Evaluating knowledge management implementation in an organisation: A case study in the context of Eskom’s HyperWave

In this paper, the interpretive philosophy was adopted and drawn from structuration theory’s (ST) concept of enactment of technology-in-practice (ETiP). ETiP was used as a lens to understand and interpret factors influencing the implementation of knowledge management (KM) in an organisation where knowledge transfer/sharing is critical to its operational efficiency. Eskom, a power utility organisation in South Africa was used as the case study and the HyperWave KM system implementation was used as the object of analysis. The study’s rationale was that at all levels of operations of an organisation the need to establish systems to manage the creation, capture, flow and delivery of knowledge and information is critical. The challenge is that such systems are often seen to clash with the corporate culture and as a result have a limited impact. The study investigated the challenges of implementing KM at Eskom. Using the concept of ETiP, a conceptual framework was developed, which guided the collection and analysis of data from questionnaires and existing documents that were verified by unstructured interviews. Forty-three respondents completed the research questionnaires and 15-minute semi-structured interviews were conducted with four individual participants. Questionnaires and interview questions were based on the KM improvement model regarding (1) measures of organisational support: (a) leadership, (b) incentive, (c) coworker, (d) supervisor and (e) organisational culture; (2) knowledge content quality; (3) KMS quality; and (4) perceived usefulness of knowledge sharing.

Introduction

Organisations, at all levels of operations, need to establish systems to manage the creation, capture, flow and delivery of knowledge and information. Furthermore, Wang and Lai (2014) alluded to this observation and argued that systems are being designed by many organisations to facilitate knowledge management (KM), the management of intellectual property and the development of sustainable competitive advantages. Knowledge management systems (KMS) are being implemented in an attempt to increase the quality and speed of knowledge creation and distribution in organisations. The problem is that such systems are often seen to clash with the corporate culture and as a result have a limited impact. Wang and Lai (2014) alluded to this and highlighted that this could be because the literature is still rather limited in terms of presenting a comprehensive picture of the issues related to KMS adoption in organisations. The paper aimed at exploring factors likely to influence the implementation of KM in an organisation where knowledge transfer/sharing is critical to its operational efficiency. The study investigated the challenges of implementing KM in an organisation using Eskom as a case study. The paper provides a summary of a research undertaken to tease out the research problem, highlighting the underpinning theory, literature review, research approach, interpretation of results and conclusion. According to Sabri (2014), knowledge is considered as one of the most important assets that achieves competitive advantage in the organisation. It is important that an organisation establishes systems to manage the creation, capture, flow and delivery of knowledge and information available amongst all levels of the organisation. The major challenge of managing knowledge is less its creation and more its capture and integration (Grant 1996).

Geisler and Wickramasinghe (2015) have alluded to this observation and argued that embracing KM and implementing any KM initiative are a very challenging endeavour, which could be divided into (1) getting employees on board, (2) having business goal, (3) not allowing technology to dictate KM, (4) identifying technology to support KM, (5) approaching to KM and (6) identifying who is to lead KM efforts. According to Coakes (2004), it is now realised that KM is not a technology-driven ‘fix’. KM begins with the social and cultural elements throughout an organisation. A KM strategy should begin with establishing ‘who’, ‘what’ and ‘why’, and the ‘How’ can then be supported by using technology. The following activities were identified by Award and Ghaziri (2003) in relation to what is expected of the management to support
KM in an organisation: economics and strategic planning; training; compensation and reward; and performance appraisal. Akhavan et al. (2010) identified eight factors that were common in successful KM projects. These factors were senior management support; clearly communicated KMS purpose/goals; linkages to economic performance; multiple channels for knowledge transfer; motivational incentives for KM users; a knowledge-friendly culture; a solid technical and organisational infrastructure; and a standard, flexible knowledge structure. Each organisation has its unique culture, which develops overtime to reflect the organisation’s identity in two dimensions: visible and invisible. The visible dimension of culture is reflected in the espoused values, philosophy and mission of the firm, whilst the invisible dimension lies in the unspoken set of values that guide employees’ actions and perceptions in the organisation (McDermott & O’Dell 2001).

**Theoretical framework and research approach**

**Overview of structuration theory**

The dimensions of duality of structure of Giddens’ structuration theory (ST) were used to tease out the research problem. In its original formulation, ST pays little attention to technology (Jones 1999). According to Giddens (1986), one of the most important applications of ST to information system’s research lies in the recognition of structure and agency as duality, which makes a clear distinction between structure and agency, yet recognising them as dependent on each other interactively. One of the problems of implementing KM is that it cannot be imposed on people and it can only be successful when people realise the benefits thereof. A proper change management programme that takes both the business and the people into account must be employed. In Table 1, social structure and human interaction are divided into three columns. Each structure and interaction is then associated with each other recursively via the linking modalities (interpretive scheme, facility and norm). Three forms of structure are given here, representing various embedded social realities: signification, domination and legitimation.

Walsham (2005) drew attention to three modalities of human agency/structure, namely interpretive schemes, norms and power relations. Furthermore, interpretive schemes relate to how things are represented in communities and organisations. In the case of Eskom, the researcher looked at instances as employees communicate; they use interpretive schemes to help them make sense of their interaction; and at the same time these interactions change or reproduce the same interpretive schemes that are embedded in structures as signification. This paper looked at how HyperWave was presented to Eskom employees. A focus on interpretive schemes led to questions such as why particular forms of presentation were chosen in particular contexts, and what types of representation were perceived to be valuable by the individuals within particular communities. This led to the conceptualisation of the problem shown in Figure 1.

Deducing from the views of Walsham (2005), norms relate to what is normally represented and for whom, and this will answer the question why particular forms of representation were chosen. That is, how was HyperWave introduced to Eskom employees? In the same context, Walsham’s (2005) power relations imply a focus on who requires particular representations and for what purposes. ST assisted in understanding and interpreting the effect of people in power, in this case group IT project managers and managers from the business. Thus, how Eskom managers view and support KM in an organisation can have an effect on obtaining the required results when implementing the system, looking at the decisions made and what informed them and what role did they play in KMS implementation. ST has been used successfully by Walsham (2005) in a compound UK case study from where the theoretical schema shown was developed, and the questions generated through the use of ST were illustrated through their application.

**The case**

Eskom is a South African electrical power utility, which has over 40 000 employees. With so many employees, one could imagine how much knowledge is carried by those employees and how much knowledge is shared between them. Eskom employees in different business units and levels interact with customers, suppliers, contractors, tertiary institutions, government departments, shareholders, regulators and other stakeholders on a daily basis to carry out various tasks. The interaction and collaboration with such external parties is a common practice throughout Eskom and essential as a ‘state’ and ‘public’ enterprise. With Eskom embarking on projects of building new power stations, retired employees had to be called back to assist as certain skills and knowledge were required from them. It is believed that if they had working KM processes in place this could have been avoided. Eskom KM policy is to help Eskom to manage its knowledge in such a manner that it would enhance the achievement of the business priorities through optimisation and delivery of knowledge in the organisation. The policy is to ensure that the implementation of an effective and efficient KM programme to maximise the benefit of (1) human capital management: tacit knowledge (experience) of experts in the organisation is an important catalyst to mitigate Eskom’s

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**TABLE 1: The dimensions of the duality of structure**

<table>
<thead>
<tr>
<th>Signification</th>
<th>Domination</th>
<th>Legitimation</th>
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<tbody>
<tr>
<td>Modality</td>
<td>Interpretive scheme</td>
<td>Facility</td>
</tr>
<tr>
<td>Interaction</td>
<td>Communication</td>
<td>Power</td>
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<tr>
<td>Structure(s)</td>
<td>System(s)</td>
<td>Structuration</td>
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Rules and resources, or set of transformation relationships, organised as properties of social systems

Reproduced relations between actors or collectiveness, organised as regular social practices

Conditions governing the continuity or transmutation of structures, and therefore the reproduction of social systems

escalating intellectual property risk; (2) learning and growth: learning, training, development and succession planning are crucial to Eskom if the imperatives of Eyethu are to be realised; (3) collaboration and knowledge sharing: to achieve the objectives of the Revised Business Model, Eskom needs to rapidly and effectively learn from its experiences. The value chain adopted in Eskom consists of three parts: (1) collection of the intellectual capital that focus on capturing and converting tacit knowledge into documents and records (e.g. lessons learnt); (2) transformation that looks at security, classification and change management with the focus of getting people to collaborate and to share knowledge in the organisation; and (3) monitor and control processes to manage and ensure that the aforementioned (i.e. the first two parts) are being taken care. To enable collaboration and sharing of information in Eskom, an electronic KM software application was acquired. One of the reasons was to overcome demographic stumbling blocks. Current electronic KM platforms take into consideration collaboration, document management, work flow and interactive knowledge, which enable seamless interaction amongst actors, i.e. stakeholders. In Eskom it was envisaged that a KM electronic platform would have the capabilities to enable experts in the organisation to interact, allowing questions to be asked, e-learning functionality and search capabilities. Furthermore, Eskom did realise that certain parts of the KM framework could be utilised to capture experience-based knowledge of people.

**Methodology**

In this research, two epistemological approaches were used, which were positivist and interpretive. The positivist approach made use of questionnaires to collect data from the participants. The interpretive approach made use of semi-structured interviews to gain more insight and to interact with the participants. The latter approach enabled the use of existing documents in the organisation to obtain more information about a problem. On the basis of the type of research undertaken and the unit of analysis, case study is the suitable approach, which made it easy for the research to be undertaken. Interviews, questionnaires and documented papers were used to assist and carry out the research. The population selected for the research was mainly Eskom Group IT staff members in the Enterprise Development, and e-mail was adopted as a means of communication. Group IT employee participants were requested to answer questions via multiple choice options, thus providing the researcher with data that will be analysed and interpreted. One-to-one interviews with participants were conducted to get more information on the research. Fifteen-minute interviews with selected Group IT employees were conducted. Policy documents, minutes of meetings regarding KM and KMS in the organisation were studied. Method triangulation can be identified by the use of questionnaires, interviews and previous documented data. Four main key questions were identified: (1) do managers support KM initiatives in the organisation? (to aim at identifying managers’ support and view towards KM); (2) regarding human factors affecting KM in the organisation, how is organisation’s culture towards KM? (to look at how Eskom employees perceive KM in an organisation, social interactions and behaviour of employees); (3) regarding non-human factors affecting KM in the organisation, how is KMS (HyperWave) affecting KM in an organisation? (to understand the role IT plays in KM, in this case KMS, also to understand the need to balance emphasis on IT at the expense of social and cultural facets of KM); (4) do employees use or share knowledge as required by the business? (to aimed at determining whether employees share knowledge as required by the business and stipulated by company policy).
Results and interpretation

Introduction

To address the research topic, five groups were identified to assist or undertake the research. The groups are measures of organisational support, knowledge content quality, KMS quality, perceived usefulness of knowledge sharing and user satisfaction. Questionnaires and interviews were used to obtain data about the research topic, which were then written down and analysed. Data analysis was conducted to understand or get a view of the state of KM in the organisation. The research will also evaluate the implementation of KM in the organisation with the aim of retaining or keeping knowledge in Eskom and improving knowledge sharing. Eskom was looked at to determine how the organisation views knowledge and the importance of keeping knowledge thereof, also looking at the measures taken by the organisation to manage or implement KM in the company. The aim of research questionnaire used was to get a view of the KM status in Eskom and also to identify ways in which KM could be implemented to further improve knowledge sharing, Figure 1 depicts feedback received from employees using the hypotheses outlined in this article. The red arrows in Figure 1 show Eskom results that did not conform to the set hypotheses and the ones highlighted in green did conform to the hypotheses.

Measures of organisational support

Leadership: According to participants’ feedback, although management took a decision to implement KM in the organisation, it appears that there is a lack of support from the top management to ensure that it does achieve its goal of KM and sharing in the organisation. This can be attributed to the lack of meetings organised by the management, lack of commitment and not periodically reviewing the effectiveness of KM. The top management does view KM as important in the organisation but hardly supports it.

Incentives: Employees are to some extent rewarded for knowledge sharing, but more can be done to encourage employees as participants believe individuals are not visibly rewarded for team work.

Co-worker: As per the feedback received, co-workers are reluctant to share solutions and problems, which is one of the main reasons why KM was implemented in the company. It was also discovered that co-workers do not encourage by action and words to share knowledge.

Supervisor: It is reported that most supervisors do encourage employees to share work-related solutions, which is good for KM. However, there is an issue of not organising regular meetings to discuss or to get a view of how the knowledge could be shared in their department.

Organisation culture: Changing people’s behaviour from knowledge hoarding to knowledge sharing seems to be the biggest challenge. Not all employees take responsibility for KM, and the prevailing notion is that KM is a task for a designated few people, which might be a problem if people have negative view towards KM.

Knowledge content quality: Positive feedback was received from participants as most of them said they do use or refer to shared knowledge. This means that they are of the view of the knowledge shared of good quality; otherwise they were not going to use it.

Knowledge management system quality: Positive feedback was received as most were aware of the deployed KMS in the company. The system is also accessible from anywhere in the company, which makes it easy to be used and regarded as well documented. It must be mentioned that participants regard lack of training as a contributing factor to IT deployment in KM.

Perceived usefulness of knowledge sharing: According to the feedback received, it seems that co-workers and supervisors do not view knowledge sharing as useful, and that supervisors do talk about knowledge sharing, but they do not hold knowledge sharing meetings as often as required. The co-workers do encourage by action to share knowledge. It must be noted that a positive feedback was received from participants as they said KM is significant on employee development, innovation, improving employee competitive advantage, inventory reduction and cost-cutting.

User satisfaction: According to the feedback received, most employees were aware of the KMS (HyperWave) deployed in the company, and they are using the system. It can be said that most employees use shared knowledge, but it must be mentioned that perceived usefulness of knowledge sharing showed that co-workers do not get encouraged by action to share a solution and to share the knowledge. Supervisors do not hold regular meetings to share knowledge, and this might lead to users not being satisfied.

Contribution and future research

The research framework was formed based on the case study using Eskom’s HyperWave as the unit of analysis. The problem conceptualisation that was refined to the general framework requires further research to validate its global use. The problem conceptualisation was derived from ST and, in relation to the work of Orlikowski and Robey (1991), can be used for studying the interaction between IT and organisations, the relationships amongst technology, people and organisation. The framework provides more insight on complex interplay of all elements (human and non-human) that could be involved in KMS implementation. The questionnaire as the main data collection technique created the opportunity to use semi-structured interviews to verify and affirm certain data collected to enrich. Analysis of certain documents added more meaning to the data analysis. It must be noted that this paper intended to identify best practice that can be deployed by an organisation to implement KM. The first practical contribution is the understanding provided by the case study. Another is highlighting how things should
be done, in this case, how KMS should be implemented. This is informed by a phase-by-phase approach described by the general framework shown in Figure 2. This could further assist in future and similar projects as the project team will have steps to follow for the project to be implemented to achieve its objectives. Most importantly, the general framework considers human and non-human factors when implementing KMS. What is new in this paper that makes a significant contribution to the body of knowledge is the proposed general framework to guide project leaders in KMS implementation in an organisation. Given the above information, the general framework also adapted the Technology Acceptance Model (TAM) to determine if KMS will be used satisfactorily. TAM was important as, according to Davis (1989), TAM assigns considerable weight to two key determinants: perceived usefulness and perceived ease of use. Additional contribution is the application of ST as the underpinning theory for the study, which was used to conceptualise the phenomenon using Eskom as a case study and the implementation of the HyperWave KMS as an objective of analysis. The theory also guided the literature review process, the design of data collection instrument and the analysis and interpretation thereof. Further contribution is that this paper can be of a contemporary interest to scholars and practitioners in the area of KM and KMS. It was revealed in the literature review process that there has not been enough research undertaken on KM and KMS, but there have been an increasing number of studies, including this paper. This paper also serves as a guide for organisations looking to invest in KM. The final contribution this paper makes is for those in the academia involved in KM implementation (public or private organisation) and ICT/IS research.

**Conclusion**

The potential to implement effective KM in an organisation exists. However, it is subject to a number of variables in the organisation. The variables concerned are mainly internal. Human agency consists of authoritative resources, which in this research are the top management and supervisors. These authoritative resources need to do more to encourage and support effective KM in Eskom. Also the organisation needs to put more emphasis on improving organisational culture towards KM. According to the feedback received, IT has no adverse effect on KM implementation in the organisation. Furthermore, according to the feedback received, participants find it easy to use HyperWave, and they do add/share data through the system. In general, Eskom has done a lot to see through KM implementation in the organisation by putting down KM policies. Also having a dedicated KM department in place shows how important KM is to the organisation and deploying IT in the form of KMS (HyperWave) as part of KM. Having invested so much in KM, Eskom needs to further educate its employees on how important KM is not only to the organisation but also to employee(e)s themselves to encourage them not to work in silos and not to be threatened by sharing knowledge.

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**Competing interests**

The authors declare that they have no financial or personal relationship(s) that may have inappropriately influenced them in writing this article.

**Authors’ contributions**

M.T-D. (Cape Peninsula University of Technology) and S.B.M.R. (Tshwane University of Technology) contributed equally to the writing of this paper.

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