PERCEPTIONS OF KNOWLEDGE MANAGEMENT PROCESSES, STRATEGIES, IMPLEMENTATION AND IMPACT: BIOGRAPHICAL INFLUENCES

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Abstract

The study aims to provide recommendations with strategic direction and an improvement as far as knowledge management initiatives are concerned within the Skills Development and Management Services and Organizational Development Units so that they can drive knowledge management to be effective and efficient in its implementation whilst taking cognizance of the biographical correlates. This study seeks to address the bottlenecks as far as knowledge management is concerned by using biographical profiles with the view of promoting the creation and management of knowledge in the municipality concerned.

The study reflects that the biographical profiles of employees (age, education, race, job level) influences their perceptions of the current knowledge management processes and strategies and their implementation and impact on effectiveness. The influence of age emphasizes that it is imperative to avoid the decay of employees' knowledge stocks at the individual level by striving to make knowledge, skills and capabilities more valuable, unique and available. The influence of education reinforces the needs to improve the connectivity among all employees. The impact of race adds to the urgency to promote the diversification of the workforce in order to have access to different ideas and skills and, enables the organisation to enhance its competitive edge. The influence of job level demands that knowledge management activities should be cascaded down to the operational level. The combined effect of the biographical variables dictates that organisations need to foster a culture that supports knowledge sharing and must provide salient incentives to recognise and encourage such interactions.

Keywords: management strategies, biographical influences, corporation

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INTRODUCTION

The emerging global economy is characterized increasingly by knowledge intensive firms which require diverse and specialized knowledge workers to develop unique knowledge competencies and also to collaborate in ways to create new knowledge that enhances the performance of the organization. Furthermore, Dougherty (1992) and Nonaka (1994) argue that in knowledge intensive firms, competitive advantage and product success are a result of collaborative and ongoing learning. Success depends not only on how effectively the diverse individuals are able to organize and develop their unique knowledge competencies but also how they can integrate and utilize their distinctive knowledge both effectively and synergistically. Organizational knowledge is now recognized as a key resource and a variety of perspectives suggest that the ability to marshal and deploy knowledge dispersed across the organization is an important source of organizational advantage (Teece, 1998; Tsai & Ghoshal, 1999).

In the South African local government context, the municipality concerned promotes teamwork within an organizational structure that is lean, flatter and flexible and debureaucratized, despite the fact that it fails to design strategic programs with the view to formulate and implement knowledge management initiatives. Technological advancements created by Information Communication Technology (ICT) require employees to be creative and innovative and to record their skills and experiences to be used competitively by newly employed employees. Scarbrough & Swan (2001, p. 38) argue that the rise and growth of knowledge management is one of the managerial responses to the empirical trends associated with globalization and post industrialism. The authors further argue that these trends include the growth of knowledge worker occupations, and technological advances created by ICT. ICT can

enhance knowledge sharing by lowering temporal and spatial barriers between knowledge workers, and by improving access to information.

The research objectives of the study are to examine the influence of the biographical profiles of employees on current knowledge management strategies, the transfer of tacit to explicit knowledge, knowledge management's contribution to organizational effectiveness and efficiency and, implementation strategies of knowledge management. The authors consider the influence of the biographical profiles to be crucial considering the diverse workforces that exist in organizations and believe that a substantial part of knowledge management entails understanding these employees and appropriately managing their knowledge in order to make them more innovative, effective and output orientated. Furthermore, the study aims to provide recommendations with strategic direction and an improvement as far as knowledge management initiatives are concerned within the Skills Development and Management Services and Organizational Development Units so that they can drive knowledge management to be effective and efficient in its implementation whilst taking cognizance of the biographical correlates. This study seeks to address the bottlenecks as far as knowledge management is concerned by using biographical profiles with the view of promoting the creation and management of knowledge in the municipality concerned.

Synthesis and critical evaluation of the literature

The theoretical understanding of organizational knowledge has evolved over the last 50 years. Edvardsson (2003, p. 1) proclaims key factors in the growth of interest in knowledge management in the 1990s which was the rediscovery that employees have skills and knowledge that are not available to, or captured by, the organization. The popularity of knowledge management increased rapidly, especially after 1996, and it has become a central topic of management philosophy and a management tool. This popularity is reflected in the growing number of articles and books on the topic. In 1995, there were 45 articles about knowledge management in the ABI or Information database, 158 in 1998, 835 in 2002 and exceeding 13 000 citations in 2010 (Lang, Hall & Landrum, 2010).

There are a number of definitions of knowledge management already presented in the extant literature. Drawing on the views of various authors,, knowledge management is defined as the process of acquiring, identifying, locating or creating, capturing or retrieving, storing, transferring, disseminating knowledge within and between organizations and, the management of its use (Alavi & Leidner, 2001; Bennett & Gabriel, 1999; Darroch, 2003). This study follows Alavi and Leidner's (2001, p. 15) description of the creating, storing or retrieving, transferring, and applying the knowledge process. The creation process refers to the organization's effort to gather information and new knowledge from internal and external sources and codify it into explicit knowledge. The codification processes are followed by the storing process which enables the organization to fast-retrieve information when it is necessary, in order to develop new knowledge.

In the public service, knowledge is acquired from stakeholders which include communities, the three tiers of government, civil servants, civil society and the private sector. Wiig (2002, p. 228) indicates that the conceptual leadership of knowledge management must in part reside within public administration but must also be shared with all stakeholders. Furthermore, knowledge management methods provide opportunities to prepare the citizenry to be more effective policy partners for conceptualizing, planning, deciding, and implementing public actions as well as for providing general support. In this sense, Quintas, Lefrere and Jones (1997, p. 145) believe that knowledge management is the continuous process of managing organizational knowledge in order to anticipate current and future needs, to identify and exploit existing and acquired knowledge as well as to develop new opportunities. In order to achieve this, it is imperative to evaluate current knowledge management strategies, current processes for managing knowledge, implementation of knowledge management strategies, perceptions of the impact of knowledge management on effectiveness and the influence of the biographical profiles of managers involved in the process.

Current knowledge management strategies

Human capital, defined as the individual's knowledge, experiences, capabilities, skills, creativity and innovativeness (Edvinsson & Malone, 1997, p. 67), is the core of any knowledge-based enterprise (Bontis, 1998; Serenko, Bontis & Hardie, 2007) and is a primary component of the intellectual capital construct (Bontis & Fitz-Enz, 2002; Edvinsson & Malone, 1997; Sveiby, 1997). Marr, Gupta, Pike and Roos (2003, p. 771), cited in Teece (2000), believe that intellectual capital is a key driver of innovation and competitive advantage in today's knowledge based economy. At the same time, knowledge management (KM) is recognized as the fundamental activity for obtaining, growing and sustaining intellectual capital in organizations (Marr & Schiuma, 2001, p. 49). This means that the successful management of intellectual capital is closely linked to the knowledge management processes an organization has in place which in turn implies that the successful implementation and usage of knowledge management

ensures the acquisition and growth of intellectual capital. Furthermore, Barney (1991, p. 87) agrees that an organization's human capital is an important source of sustainable competitive advantage in creating, building, and/or establishing effective knowledge management systems that will accumulate valued organizational leaders. Managers must recognize the interdependence of human, relational, organizational and technological capital as strategic knowledge stocks that contribute significantly to the development of long-term competitive advantage in the knowledge economy (de Pablos, 2003, p. 7).

Frequent interaction can promote learning from existing knowledge (Chesbrough & Teece, 1996) by reducing redundancy (in knowledge) and transforming necessary knowledge into social norms, values and preference. Knowledge from different parts of the organization can be integrated to generate new knowledge. In 'highly social capital' organizations, trust and norms tend to reduce the opportunistic behavior of leaking knowledge to outsiders (Kale, Singh & Perlmutter, 2000, p. 45). By better knowledge protection, organizations can devote their time and energy to innovation, competence improvement and become more effective (Lee & Sukoco, 2007, p. 549).

During human resource information system implementation, companies become a drastic tool for knowledge management created in the 21st century. Knowledge management can be viewed as three levels of techniques, technologies and systems that promote the collection, organization, access, sharing and use of workplace and enterprise knowledge. Lee & Sukoco (2007, p. 549-550) indicate that data can be viewed either as factual, raw material or as signals with no meaning. Information as data related to other data, has meaning and is refined into structured or functional forms within a system (for example, client database or directories). The most fundamental and common classification of organizational knowledge is along the explicit-tacit dimension. Explicit knowledge is data, documents, things written down or stored on computers whilst tacit knowledge is the "how-to" of knowledge with resides in workers (O'Brien, 2005, p. 56) such as insights, intuition, beliefs, personal skills and craft and using rule-of-thumb to solve complex problems (Chua, 2002; Daft, 2001; Hunter, Beaumont & Lee, 2002). In this classification, explicit knowledge is considered to be formal and objective and can be expressed unambiguously in words, numbers and specifications. Hence, it can be transferred via formal and systematic methods in the form of official statements, rules and procedures and so is easy to codify. Tacit knowledge, however, is subjective, situational, intimately tied to the individual's experience and hence, difficult to formalize, document and communicate to others.

Current processes for managing knowledge

Von Krogh, Roos & Slocum (1994:234) introduce the concept of corporate epistemology as the theory of how and why organizations gain knowledge and how they believe this knowledge is developed. Accepting this concept of corporate epistemology we deduct that in order for knowledge management initiatives to be successful, there has to be alignment between the epistemologies of individuals and the corporate epistemology within which these individuals are to operate.

Ingrained into the process of knowledge management is the so-called knowledge cycle. This cycle integrates knowledge through four main phases, which should be observed interactively rather than by a linear approach (OECD, 2000:65):

- knowledge acquisition, which focuses primarily on searching among various sources of information and knowledge, on their selection, and on ways to bring the existing knowledge in the possession of individuals and organizations;
- knowledge creation, which focuses on the development and increasing bulk of new knowledge;
- knowledge transfer, distribution, dissemination and sharing, aiming for relevant knowledge to reach relevant individuals, groups and organizations as soon as possible;
- knowledge utilisation and application in various environments, which is the ultimate goal of the economic organizations and systems as well as individuals who work for them.

Fong, Love and Irani (2005, p. 6), cited in Nonaka & Takeuchi, 1995, state that the Socialisation-Externalisation-Combination-Internalisation (SECI) model can be included as part of the knowledge management cycle. Fong, Love and Irani (2005:6) suggest that once key knowledge has been identified and codified in some way, socialisation effect occurs resulting in knowledge sharing. Knowledge resulting from this knowledge-sharing experience becomes externalised, resulting in an application of the knowledge. This knowledge is then combined which should hopefully result in new knowledge being created, which then needs to be preserved as it becomes captured and the cycle begins again.

Similarly, literature reveals the integration of multiple streams for the creation of new knowledge through the mechanism of socialisation which causes tacit knowledge. Nonaka (1994, p. 65) defines socialisation as the synthesis of tacit knowledge across individuals, usually through joint activities instead of written or verbal instructions. In a local government environment, socialisation can be promoted by diversified knowledge workers within the organization (during meetings and workshops, trainings) and outside the organization (during

community meetings and dialogues) with the aim of combining it to create explicit knowledge.

Implementation of knowledge management strategies

According to McFarlane (2008:1), a knowledge worker is a product of education, technological marvel, and modern development of organizational practices and theories. Emerging out of value and process theories, the idea of knowledge in the form of human capability or human resources is instrumental in driving organizational performance, development and success. Knowledge workers are important and key strategic resources in modern learning organizations; they are value creators and value adders whose major contributions come from their abilities to process and apply knowledge and information to completing essential tasks, making decisions, and solving problems.

According to Becker, Huselid & Ulrich (2001), human resource management's contribution to value creation is a firm's strategy based on people as a source of competitive advantage, and a firm's culture to share those values. The key to success is to ensure that the firm can attract and maintain knowledge workers through appropriate human resource management practices. According to McFarlane (2008:6), the management of the knowledge workers in today's organization and society, where there are increased educational and learning opportunities, requires organizational leaders and policy planners to rethink and redefine their roles as "knowledge leaders" whose very duties and responsibilities are to develop a system of participative knowledge sharing in attempting to solve organizational problems, accomplish the mission, vision and critical tasks, manage effectively and survive crises and change. According to Becker, Huselid, & Ulrich (2001, p. 76), employees create value when they help to implement a firm's strategy. If they are not able to do so, their talent has no value. Therefore, human resource professionals should understand the required competencies that can help implement a firm's strategy. Then, they should develop a set of human resource systems and practices that help develop those competencies (Afiouni, 2007, p. 124).

Wright, Dunford & Snell (2001:33) made a clear distinction between the firm's human resources (for example, human capital pool) and human resources practices (those human resources tools used to manage the human capital pool). In applying the concepts of value, rareness, inimitability, and substitutability, they argued the human resource practices could not form the basis for sustainable competitive advantage since any individual human resource practice could be easily copied by competitors. Rather, they proposed that the human capital pool (a highly skilled and highly motivated workforce) had greater potential to constitute a source of sustainable competitive advantage. These authors noted that to constitute a source of competitive advantage, the human capital pool must have both high levels of skill and willingness (for example, motivation) to exhibit productive behaviour. Thus, to create value, human resource practices are not enough; they need to be seconded by knowledge management practices that will ensure the development of employees' skills and competencies.

Although time and competition tend to erode the strategic position of human capital, firms may be able to counteract these natural forces (Lepak & Snell, 1999:23). The resource-based view of the firm points out that the organization can avoid the decay of their knowledge stocks at the individual level (human capital) by striving to make knowledge, skills, and capabilities more valuable and/or unique. As Lepak & Snell (1999, p. 43-44) state, "to make the deployment and value of human capital more specific, managers logically may try to enhance the uniqueness of human capital by customising or adjusting skills, managers may use human resource investments to increase the uniqueness of human capital so they might strive to make human capital more valuable". One way to get these specific knowledge stocks at the individual level (human capital) is through an internal human resource management system (de Pablos, 2003:67). One can accomplish this through investing in constant training and development of employees to perform work processes and procedures that are specific to the firm. In fact, central to the concept of organizational learning is the process of developing and disseminating tacit knowledge (for example, firm-specific knowledge) throughout the firm (Senge, 1990).

Given that knowledge management is often adopted by organizations in complex, unpredictable environments, traditional selecting and recruitment practices have more often than not had to be modified. Thus, Scarbrough (2003:18) points out that in innovative organizations, the selection of individuals with both appropriate skills and appropriate attitudes has been identified as crucial to the project team's ability to integrate knowledge from diverse sources. Scholars such as Edvardsson (2003), Carter & Scarbrough (2001), Currie & Kerrin (2003), Evans (2003), Hunter, Beaumont and Lee (2002) and Robertson and Hammersley (2000) have argued recently that knowledge is dependent on people and that knowledge issues, such as recruitment and selection, education and development, performance management, pay and reward, as well as the creation of a learning culture are vital for managing knowledge within firms and for the implementation of knowledge management strategies.

Functionally focused centres (for example, marketing, sales) run separately, have their own cultures and make knowledge sharing between functions very difficult. Currie & Kerrin (2003) emphasize that in order to enhance knowledge

sharing, employees with an appreciation of others' perspectives have to be preferred, and they encourage the use of lateral career movement by employees in order to develop the necessary appreciation of others' perspectives.

Other studies highlight the importance of a fit between new recruits and the organization's knowledge culture. These studies relate to the person-organizational fit literature within HRM and stress the need for a fit between the organizational cultures and hiring employees of suitable personality, as well as the socialisation of individuals into the culture of the firm (Judge & Cable 1997).

Employee perceptions of knowledge management effectiveness

According to Watad & Perez-Alvarez (2007:49), the spread of information technology (IT) and Internet applications has created a shortage in skilled labour in the IT industry. This shortage has created opportunities for under qualified people who were, often, at the right place at the right time. One of the unintended consequences of the shortage has been the increased cultural diversity of the workforce. Diversification of the workforce provides companies with access to different ideas, skills, and it enhances the companies' competitive edge (Elmuti, 2001:45). However, management has to provide mechanisms and adjust structural arrangements in order to reap the benefits that accompany a diversified workforce.

In both global and organizational contexts, the broader the collective perspective of a project team is, the more likely the group will be to generate a wide variety of potential solutions to a problem. One may assume that, given that members of different cultures have different kinds of frames of reference, a team composed of members from different cultural backgrounds would be interested in knowing the way of solving problems and sharing knowledge in their own as well as in their host cultures. On the other hand, cultural diversity may impede the sharing of knowledge, as there is a lack of personal compatibility and common language.

Companies with a diverse, multicultural workforce tend to rely on workshops to develop knowledge management skills among people from different backgrounds. These training sessions may emphasise ways to shorten the amount of time it takes to solve problems and explore alternative courses of action. However, these sessions usually lack a very important component, which is focusing on building mechanisms for knowledge sharing. Without these mechanisms, the work of the team will not reach adequate levels of performance that have a substantial impact on the effectiveness of the organization (Watad, 2007, p. 49).

In order to both take advantage of a diverse workforce and to allow employees to perform at their full capacities, managers should promote a cultural environment that is responsive to the employees' specific cultural needs (Elmuti, 2001, p. 44). Organizations need to put in place multicultural communication tools to overcome language and cultural barriers. In fact, the cultural trait of not being outspoken, for example, can be remedied by a collaboration system that includes anonymous features, which are useful for idea generation and feedback.

The effective management of a firm's knowledge assets is an essential factor to achieve a sustainable competitive advantage in today's market (Drucker, 2001:33). A firm's knowledge encompasses a mix of framed experience, values, contextual information and expert insight that makes possible the incorporation of new experiences and information (Davenport & Prusak, 1998:45). This same knowledge entails the domain-related skills needed to boost organizational effectiveness through innovation and the enablement of a flexible knowledge management infrastructure (Watad, 2002:45). Knowledge sharing helps in organizational learning (Ford & Chan, 2003, p. 134) and the development of domain related skills (for example, expertise), a pre-condition for organizational innovation. However, knowledge sharing is susceptible to the effects of cultural differences (Ford & Chan, 2003, p. 14). Trust, common languages and beliefs are critical to effective knowledge sharing (Simonin, 1999). More specifically, knowledge sharing within heterogeneous cultural groups tends to be difficult, requiring more time and effort than in homogeneous cultural groups (Ford & Chan, 2003, p. 33). Therefore, management should promote knowledge sharing along formal structures that exhibit a formal reward system and incentives. A commonly used practice entails moving from rewarding individuals to rewarding groups, or devising incentives that promote sharing at both the divisional and firm levels (Watad & Peres-Alvares, 2007, p. 49).

Influence of biographical variables on the dimensions of knowledge management

The influence of age, gender, education, race and job level on the dimensions of knowledge management are being assessed as it is postulated that these biographical variables have the potential to affect perceptions of current knowledge management strategies, current process for managing knowledge management and to convert tacit into explicit knowledge, the implementation of knowledge management strategies and the impact of knowledge management effectiveness respectively. Researchers have also noted the influence of age (Connelly & Kelloway, 2003; Organ & Ryan, 1995), gender and tenure (Connelly & Kelloway, 2003) on knowledge sharing and the impact of education on new knowledge and existing knowledge (Egbu, 2004; Inkpen, 1996; Van den Börsch, 1999). The influence

of race on knowledge management was indirectly noted in studies relating to workforce diversity, the influence of language barriers and multiculturalism (Finestone & Snyman, 2006). Job level also has the potential to impact on knowledge management, knowledge management support and information sharing (Connelly & Kelloway, 2003). Whilst many of these biographical influences have been noted in studies indirectly relating to knowledge management, this study aims to assess these direct influences statistically.

RESEARCH DESIGN

Research approach

The research methodology is designed to examine the effectiveness of knowledge management strategies and its implementation within the municipality's Skills Development and Management Services and Organizational Development Units. Employee perceptions of knowledge management were assessed by obtaining primary data using a cross-sectional approach. In this formal, hypothesis-testing study, the unit of analysis is a group of employees from whom quantitative data was collected using self-developed questionnaires and analysed using descriptive and inferential statistics.

Research method

Research participants

This study adopted a census approach whereby data was obtained from every employee of the Skills Development and Management Services and Organizational Development Units which was feasible as the units have less than 100 employees. From a population of 80 employees, sixty six (66) respondents correctly completed the personally administered questionnaires thereby generating a response rate of 82.5%. The sample may be described in terms of age, gender, education, race, tenure and job level. In terms of age, 13.6% of the respondents were 18-24 years, 34.8 were 25-34 years, 25.9% were 35-44 years, 21.2% were 45-54 years and 4.5% were 55 years and above. Males constituted 51.5% of the sample whilst 48.5% were females, thereby depicting a more or less equitable representation of gender in these units. In terms of education, there were a disproportionately high percentage of respondents (40.9%) with diplomas while 33.3% had degrees, 10.6% held a trade certificate, 9.1% had just a matriculation and 6.1% had below a matriculation. In addition, 78.8% of the respondents were Black while 9.1% were White, 7.6% were Indian and 4.5% were Coloured employees, thereby reflecting that these units may not be diversified enough for purposes of knowledge creation and the implementation of knowledge management strategies. In terms of tenure, 63.6% of the respondents have been employed for 0-5years, 15.2% are employed for 6-10 years, 9.1% for 11-15 years and 12.1% have over 20 years of service. Furthermore, 65.2% of the respondents occupy non-managerial posts while 16.7% are at junior management,12% are at middle management and 6.1% at senior management levels.

Measuring instruments

The self-developed, closed-ended questionnaire comprised of two sections. Section A used a nominal scale and comprised of option categories to choose from per biographical variable (age, gender, education, race, tenure and job level). The respondents were required to put a cross (x) next to the appropriate answer. Section B measured the sub-dimensions of knowledge management which were assessed using a 1 to 5 point Likert scale ranging from strongly disagree (1) to strongly agree (5). Appropriate questions were designed based on the challenges, gaps and recurring themes that surfaced while reviewing the literature on knowledge management.

Research procedure

Subsequent to consent being given by the municipality's Skills Development Units Head and an ethical clearance process being followed, a pilot test was conducted by administering the questionnaire to 10 participants and its main intention was to obtain some assessment of the questions' validity. The results of the pilot study confirmed that the items were appropriate, and adhered to the principles of wording and measurement. Thereafter, the self-administered questionnaires were administered over a two month time period.

Statistical analyses

Descriptive statistics (frequencies, percentages, measures of central tendency and dispersion) and inferential statistics (t-test and ANOVA) were used to analyse the results of the study which were processed using Statistical Packages for Social Scientists (SPSS).

Furthermore, the psychometric properties of the questionnaire were statistically assessed using Factor analysis and Cronbach's coefficient Alpha respectively. The Factor Analysis generated four separate factors with latent roots greater than unity, which represented the four dimensions of the study. The questionnaire, therefore, validly determines the aforementioned dimensions. The overall Cronbach's Coefficient Alpha is 0.953 which depicts a high level of internal consistency of items. The Cronbach's Alpha values for individual dimensions were also high: Current knowledge management strategies (Alpha = 0.878), current processes for managing

knowledge management (Alpha = 0.840), implementation of knowledge management strategies (Alpha = 0.889) and perceptions of the impact of knowledge management effectiveness (Alpha = 0.876).

RESULTS

Descriptive and inferential statistics were used to analyse the data.

Descriptive statistics

The subjects were required to respond to the items relating to the key dimensions of the study using a 1-5 point Likert scale. Descriptive statistics were computed for each of the key dimensions (Table 1).

Table 1. Descriptive statistics – Key dimensions of knowledge management

Statistic	Current knowledge management strategies	Current processes for managing knowledge management	Implementation of knowledge management strategies	Perception of the impact of knowledge management
Mean	2.98	2.97	2.75	2.99
Confident Lower interval Upper for mean	2.78 3.17	2.54 2.96	2.7909 3.1941	2.82 3.21
Variance	0.654	0.520	0.719	0.673
Std deviation	0.808	0.7213	0.848	0.821
Minimum	1	1	1	1
Maximum	4	4.3	5	4.80

The mean score values reflected in Table 1 indicate that employees have differing views on the sub-dimensions of knowledge management, which in descending level based on mean scores are as follows:

- Perceptions of the impact of knowledge management effectiveness (Mean = 2.99).
- Current knowledge management strategies (Mean = 2.98).
- Current processes for managing knowledge management (Mean = 2.97).
- Implementation of knowledge management strategies (Mean = 2.75).

These values reflect that on a scale from 1 to 5, respondents generally were below 3. This indicates that a high proportion of responses ranged from strongly disagree, disagree to being undecided about the questions relating to each dimension. This further reflects a negative perception with regards to each of the dimensions relating to the knowledge management within the Skills Development and Management Services & Organizational Development Units of the municipality concerned. This implies that improvement is needed with regards to knowledge management.

In terms of current knowledge management strategies, a frequency analysis was undertaken and the findings indicated that 25.8% of the respondents strongly disagreed and 15.2 % disagreed that knowledge management incentive systems were satisfactory. Furthermore, 34.8% of the subjects strongly disagreed and 24.2% disagreed on the existence of knowledge management reward systems which acquaint to the effort the employees have contributed into knowledge creation. Moreover, a disproportionately high percentage of 30.3% of the respondents strongly disagreed and 13.6% disagreed that employees are rewarded in groups.

Current processes for managing knowledge management is another area for improvement as reflected in the study findings. A frequency analysis was undertaken and the research findings indicate that 13.6% of the respondents strongly disagreed and 16.7% disagreed that these units recategorises and recontextualises existing explicit knowledge, data and information to produce new explicit data, information and knowledge. The research results further indicate that 19.7% strongly disagreed and 22.7% disagreed that these units use mining techniques to uncover new relationships among explicit data that may lead to predictive or categorization models that create new knowledge. Moreover, 16.7% of the subjects strongly disagreed and 19.7% disagreed that tacit knowledge is captured from individual's minds.

Also the results indicate that there is room for improvement for the implementation of knowledge management strategies. This implies that the implementation of knowledge management strategies should be taken into consideration when enhancing team effectiveness.

The total percentage of 19.7% of the respondents strongly disagreed and 28.8% disagreed that these units have implementation strategies to convert tacit

to explicit knowledge. The findings indicate that 21% of the respondents strongly disagreed and 27.3% disagreed that these units have knowledge that is codified and stored in databases where it is accessible and readily used by anyone in the organization. Furthermore, the results indicate 18.2% of employees strongly disagreed and 31.8% disagreed that managers develop a system that encourages people to write down what they know and to get those documents into the electronic repository. The employees do not believe (supported by the research findings whereby 21.2% strongly disagreed and 27.3% disagreed) that the level and quality of employees' contributions to the document database and knowledge creation are part of their annual performance measurements (reviews). In addition, in these units the study findings depict a highest percentage of 24.2% of the employees who strongly disagreed and 19.7% who disagreed that there are techniques, technologies, systems and rewards for getting employees to share what they know.

The results also indicate that there is room for improvement for the perceptions of the impact of knowledge management effectiveness. The research findings show that 16.7% of the respondents strongly disagreed and 13.6% disagreed that employees participate in professional networks that extend beyond organizational boundaries. Also, 16.7% of the respondents strongly disagreed and 9.1% disagreed that these units apply knowledge assets. Finally, the total percentage of 16.7% of the respondents strongly disagreed and 15.2% disagreed that the role of human capital in these units contributes to the competitive advantage of business in today's knowledge economy.

Inferential statistics

Inferential statistics were computed to make decisions on the hypotheses of the study.

Hypothesis 1: Managers differing in biographical profiles (age, gender, education, race, tenure and job level) differ in the perceptions of the key dimensions of knowledge management respectively (Tables 2 to 7).

Table 2. ANOVA: Age and key dimensions of knowledge management

Dimension of knowledge management	Age categories	N	Mean	F	p
Current knowledge management strategies	18-24 25-34 35-44 45-54 55-64	9 23 17 14 3	2.93 3.09 2.74 2.94 3.80	1.303	0.279
Current processes for knowledge management	18-24 25-34 35-44 45-54 55-64	9 23 17 14 3	3.01 3.00 2.83 2.92 3.67	0.884	0.479
Implementation of knowledge management strategies	18-24 25-34 35-44 45-54 55-64	9 23 17 14 3	3.11 2.95 2.63 2.23 3.21	2.578	0.046*****
Perceptions of the impact of knowledge management effectiveness	18-24 25-34 35-44 45-54 55-64	9 23 17 14 3	3.00 3.07 2.85 2.87 3.77	0.907	0.466

* $p < 0.05$

Table 2 indicates that there is a significant difference in the perception of employees varying in age regarding the implementation of knowledge management strategies at the 5% level of significance. In order to assess exactly where the differences lie, mean differences was assessed and it was found that employees between the age of 55-64 years held more positive views of the implementation of knowledge management than all other employees, especially those between 45-54 years who had the most negative views. Furthermore, there is no significant difference in the perception of employees varying in age

regarding the other three dimensions of knowledge management (current knowledge management strategies, current processes for managing knowledge management and perceptions of the impact of knowledge management effectiveness) respectively. Hence, hypothesis 2 may be partially accepted in terms of age.

Table 3 indicates that there is no significant difference in the perception of male and female employees regarding each of the key dimensions of knowledge management respectively. Hence, hypothesis 1 may be rejected in terms of gender.

Table 3. t-Test: Gender and key dimensions of knowledge management

	Male			Female					
Dimensions of knowledge management	**N**	**Mean**	**Std dev**	**N**	**Mean**	**Std dev**	**df**	**T**	**p**
Current knowledge management strategies	34	2.92	0.793	32	3.03	0.833	64	-0.568	0.572
Current processes for knowledge management	34	2.956	0.6983	32	2.984	0.7559	64	-0.159	0.874
Implementation of knowledge management strategies	34	2.60	0.817	32	2.91	0.863	64	-1.522	0.133
Perceptions of the impact of knowledge management effectiveness	34	2.976	0.796	32	3.009	0.858	64	-0.162	0.872

Table 4. ANOVA: Education and key dimensions of knowledge management

Dimension of knowledge management	**Education Categories**	**N**	**Mean**	**Std Dev**	**F**	**p**
Current knowledge management strategies	Below matric	4	2.68	0.789	2.433	0.057
	Matriculation	6	3.18	0.542		
	Trade Certificate	7	3.20	0.922		
	Diploma	27	3.23	0.787		
	Degree	22	2.60	0.759		
Current processes for knowledge management	Below matric	4	2.938	0.7108	1.736	0.154
	Matriculation	6	2.792	0.7486		
	Trade Certificate	7	3.054	0.8318		
	Diploma	27	3.213	0.7204		
	Degree	22	2.699	0.6323		
Implementation of knowledge management strategies	Below matric	4	2.81	0.944	3.252	0.017*
	Matriculation	6	2.44	0.710		
	Trade Certificate	7	2.95	0.866		
	Diploma	27	3.10	0.718		
	Degree	22	2.32	0.856		
Perceptions of the impact of knowledge management effectiveness	Below matric	4	2.58	0.665	4.795	0.002**
	Matriculation	6	2.50	0.853		
	Trade Certificate	7	3.06	0.932		
	Diploma	27	3.44	0.658		
	Degree	22	2.63	0.751		

* $p < 0.05$, ** $p < 0.01$

Table 4 indicates that there is a significant difference in the perception of employees varying in education regarding the implementation of knowledge management strategies and perceptions of the impact of knowledge management effectiveness at the 5% and 1% levels of significance respectively. In order to assess exactly where the differences lie, mean differences was assessed and it was found under the education category that employees with diplomas had the highest mean score value of 3.10 thereby reflecting the view that knowledge management strategies are implemented in these units. However, employees with degrees held the most negative impression of the implementation of knowledge management strategies in these units. In addition, employees varying in education differed in their perceptions of the impact of knowledge management effectiveness. In this regard, employees with a diploma had the most positive view (Mean = 3.44) whilst those with a matriculation (Mean = 2.50) had the most negative impression.

Furthermore, there is no significant difference in the perception of employees varying in education regarding the two dimensions (current knowledge management strategies and current processes for managing knowledge management) respectively. Hence, hypothesis 2 may be partially accepted in terms of education.

Table 5. ANOVA: Race and key dimensions of knowledge management

Dimension of knowledge management	Race Categories	N	Mean	Std Dev	F	p
Current knowledge management strategies	Black	52	2.98	0.787	4.949	0.004**
	White	6	3.73	0.484		
	Indian	5	2.00	0.612		
	Coloured	3	3.00	0.000		
Current processes for knowledge management	Black	52	2.947	0.7033	1.956	0.130
	White	6	3.479	0.6728		
	Indian	5	2.475	0.9203		
	Coloured	3	3.167	0.0722		
Implementation of knowledge management strategies	Black	52	2.86	0.793	3.243	0.028*
	White	6	2.85	0.816		
	Indian	5	2.10	0.756		
	Coloured	3	1.67	1.155		
Perceptions of the impact of knowledge management effectiveness	Black	52	3.04	0.814	1.770	0.162
	White	6	3.33	0.737		
	Indian	5	2.60	0.758		
	Coloured	3	2.20	0.866		

* $p < 0.05$
** $p < 0.01$

Table 5 indicates that there is a significant difference in the perception of employees varying in race regarding the current knowledge management strategies and implementation of knowledge management strategies at the 1% and 5% levels of significance respectively. In order to assess exactly where the differences lie, mean differences were assessed and it was found that Whites with the highest mean value of 3.73 are happier with current knowledge management strategies whilst Indians held a more negative view (Mean = 2.00). In addition, the mean differences were assessed on the implementation of knowledge management strategies and the study indicates that Blacks with the highest mean value of 2.86 agreed that knowledge management strategies in these units are implemented.

Furthermore, there is no significant difference in the perception of employees varying in race regarding the two dimensions (current processes for managing knowledge management and perceptions of the impact of knowledge management effectiveness) respectively. Hence, hypothesis 2 may be partially accepted in terms of race.

Table 6. ANOVA: Tenure and key dimensions of knowledge management

Dimension of knowledge management	Tenure Categories	N	Mean	Std Dev	F	p
Current knowledge management strategies	0-5 6-10 11-15 20+	42 10 6 8	2.88 2.90 3.18 3.40	0.877 0.596 0.821 0.571	1.083	0.363
Current processes for knowledge management	0-5 6-10 11-15 20+	42 10 6 8	2.917 3.013 3.063 3.125	0.7584 0.4505 0.9577 0.7008	0.236	0.871
Implementation of knowledge management strategies	0-5 6-10 11-15 20+	42 10 6 8	2.64 3.00 2.79 2.97	0.881 0.553 1.183 0.716	0.699	0.556
Perceptions of the impact of knowledge management effectiveness	0-5 6-10 11-15 20+	42 10 6 8	2.85 3.09 3.43 3.28	0.891 0.528 0.755 0.669	1.372	0.260

Table 7. ANOVA: Job level and key dimensions of knowledge management

Dimension of knowledge management	Job level Categories	N	Mean	Std Dev	F	p
Current knowledge management strategies	Senior Middle Junior Non-managerial	4 8 11 43	3.73 3.06 2.80 2.93	0.818 0.233 0.548 0.905	1.412	0.248
Current processes for knowledge management	Senior Middle Junior Non-managerial	4 8 11 43	3.594 2.969 2.773 2.962	0.9036 0.3116 0.7089 0.7508	1.290	0.286
Implementation of knowledge management strategies	Senior Middle Junior Non-managerial	4 8 11 43	3.31 2.47 2.64 2.78	0.473 0.947 0.663 0.890	0.958	0.418
Perceptions of the impact of knowledge management effectiveness	Senior Middle Junior Non-managerial	4 8 11 43	3.78 2.56 3.31 2.92	0.263 0.637 0.314 0.906	2.827	0.046*

* $p < 0.05$

Table 6 indicates no significant difference in the perception of employees varying in tenure regarding four aforementioned dimensions of knowledge management (current knowledge management strategies, current processes for managing knowledge management, implementation of knowledge management strategies and perceptions of the impact of knowledge management effectiveness) at the 5% level of significance respectively. Hence, hypothesis 2 may be rejected in terms of tenure.

Table 7 indicates that there is a significant difference in the perception of employees varying in job level regarding the impact of knowledge management on the units effectiveness at the 5% level of significance. In order to assess exactly where the differences lie, mean differences were assessed and it was found that senior managers (Mean = 3.78) were

most in agreement that knowledge impacts on the unit's effectiveness, contrary to the beliefs of middle managers (Mean = 2.56).

Furthermore, there is no significant difference in the perception of employees varying in job level regarding the three dimensions of knowledge management (current knowledge management strategies, current processes for managing knowledge management and the implementation of knowledge management strategies) respectively. Hence, hypothesis 2 may be partially accepted in terms of job level.

DISCUSSION

The influence of the key biographical variables (age, gender, education, race, tenure, job level) on knowledge management dimensions will form the basis of the discussion of the results of the study.

Age

Analyses of the data indicate that there was a significant difference in the perception of employees varying in age regarding the implementation of knowledge management strategies. Employees' ages and career stage may also affect their knowledge sharing behaviours through the size and utility of their social networks; experienced employees may simply be more able to share their knowledge because they know more of the right people in the organization (Organ and Ryan, 1995:8).

Gender

The analyses of the results show that there is no significant difference in the perception of male and female employees regarding each of the key dimensions of knowledge management respectively. However, according to Organ and Ryan (1995: 8), gender was not found to be a significant predictor of organizational citizenship behaviour, but given gender's influence on communication styles, it is not unreasonable to wonder if it would also affect knowledge sharing (Organ & Ryan, 1995:8). The research conducted by Connelly & Kelloway (2003) investigated whether organizational factors such as employees' perceptions of management's support for knowledge sharing, their perceptions of the organization's social interaction culture, the organization's size, and the organization's available knowledge sharing technology, as well as whether individual factors such as age, gender and organizational tenure had a significant impact on employees' perceptions of a knowledge sharing culture. Gender was a significant moderator; female participants required a more positive social interaction before they would perceive a knowledge sharing culture as positive as compared to their male counterparts (Connelly and Kelloway, 2003).

Education

The analysis of the data provides evidence that there is a significant difference in the perception of employees varying in education regarding the implementation of knowledge management strategies and perceptions of the impact of knowledge management effectiveness respectively. The exploration of new knowledge is more effective when there is interaction between new knowledge and existing knowledge from internal and external sources in the organization (Van den Börsch, 1999; Inkpen, 1996:14). By transforming tacit into codified knowledge, organizations can utilise explicit knowledge more efficiently and effectively (Egbu, 2004:3). Subsequently, the transformed knowledge should be able to be stored, retrieved, applied, shared and distributed in order to facilitate the creative and renewal competence process in the organization (Almeida, 1996; Bhatt, 2001:8).

The enhancement of knowledge management capability emphasize the gathering of new knowledge, something that can be done by encouraging members to sustain their continual application, distribution and creation (Hauschild, Licht & Stein, 2001:17). It means that organizations should encourage their members to update their existing knowledge to develop new competencies that will be beneficial to them. Acquiring knowledge about the market is well established as a precursor for developing innovations that best suit customer requirements. If the internal process encourages individuals to interact and collaborate with others it will facilitate the transmitting and disseminating of knowledge, which will increase the probability of innovation and enhance organizational effectiveness (Leonard & Sensiper, 1998; Gold, Malhotra & Segars, 2001:187).

The research conducted by Lee & Sukuco (2007) investigating the effects of entrepreneurial orientation and knowledge management capabilities on innovation, competence upgrading and organizational effectiveness among companies in Taiwan, listed in the Top 100 firms revealed the benefits of entrepreneurial orientation. The research found that entrepreneurial orientation has a positive influence on the capability of organization to manage their knowledge, on new product or process innovation, on the upgrading of their competence as well as on organizational effectiveness. This analysis showed that entrepreneurial orientation had a highly significant impact (p=0.000) on knowledge management capability, innovation, competence upgrading and organizational effectiveness.

Race

Research results of this study reflected that there is a significant difference in the perception of employees varying in race regarding the current knowledge management strategies and implementation of

knowledge management strategies respectively. The "identity-group affiliations" concept (as discussed by Thomas & Bendixen, 2000:1) can be problematic when one looks at the variety of sub-cultures existing within the corporate culture. Thomas and Bendixen (2000:12) make a valuable prediction that "the challenge facing South Africa today is for managers to harness the richness of the many ethnic groups so as to enhance productivity and facilitate global competitiveness. This demands an understanding of ethnic values and how they impact on global competitiveness". This statement is also very valid from a knowledge-management perspective. One should never lose sight of the fact that companies exist to make money. They want to see return on investment whether from research and development or knowledge management.

Research employed by Finestone & Snyman (2006:45) focussed on the influence of multiculturalism on the corporate environment and the respondents differ widely in their responses. One respondent sees multiculturalism as having a big influence because there is distrust, especially among the different levels in the company. Upper levels are still mostly comprised of White employees and lower employee levels are still mostly consisting of Black employees. Language barriers also create problems for them. In their situation, labour unions play a big role in the functioning of the company and it causes tension between the role players.

Tenure

Research results of this study reflected that there was no significant difference in the perception of employees varying in tenure regarding the knowledge management dimensions (current knowledge management strategies, current processes for managing knowledge management, implementation of knowledge management strategies and perceptions of the impact of knowledge management effectiveness) respectively.

Job level

Tests of significance indicated that there is a significance difference in the perception of employees varying in job level regarding perceptions of the impact of knowledge management. Kelloway & Barling (1999:12) have suggested that transformational leadership may be a potential predictor of knowledge use in organizations. In, addition, leadership commitment to knowledge sharing has also been identified by Martiny (1998:26) as a key challenge. Davenport (1994:26) indicates that this support, of course, must be encouraging rather than coercive; employees can receive suggestions on what and how much to share with their colleagues, but the final decision is always up to them. In fact, when lower level workers are ordered to "share" information with those higher up the corporate ladder, meddling and micromanagement can result (Davenport, 1994:26). The study findings by Connely & Kelloway (2002:6) indicated that employees are interested in acting in accordance with management direction. Further research can assess whether managers can best encourage their employees to share knowledge with each other by acting as a role model, by rewarding desired behaviour, or with charismatic persuasion.

The interpretation of the results indicated that employees differing in biographical profiles (age, education, race) differ in the perceptions of the implementation of knowledge management strategies, those differing in race differ in their perceptions of current knowledge management strategies and those varying in education and job level differ in their perception of the impact of knowledge management effectiveness.

Recommendations

This study aims to provide recommendations for the organization with regard to the significant findings of this study.

Age

In this study, respondents indicated that in these units employees between 25-54 years of age held negative views on the implementation of knowledge management. It is therefore, recommended that the municipality concerned should:

- avoid the decay of their knowledge stocks at the individual level (human capital) by striving to make knowledge, skills, and capabilities more valuable and/or unique.
- embark on a commonly used practice which entails moving from rewarding individuals to rewarding groups, or devising incentives that promote sharing at both the divisional and organizational levels.
- employ young people as they can acclimatize easily working in groups and are mostly involved in social networks (internet) including network structures that are most effective for facilitating knowledge sharing outside of the group.
- foster a culture that supports knowledge sharing and provides incentives for newly appointed employees to participate, either through their performance evaluation or public recognition.

Education

In this study, respondents mentioned that in these units, employees with degrees held the most negative impression of the implementation of knowledge management. It is therefore, recommended that the municipality concerned should:

- emphasise that in order to enhance knowledge sharing, employees with an appreciation of others' perspectives have to be preferred, and they should encourage the use of lateral career movement by employees in order to develop the necessary appreciation of others' perspectives.
- hire suitable personality types that match the culture of the firm, as well as ensure the socialisation of individuals into the culture of the firm.
- assess ways to improve the connectivity among their employees, such as cross-functional workshops or knowledge fairs, that offer an arena for bringing people together.
- invest in the constant training and development of employees to contribute to knowledge management processes.

Race

In this study, respondents mentioned that employees in these units most especially Indians and Coloureds held more negative view regarding the current knowledge management strategies and implementation of knowledge management strategies respectively. It is therefore, recommended that the municipality concerned should:

- promote the diversification of the workforce in order to have access to different ideas and skills as it enhances the companies' competitive edge.
- promote a cultural environment that is responsive to the employees' specific cultural needs and should put in place multicultural communication tools to overcome language and cultural barriers.
- guide the radical cultural change for knowledge creation and knowledge sharing of all employees.
- introduce workshops to promote the identification of commonalities and differences with the aim of promoting knowledge management components through diversity. The objective should be the broadening of perspectives and approaches that produce a competitive advantage through the effective management of diversity in the workforce.

Tenure

This study indicated that in these units studied, there is no relationship between tenure and the aforementioned knowledge management dimensions. It is however, recommended that the municipality concerned should:

- formulate a retention strategy for the employees with knowledge to stay within the organization up to retirement age and beyond (where possible) in order to impart knowledge acquired to newly inexperienced employees.

Job level

This study revealed that middle managers in these units do not believe that knowledge impacts on the unit's effectiveness. It is therefore, recommended that the municipality concerned should:

- logically try to enhance the uniqueness of human capital by customising or adjusting skills, and may use human resource investments to increase the uniqueness of human capital so they might strive to make human capital more valuable.
- implement a sophisticated but easy to use, new knowledge sharing software so that managers can find more ways to demonstrate their support to employees who share their knowledge.
- cascade knowledge management activities down to operational level.

Conclusion and managerial implications

The study reflects that the biographical profiles of employees (age, education, race, job level) influences their perceptions of the current knowledge management processes and strategies and their implementation and impact on effectiveness. The influence of age emphasizes that it is imperative to avoid the decay of employees' knowledge stocks at the individual level by striving to make knowledge, skills and capabilities more valuable, unique and available. The influence of education reinforces the needs to improve the connectivity among all employees. The impact of race adds to the urgency to promote the diversification of the workforce in order to have access to different ideas and skills and, enables the organisation to enhance its competitive edge. The influence of job level demands that knowledge management activities should be cascaded down to the operational level. The combined effect of the biographical variables dictates that organisations need to foster a culture that supports knowledge sharing and must provide salient incentives to recognise and encourage such interactions.

Limitations and recommendations for future research

Barriers and limitations were present in the research design and during the data collection phase of the research process whereby resistance was met from senior management to access information. Furthermore, due to the constraints of time and data availability, longitudinal research was not viable in this study, although it is the kind of study that will be valuable in the future.

It is suggested that future research assesses whether managers can best encourage their employees to share knowledge with each other by acting as a role model, by rewarding desired behaviour, or with charismatic persuasion.

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