exists, and several projects are afoot to derive KM standards, but there has been very little research in South Africa in this regard. This article investigates whether organisations in South Africa are using KM measurement models and measures, and if so, which ones. In particular, the authors wanted to establish if the measures used conform to one of the published approaches, namely that of the British Standards Institute (BSI). A descriptive quantitative research methodology was employed, using a semi-structured questionnaire e-mailed to a target population derived from non-probability purposive sampling. In the sample of eighteen organisations 94 per cent were found to be using KM measurement models, albeit from a much wider range than has been recorded elsewhere. In terms of measures, 89

per cent of the sample were found to be using measures, and all of these were using at least some of those recommended by the BSI.

1.   INTRODUCTION

Many discussions about the modern business landscape or strategic imperatives of the new millennium organisation make mention of the need for firms to be able to adapt rapidly to an ever-changing environment and to find new ways of gaining a competitive advantage that are no longer dependent on a comparative advantage based on the traditional factors of production. Consistent with this is the accelerating move of business in the developed world further along the global value chain towards a greater services orientation and away from manufacturing, in the process relying more and more on leveraging intangible rather than tangible assets. The basis of growth in the modern age, as Arora (2002) puts it, has shifted from natural resources and physical assets to intellectual capital (IC). The shift in focus from tangible to intangible assets has meant that the way organisational performance and value is determined also had to change. In line with this, performance measurement has undergone three stages of development (Ghalayini and Noble 1996), namely

- financial focus, based on traditional system of management accounting
- non-financial focus
- integrated use of financial and non-financial measures.

The valuation of businesses based on these new performance measurement criteria was thrust into the spotlight at the start of the twenty-first century with the spectacular corporate failures of the likes of Enron and WorldCom. Ittner and Larcker (2003) contend that the increased use of non-financial performance measures is at least partly to blame, as these measures in their opinion are just as susceptible to manipulation as financial accounting measures, if not more so, because self-serving managers can choose those measures that can most easily be manipulated in their favour. However, as will be shown in this article, relatively little empirical research has been conducted so far in South Africa into the range of measures which can be and are being used to assess knowledge management activities in organisations. This was the focus of this research.

The way business performance is now being judged has fundamentally changed. Stewart (1998, xi) recognised this with his statement that 'wealth is the product of knowledge', and he proposed that intellectual capital is made up of three elements: human capital, structural capital and customer capital. Stewart (1998, 78) in particular emphasised that 'intellectual capital is not

created from discrete wads of human, structural and customer capital but from the *interplay* among them' (Stewart provided the italics). Stewart (1998, x) also defines intellectual capital as 'intellectual material – knowledge, information, intellectual property, experience – that can be put to use to create wealth'.

In terms of the relationship between KM and IC, Firer (2005, 4), basing his ideas on a number of other authors, states that 'knowledge management entails the management of the intellectual capital controlled by an entity. Knowledge management as a function describes the act of managing intellectual capital.' In a similar vein, Rumizen (2002, 239) states that 'knowledge management recognises the value of knowledge; intellectual capital approaches attempt to give it a value'.

Bontis (2001, 42) puts it thus: 'Perhaps the most impressive evidence suggesting a transition in thinking about a new structure and process supporting a company's productive assets is in the inclusion of intellectual capital as a strategic performance measure.' He makes reference to a 1998 Arthur Andersen study of European, North American and Asian organisations that revealed that:

- the majority of respondents thought that IC reporting would increase
- about 75 per cent of respondents already tracked two or more non-financial measures
- knowledge measurement would improve organisational performance.

Bontis (2001) goes on to ask the question whether this move from the historical understanding of financial value, which has been developed over 500 years, to a new structure of assets in fact constitutes a paradigm shift. Such a fundamental shift to a new model, he posits, whether in a theoretical or applied context, requires that it be superior in terms of its philosophical, conceptual and empirical elements. Bontis (2001) credits Skandia with being the first large organisation to have started trying to understand and quantify the value added by its IC. Skandia first developed its IC report internally in 1985, and then, in 1994, was the first company that appended an IC addendum to its annual report (Bontis 2001). IC reporting has since progressed to the point that there are now national IC reporting guidelines, in Denmark for example (Firer, 2005) and that companies like Microsoft and Coca-Cola only report their traditional assets in their balance sheets, which account but for a small fraction of their market value (Mouritsen, Bukh and Marr 2004). In the process of the evolution of their measurement systems, organisations 'commonly found they over-measured, which distorted focus and created change management issues' (APQC 2004, 7). Leading organisations over time, however, are able to define the vital few measures

that effectively link strategic goals with actionable scorecards that both encompass these measures and guide performance and behaviour throughout the organisation (APQC 2004).

Effective KM is being touted as an organisational imperative for surviving and thriving in the global economy of the day, with many proponents advocating that it is in fact the only way for modern firms to gain and maintain a competitive advantage (Bose 2004; Botha and Fouché 2002; Chourides, Longbottom and Murphy 2003; Firer 2005; Goh 2005; Nonaka 1991; Nonaka and Takeuchi 1995; Reich 1992; Skyrme and Amidon 1997; Stewart 1998). There is more significant evidence that supports KM as the latest business performance enhancer. For example, the Executive Summary of the 2005 Global Most Admired Knowledge Enterprises (MAKE) Study (Teleos 2005, online), which boldly proclaims: 'Companies dedicated to growth through innovation and knowledge management create intellectual capital and shareholder value twice as fast as their competitors,' and then supports this assertion with a string of metrics in which publicly traded MAKE finalists and winners outperform their competitors by considerable margins:

- total return to shareholders for the ten-year period 1993–2003 of 19.3 per cent, nearly twice the average Fortune 500 company median
- profits as a percentage of assets of 7.3 per cent, nearly four times that of the Global Fortune 500 median
- high rankings in brand value, with 22 out of the top 100 brands being associated with these organisations.

Research into KM in South Africa has so far looked at the role of leadership (Kok 2003) and culture (Davel and Snyman 2005; Ndlela and du Toit 2000), communities of practice (COPs) (Van den Berg and Snyman 2003), and at best practice and maturity models (Botha and Fouché 2002; Botha 2004; Kruger and Snyman 2005; Tobin and Snyman 2004). One significant contribution specifically involving intellectual capital reporting is from Firer (2005, 16) who proposes that companies should 'recognise the benefits of voluntarily disclosing intellectual capital information in their annual reports' whilst recognising a number of challenges associated with this proposal.

Of these, the study by Botha and Fouché (2002), using their KM Reference Model, reveals that, whereas participants scored quite well on five of the six core KM components surveyed, they recorded very low scores for the core component of measurement. By measurement, Botha and Fouché (2002, 14) mean 'procedures to measure on an ongoing basis the organisation's proficiency in sustaining and improving the other five characteristics'. Firer

(2005) also lists a number of examples of intellectual capital measurement approaches in his discussion of corporate disclosure.

2. MEASURING KNOWLEDGE MANAGEMENT

Ahmed, Lim and Zairi (1999) state that senior management have tried to manage knowledge without actually measuring it, simply because they deem it so difficult to measure an elusive concept such as knowledge. Yet, they continue, measurement provides the basis for comparing performance between different organisations, processes, teams and individuals. Ahmed et al. (1999) point to the relevance of measuring knowledge, as it provides a mechanism to evaluate, control and improve on existing performance, and forms one of the essential linkages between strategy and actions. Such measurement is important:

- because you cannot manage what you cannot measure
- to determine what needs to be improved
- to provide a scoreboard for self-monitoring
- to give an indication of the cost of poor implementation
- to provide a standard for comparisons
- to align efforts with business objectives.

Several authors offer a spectrum of knowledge management metrics, ranging from attempts to measure return on investment or return on assets, through adaptations of IC measurement tools such as the Balanced Scorecard (BSC), Scandia Navigator or Sveiby's Intangible Assets Monitor (IAM), to revisions of standard industrial classifications (Bose 2004; Erickson, Rothberg and Wuerz 2002; Kok 2003; Liebowitz and Suen 2000; Marr, Gray and Neely 2003; Martin 2004; Sveiby 2002; Van Buren 1999; Yelden and Albers 2004). The measurement models described in the literature are listed in Table 1 and include the only published South African one the authors could trace, the KM Reference Model (Botha and Fouché 2002). Unfortunately, it is not possible due to space limitations to describe or discuss these models in this article. It is suggested that further information about each model should be obtained by consulting the sources supplied.

In their *Guide to measurements in knowledge management* the BSI (2003) set out to provide all types of organisations with guidance on measures to determine the effectiveness, efficiency and value of their KM initiatives. Their document combines both desk and primary research, and compares different models and case studies, and its authors postulate that KM adds value to organisations across at least six dimensions: financial, innovation, processes,

TABLE 1 ————————————————————————————————

MODEL	SOURCES
Skandia Navigator	Bontis (2001); Kok (2003); Martin (2004); Shaikh (2004)
IC-Index	Bontis (2001); Bose (2004); Martin (2004)
Technology Broker	Bontis (2001); Martin (2004)
Intangible Assets Monitor	Bontis (2001); Kok (2003); Martin (2004); Shaikh (2004)
Economic Value Added	Bontis (2001); Bose (2004); Martin (2004)
Market Value Added	Bontis (2001)
Citation-weighted Patents	Bontis (2001); Martin (2004)
Knowcorp Audit	Bontis (2001)
Tobin's Q Ratio	Bontis (2001); Martin (2004)
Balanced Score Card	Bontis (2001); Kok (2003); Martin (2004); Shaikh (2004)
KM Reference Model	Botha and Fouché (2002)
Value Chain Scorecard	Martin (2004)
Investor Assigned Market-Value	Martin (2004)
Human Resource Accounting	Martin (2004); Shaikh (2004)
Structural Equation Models	Papmehl (2004)
Market to Book Value	Shaikh (2004)
Calculated Intangible Value	Shaikh (2004)
Real Options	Shaikh (2004)
Wiig's KM Framework	Kok (2003)
Intellectual Asset Management Tool	Kok (2003)

clients, human, and service. The BSI suggests that effective KM should therefore add value to all the components of IC in an organisation. This may be measured via qualitative measures (which give an insight into the how KM efforts are being perceived) such as the following typical key performance indicators (BSI 2003):

- proportion of employees offering new ideas
- number of new ideas taken to market
- time to create new knowledge
- the rookie ratio
- time to competence
- better competence development
- contribution to knowledge bases
- increased employee satisfaction
- knowledge user complaints.

It is the quantitative measures that business people are generally most interested in, because measuring direct business impact is the most powerful way of showing the added value of a management activity such as KM (BSI 2003). Such metrics, the BSI contends, could include ones that measure strategic, organisational, or job effectiveness. However, many organisations find it difficult to measure KM as there are just too many variables, and for them a simple tool such as internal KM effectiveness surveys might be more appropriate (BSI 2003). Based on the results of their extensive research around KM measures, the BSI suggests that the following metrics be used to measure KM initiatives:

- increased customer satisfaction
- increased customer value
- better employee attitude
- better employee morale
- better employee involvement
- cost reduction
- cost savings
- better time to market
- increased sales effectiveness
- higher number of Communities of Practice
- increased new product sales
- higher number of KM initiatives
- reduced employee turnover
- the amount of knowledge getting into the system
- new business initiatives
- new product lines
- commercialisation of knowledge assets.

This research project was designed to improve the understanding of KM measurement practices in South Africa, in particular in relation to the measurement approaches advocated by the BSI (2003).

3. RESEARCH METHODS

The population of relevance comprised all South African-based organisations (public, private and governmental) that have been engaged in KM initiatives for at least one year. Several references in the reviewed literature point to delayed benefits from KM (Arora 2002; Clare 2002; Costello 2004), and the authors therefore felt justified in deliberately excluding newcomers to the field. The initial target population sample was derived through non-probability purposive snowball sampling (Welman and Kruger 2001). Snowball sampling is a popular sampling method employed in instances where probability samples of the population are difficult to obtain because a known sampling frame does not exist (Barendregt, van der Poel and van den Mheen 2005). In the KM arena in South Africa no sampling frame exists for the following reasons:

● There is no representative body or association for KM practitioners in South Africa, as the practice of KM is not a profession and does not require that a practitioner be registered with a regulatory body, in contrast to accountants or medical doctors for instance. The Knowledge Management Society of South Africa (KMSSA), which could have been a good source for a sampling frame, had been disbanded by the time the research commenced. The 'KM Practitioners Group' is a small grouping of KM practitioners in South African organisations that meets regularly to exchange ideas and engage in KM discussions, but it makes no claims to being a representative body and only draws participants from a limited geographical area in South Africa, and therefore also cannot serve as a source for a sampling frame.
● No equivalent of the Global MAKE Study, Regional MAKE Study or Country MAKE Study exists in South Africa. These studies serve as a good source for identifying organisations engaged in KM.

Non-probability sampling has the additional advantage of being more economical than probability sampling in terms of time and financial expenses (Welman and Kruger 2001), and the authors experienced both time and financial constraints that had to be taken into consideration. As a result of all of the above-mentioned factors the authors believe their choice of sampling method to be appropriate.

The following key informants were deemed by the authors to be well positioned (due to their level of involvement in KM) to provide a seed sample

of KM practitioners in organisations that fitted the population of relevance criteria, and they were consequently approached to initiate the snowball sampling exercise:

- a senior lecturer, who specialises in the field of KM at a pre-eminent South African business school, to represent academia
- the founder of the now defunct KMSSA, to represent the general South African KM community
- the founder of the KM Practitioners Group, who is also a KM consultant, to represent the KM consulting fraternity
- the KM Officer of a South African company that was nominated to participate in the 2004 Global MAKE Study, to represent the business community that is engaged in KM.

This initial snowball sampling method only yielded 35 potential units of analysis to which the survey could be administered. In order to obtain a larger target population, two additional sampling exercises were conducted:

- copies of the survey questionnaire were handed out by one of the co-authors at a meeting of the KM Practitioners Group;
- one of the co-authors approached a group of his peers studying towards the Master of Business Administration (MBA) degree to ask the nominated KM representative in the organisations they work for to participate in the survey.

The first of these two additional sampling exercises is essentially an extension of the original snowball sampling exercise, but has the added characteristics of incidental sampling (Welman and Kruger 2001), because the survey questionnaire was handed out to everyone who happened to be attending the particular meeting of the KM Practitioners Group at that time. This sampling exercise yielded an additional 10 potential units of analysis. The second of the two additional sampling exercises constitutes a non-probability purposive convenience sampling approach. Convenience samples are chosen on the basis that respondents are easily accessible and articulate (Struwig and Stead 2001), both criteria that are fulfilled by the co-author's fellow MBA students' organisation's KM representatives. This method, unless applied to a very homogeneous population, should not be used unless there are time and financial constraints (Struwig and Stead 2001). Both these constraints were in place with this research project. Time was even more of a factor in this instance because this sampling exercise was added only after it became apparent that the initial sampling approach was not yielding the desired size of target population. This sampling approach added a further 25 potential units of analysis. The three sampling exercises yielded a target population of 70.

One of the problems with mail surveys is the low response rate of between 15 per cent and 25 per cent (Struwig and Stead 2001). At these response rates it could therefore be anticipated that only somewhere between 10 and 17 responses would be received. The authors were of the opinion that they should be able to achieve higher response rates than this from their survey sample because:

- KM is very topical in South Africa
- the willingness to share information is central to KM
- the target population, due to the referral-based nature, should have consisted largely of organisations with a genuine and vested interest in KM
- the survey questionnaire was short, and therefore would not have to compete as much with people's busy schedules as a long one would.

As it turned out, there were 23 respondents, of whom only 18 fulfilled the criteria stipulated for the population of relevance.

This research aimed to answer the following questions:

- *Question 1:* Do South African organisations engaged in KM base their KM initiatives on published models?
- *Question 2:* If they do, what models do these organisations base their KM initiatives on?
- *Question 3:* Do these organisations monitor their KM initiatives with metrics?
- *Question 4:* If they do, are they using the metrics recommended by the BSI in their *Guide to measurements in knowledge management?*

The survey questionnaire took the form of a partly structured questionnaire with multiple-choice questions and multiple answers allowed (Struwig and Stead 2001). To allow for respondents to include alternatives not listed in the questionnaire, an 'other' option was included under each question. The survey questionnaire was administered via e-mail to the survey sample derived from the initial snowball sampling exercise and the subsequent convenience sampling exercise. Recipients of the e-mail were given two weeks to respond by completing the questionnaire electronically, and then returning it via e-mail. Printed versions of the survey questionnaire were handed to the attendees at the KM Practitioners meeting, and they were requested to fill the questionnaire in by hand and return it by fax at their earliest convenience.

The data from respondents were analysed to determine the frequency of individual answers and presented in the form of bar charts, but due to the relatively small sample size and non-probability sampling methods used no statistical analysis was conducted to compute measures of validity and

representivity of the survey data. The outcome of this research is therefore exploratory in nature, and it is intended to add to the topical discussion around KM measures rather than to be used to make inferences beyond the sample to the population of relevance. The non-probability of the sampling methods employed, as well as the mixing of different sampling approaches, introduces high, but immeasurable, variability and bias. In addition, these factors, combined with the small sample size, preclude any useful statistical analysis from being performed on the data. This means that the data cannot be generalised into the greater population.

4. RESEARCH RESULTS

The response rate from the initial snowball sampling target population is close to the upper end of the range (between 15 per cent and 25 per cent according to Struwig and Stead 2001) that can reasonably be expected for a mail survey. The questionnaires that could not be successfully delivered were sent to e-mail addresses that were either no longer valid because the person had left the organisation, or were incorrect and attempts to obtain updated addresses were not successful. The 100 per cent non-response rate from the KM Practitioners Group was somewhat surprising. The fact that the questionnaire was handed to this group in person by one of the co-authors explains why delivery failure was not possible, and these are therefore reflected as non-respondents in the results analysis. This method of delivery however also meant that it was impractical to try and put in place any kind of follow-up reminder to try and coax participation in the survey. This may have contributed to the lack of participation from the recipients of the survey in this group. The combined response rate from the entire target population of 36 per cent translated into a sample of 18 completed questionnaires for which the data could be analysed. The seven responses that did not fit the population of relevance criteria are significant in that they provide some information on the status of KM in these organisations, as opposed to the non-respondents, for whom no information at all is known.

4.1 Data analysis

4.1.1 Do South Africa organisations engaged in KM base their KM initiatives on published models?

All but three of the respondents (83%) indicated that their organisations are using some of the measurement models listed to guide their KM initiatives. Of the three organisations that are not using any of the presented models, one is not using any model at all, and the other two are applying models that they developed in-house. Only one other organisation also uses a model developed

in-house, but it is using this in addition to the listed models. This particular organisation stands apart from the rest in that it is applying a full 50 per cent of the published models that formed part of the survey. The next closest organisation in terms of numbers is applying only 25 per cent of these models.

4.1.2 What models do these organisations base their KM initiatives on?

Table 2 indicates how many organisations (the frequency), if any, in the sample are using each of the models.

The Balanced Score Card (BSC) (56 per cent) and Calculated Intangible Value (CIV) (39 per cent) models are the most frequently applied models within the sample, followed by the Economic Value Added (EVA) (28 per cent), IAM (22 per cent) and then In-house (22 per cent) models. Ten other models appeared in the responses at a frequency of 11 per cent or less, while a further six listed were not being used at all. Two organisations have included a South African designed model, the KM Reference Model (Botha and Fouché 2002), as one of the models they use in KM.

4.1.3 Do these organisations monitor their KM initiatives with metrics?

All of the organisations in the sample, bar two (89 per cent), apply metrics to monitor their KM initiatives. Interestingly, neither of the two organisations that do not make use of metrics corresponds with the one that does not use a model to guide its KM initiatives. These two organisations are furthermore noteworthy because:

1. the one is the organisation in the sample that has been engaged in KM for the shortest period, namely one to two years
2. the other organisation is the smallest in size in the sample, namely fewer than 50 employees.

4.1.4 Are these organisations using the metrics recommended by the BSI?

Of the sample of 18, two organisations indicated that they are not using any metrics at all, while two indicated that they are applying all of the measures recommended by the BSI (see Table 3).

The organisations that indicated that they are using metrics to measure their KM initiatives are all using ones recommended by the BSI, though to different degrees. Table 4 indicates how many organisations (the frequency), if any, in the sample are using each of the metrics.

The most used metric across the sample is that of increased customer satisfaction (78%), followed closely by metrics related specifically to employees (better morale, 67%, better attitude, 61%), cost reduction, 61%, and savings, 61%. Metrics directly related to revenue growth (increased sales

TABLE 2

Frequency distribution of models used by the organisations in the sample

Models used to guide KM in organisation	f	%	Frequency (f)													
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
Balanced Score Card (Kaplan and Norton)	10	56%	■	■	■	■	■	■	■	■	■	■				
Calculated Intangible Value	7	39%	■	■	■	■	■	■	■	■						
Economic Value Added (stern Steward)	5	28%	■	■	■	■	■									
Intangible Assests Monitor Sveiby)	4	22%	■	■	■	■										
Other	4	22%	■	■	■	■										
Intellectual Asset Management Tool (DOW)	2	11%	■	■												
KM Reference Model (Botha and Fouche)	2	11%	■	■												
Market to Book Value	2	11%	■	■												
Market Value Added	2	11%	■	■												
Skandia Navigator (Edvinnson)	2	11%	■	■												
Human Resouarce Accounting (Hermanson)	1	6%	■													
C-Index (Roos)	1	6%	■													
Real Options (Myers)	1	6%	■													
Value Chain Scorecard (Baruch Lev)	1	6%	■													
Wiig's KM Framework (Wiig)	1	6%	■													
Citation-weighted Patents (Petrach, Sherer)	0	0%														
Investor Assigned Market Value (Standfield)	0	0%														
Knowcorp Audit (Standfield)	0	0%														
Structural Equation Models (Bontis)	0	0%														
Technology Broker's IC Audit (Brooking)	0	0%														
Tobin's Ratio (Tobin)	0	0%														

TABLE 3

KM measures used by the organisations in the sample

BSI recommended measures	Organisation																	
	A	S	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
Increased customer satisfaction	■		■	■	■	■		■		■	■	■	■	■		■		
Increased customer value				■		■			■			■	■	■				
Better employee attitude	■		■	■		■		■		■			■	■		■	■	■
Better employee morale			■	■	■	■		■		■	■		■	■		■	■	■
Better employee involvement			■	■		■		■		■			■	■		■	■	■
Cost reduction			■	■				■				■		■		■	■	■
Cost savings			■	■				■				■		■			■	■
Better time to market			■	■		■		■				■	■	■		■	■	■
Increased sales effectiveness			■			■		■				■	■	■			■	■
Higher number of Communities of Practice						■		■		■			■	■		■	■	■
Increased new product sales				■				■		■	■		■	■	■		■	■
Higher number of KM initiatives				■	■	■		■			■	■	■	■		■	■	■
Reduced employee turnover	■			■		■		■				■	■		■	■	■	■
The amount of knowledge getting into the system			■		■	■		■		■			■	■			■	■
New business initiatives				■				■	■		■		■	■	■			■
New product lines				■				■				■	■	■	■			■
Commercialisation of knowledge assets								■					■	■			■	■
Other			■			■		■						■		■	■	
Number of BSI measures being uded	3	0	9	13	3	10	0	17	3	6	4	11	13	17	4	9	13	15

■ denotes that the organisation is applying this measure

TABLE 4

Frequency distribution of BSI measures in the sample

BSI recommended measurees	f	%	1	2	3	4	5	6	7	8	9	10	11	12	13	14
								Frequency (f)								
Increased customer satisfaction	14	78%	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Better employee morale	12	67%	■	■	■	■	■	■	■	■	■	■	■	■		
Better employee attitude	11	61%	■	■	■	■	■	■	■	■	■	■	■			
Cost reduction	11	61%	■	■	■	■	■	■	■	■	■	■	■			
Cost savings	11	61%	■	■	■	■	■	■	■	■	■	■	■			
Better employee involvement	10	56%	■	■	■	■	■	■	■	■	■	■				
Higher number of KM initiatives	10	56%	■	■	■	■	■	■	■	■	■	■				
The amount of knowledge getting into the system	9	50%	■	■	■	■	■	■	■	■	■					
Higher number of Communities of Practice	9	50%	■	■	■	■	■	■	■	■	■					
Increased customer value'8	8	44%	■	■	■	■	■	■	■	■						
Reduced employee turnover	8	44%	■	■	■	■	■	■	■	■						
New business initiatives	7	39%	■	■	■	■	■	■	■							
Better time to market	7	39%	■	■	■	■	■	■	■							
Increased sales effectiveness	6	33%	■	■	■	■	■	■								
Increased new product sales	6	33%	■	■	■	■	■	■								
Commercialisation of knowledge assets	6	33%	■	■	■	■	■	■								
New product lines	5	28%	■	■	■	■	■									
Other	5	28%	■	■	■	■	■									

effectiveness and new product sales, both at 33 per cent); commercialisation of knowledge assets (33%), and new product lines (28%) are being applied least frequently within the sample. Five organisations have implemented additional metrics that are not included in the BSI list, namely:

● general staff attitude to KM initiatives through survey/interviews
● innovation rewards programme
● COP rooms usage
● quality of new knowledge assets
● new learnings implemented
● KM Maturity Model
● internal / external benchmarking
● number of employees participating in ideas management process
● team rewards for improvements and sharing of best practices.

The relatively small eventual sample size, combined with the apparent nascence of the field of KM in South Africa and the lack of published research in the field of KM measurement in South Africa may have lent itself better to an exploratory research approach (Struwig and Stead 2001) from the outset, rather than the descriptive quantitative research methodology employed by the authors. Notwithstanding this short-coming, sufficient data were collected to augment the body of knowledge on KM in South Africa, and to form the basis for further research in the field of KM measurement.

4.1.5 Use of measurement models

Models present a practical way of translating academic concepts into an actionable framework within which these concepts can be implemented in the commercial world. As such, they have a long history of accompanying any new developments in the business improvement arena, and it is therefore not surprising to discover that South African organisations, like their peers internationally, are resorting to the application of models in order to guide their efforts to stay at the forefront of these developments. Where the surveyed organisations seemingly differ from their counterparts in Europe and the US, at least in the small sample under investigation, is in the nature and combination of models that are being applied.

In the sample of 18 organisations, 14 of the 20 published models (70%) listed in the questionnaire are in use. In addition to this a further four internally developed models are also being applied. The application of such a wide range of models stands in stark contrast to the findings of studies elsewhere in the world, where only one or at most two models seem to prevail. Marr and Schiuma (2003), for example, identify the BSC as the most influential concept in the field of business performance measurement. This view is

echoed by Bose (2004), who adds that it is being widely adopted in KM, where it has the advantage of directly linking learning to process performance, which in turn is linked to overall performance.

The BSI (2003), in their in-depth study of 10 organisations, found that 60 per cent were pursuing a BSC approach, while the rest were using the IAM model instead. In this study, the authors found that ten (56%) of the organisations are using the BSC model, yet only three of them are using it exclusively, while the rest are using it in conjunction with other models. The next most used models in the sample are CIV (39%) and EVA (28 per cent), models that do not even feature in the other above-mentioned studies.

It is worth mentioning here that although EVA is certainly not a KM or an IC specific model, but rather a holistic business valuation model, it has however been recognised as a valid model to represent the financial value of intellectual capital (Andriessen 2004). Two organisations cite EVA as the only model they use to guide their KM initiatives and it therefore seems plausible that this may indeed be the only model implemented in the business as a whole, and is therefore being cited as the KM model by default. The IAM model, applied by 40 per cent of the organisations in the BSI study (BSI 2003), is in use by 22 per cent of the sample in this survey. All of the organisations that are using the IAM model to guide their KM initiatives are also making use of at least two other models.

After these top three, another 11 of the published models were cited by the organisations in this study. The fact that they used so many different models could perhaps be explained by the relative immaturity of KM in South Africa, with organisations seemingly experimenting with many different models to see which ones work best for them.

4.1.6 Use of measures

The organisations that participated in this survey show a preference for scorecard models such as the BSC, and to a lesser degree the IAM. If one accepts that the BSI (2003) KM metrics in fact do map back to these models, then it can reasonably be expected that these metrics would also prove popular with these same organisations. This can be observed from the sample, with 10 of the 18 (56%) organisations applying at least 50 per cent of these metrics in an effort to illuminate the value of their KM initiatives. Two organisations (11%) make use of all the metrics suggested by the BSI, while at the other end of the scale, two others (11%) are not using any metrics at all.

Additional clarification from the respondents claiming to be using all the measures recommended by the BSI would have been useful in order to ensure the validity of this answer. The intention was to investigate whether

organisations were using these metrics specifically for KM measurement, and also to elicit responses only if the metrics were currently being employed. Both of these criteria were deemed to be implicit in the survey question: Do these organisations monitor their KM initiatives with metrics? A better survey methodology would have been to make these criteria explicit, and thereby avoid any possibility of differing interpretations.

It is of interest to note that the two measures directly related to employees, namely better attitude and better morale, were selected as a pair in 10 instances (where better attitude was selected a total of 11 times, and better morale a total of 12 times). This may be explained in that people may find it difficult to separate the two ideas from each other. The *Concise Oxford dictionary* defines *morale* as 'the mental attitude or bearing of a person or group'. It could be argued that better morale could be seen as an outward manifestation of better attitude, rather than a separate metric, and that consideration should be given to devising a single recommended measure. Similarly, the two measures relating to cost, namely reduction and savings, are not necessarily easy to differentiate. With these two measures, the data shows that they were always selected as a pair. Here too, possibly even more so than in the previously discussed example, it would appear to make sense to come up with a single recommended measure.

The two customer specific metrics, increased customer satisfaction and increased customer value, could also be seen to be similar, depending on the interpretation of the latter metric. If it is interpreted as meaning that the customer derives increased value from the organisation because of its KM initiatives, then the two metrics would seem to be closely linked at least. If, however, this metric is interpreted as meaning that the organisation derives increased value from its customers, then the two metrics are measuring very different things. Looking to the data, the two metrics were selected as a pair for every instance in which increased customer value was one of the measures selected, a total of eight times. Increased customer satisfaction was selected a total of 14 times though, meaning that in six instances it was selected in isolation of increased customer value. For these two metrics, it would be important to clarify exactly what is meant by them in order to preclude any possible confusion.

As for the rest of the measures, there do not appear to be any others that exhibit such levels of possible congruence, and the fact that even the least-selected metric, new product lines, was selected by five of the 18 (28 per cent) organisations, seems to at least superficially validate the measures recommended by the BSI. Only five (28 per cent) of the organisations in the sample indicated that they also make use of measures that they have either developed in-house, or that were not included in the survey questionnaire.

This relatively low propensity for departing from the recommended set of measures is probably explained by virtue of the fairly generic nature of the BSI measures.

5.   CONCLUSION

There has been little published empirical research in the field of KM measurement in South Africa, with only cursory mention being made of the use of KM measures by Botha and Fouché (2002) and Botha (2004). Botha and Fouché (2002) in their survey of the KM practices in 53 South African businesses found that only 18 per cent of these actually have some KM metrics, while only 10 per cent use these to align their KM initiatives with their organisational vision, objectives and strategy.

As a result of the lack of research in this area, the authors set out to explore whether South African organisations were in fact using measurement models to guide their KM initiatives, and if so, which ones. No evidence of any published research into which particular metrics South African organisations are using to monitor and measure their KM initiatives was found, and it was intended to shed light on this in terms of this survey.

The resulting survey of 18 South African organisations found that the BSC (used by 56 per cent of the sample) and IAM (used by 22% of the sample) are popular within this sample, but in addition to these, other models such as CIV and EVA are also very much in evidence, even more so in fact than the IAM. Botha and Fouché's KM Reference Model is being used by two organisations in the sample.

The use of a range of different measurement models to guide KM initiatives within the same organisation stands in stark contrast with the extant literature, which suggests that organisations in the US and Europe tend to apply only a single measurement model to their KM implementation. It would be important to ascertain whether the results in South Africa differ statistically from those in US and Europe; this would require a much larger sample than the 18 organisations the authors were able to obtain useful responses from, and would therefore have to be the subject of further research.

The resulting data show that 89 per cent of the sample indeed make use of some or other KM metrics, with all the organisations comprising this 89 per cent using at least some of the measures recommended by the BSI. Furthermore, 56 per cent indicated that they are making use of at least 50 per cent of the BSI metrics. This means that only 11 per cent of organisations in the sample are not using any KM metrics at all. This shows a very significant improvement from Botha and Fouché's findings.

Unfortunately no conclusions of relevance about the population can be drawn from the results of this very small sample of only 18 organisations. Nevertheless, the authors feel that this exploratory data warrants further research on larger samples, and with statistically sound methodologies, to try and verify what looks like a considerable improvement in the maturity of South African organisations with respect to KM measurement. In particular, such research should be based on a revised list of recommended metrics that no longer separately lists potentially congruent metrics, such as cost savings and cost reduction, better employee morale and better employee attitude, and increased customer satisfaction and increased customer value. Furthermore, it would be important to ascertain whether the measures being used are exclusively in place to measure KM initiatives, or whether they serve multiple purposes. By asking respondents to also rank the different metrics in terms of importance, one would be able to further enhance the body of knowledge around KM metrics.

The authors chose to base their research on the work done by the BSI, and have found at least exploratory evidence that the standard metrics suggested by them have found some favour with South African organisations. Much more rigorous research than was possible within the constraints experienced needs to be undertaken to test the validity and representivity of these results, and to draw any conclusion about the validity of the BSI metrics as a suitable standard.

This research set out to try to gain a better understanding of the KM models and metrics used in South African organisations, and any future research recommended revolves around these two KM aspects. This study may have also exposed another potential path for KM research, namely that of devising a more holistic KM model.

In the opinion of the authors of this research, none of the many models in the extant literature adequately accommodate all aspects of KM measurement. Consequently, as the possible basis for future discussion and research into KM that is not directly related to the research questions that were posed in this article, the authors suggest that a more holistic knowledge management and intellectual capital measurement model be developed. As KM continues to mature, and in order to avoid the fate of so many other business improvement theories that eventually were passed off as 'fads', it is important that practical experience inform theoretical concepts, and that from this interplay arise the revised measurement models and metrics that will actually work in the economic reality of the twenty-first century. The work presented in this article should assist in the achievement of this goal.

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