# REFLECTING ON THE KNOWLEDGE MANAGEMEMENT PRACTICES OF A UNIVERSITY OF TECHNOLOGY

**D. KOKT AND P. LE ROUX**

## Abstract

Knowledge is universally considered to be a public good and something that should be developed and supported. The information explosion and enabling technologies (such as the Internet and cellular technologies) of the past decade has firmly established the Age of Knowledge. Knowledge has normative value that extends far beyond a single discipline and the Age of Knowledge has resulted in a paradigm shift with regard to the way in which knowledge is generated, applied and stored. As the custodians of knowledge, universities should pay particular attention to the management of knowledge as they take the lead not only in generating new knowledge, but also in converting new and existing knowledge into innovative ideas, products and practices that benefit society at large. Knowledge should, for this reason, be strategically managed to be of value to universities. It is thus imperative that universities should ascertain the nature and extent of their knowledge resources and pay special attention to their Knowledge Management practices that include the way in which knowledge is acquired, disseminated and rewarded. Universities of Technology (UoTs), with their distinct emphasis on applied research, innovation and knowledge transfer, need to manage knowledge in such a way that it enhances the creation of solution-based technologies. This paper provides a theoretical basis for understanding Knowledge Management in a UoT context and reflects on the Knowledge Management practices of a UoT in the South African context.

**Keywords:** Knowledge Management practices, Universities of Technology (UoTs)

## 1. INTRODUCTION

The Knowledge Management paradigm gained momentum as a result of the Age of Knowledge and the emphasis placed on people as the main repositories of knowledge within organisations (Hsieh, Lin & Lin, 2009:4087; Rebernik & Širec, 2007:406). Production, financial capital, natural resources and labour are no longer the primary drivers for success, but rather the ability of an organisation to manage the knowledge they own. The industrialist giant, Andrew Carnegie, supports this by stating: 'The only irreplaceable capital and organization possesses is the knowledge and ability of its people. The productivity of that capital depends on how effectively people have their competence with those who can use it' (Knowledge Management Gateway, 2006).

Doing business in the Age of Knowledge challenges organisations to re-think their strategies and business orientation. In a world where globalisation is a reality and service delivery is expected, it is imperative that organisations find ways in which to enhance their competitive advantage (Jashapara, 2007:752). The management of knowledge is one such strategy (Moss & Kubacki, 2007:301; Rebernik & Širec, 2007:406; Zaim, 2006:16). Knowledge Management within universities is a crucial component as universities are tasked with using both new and existing knowledge to solve the challenges and problems societies face. UoTs have, as do many universities of applied sciences worldwide, a distinct focus on applied research (where real-life problems are solved through the application of scientific research methodologies), innovation (when something new is created such as a product, idea or process) and knowledge transfer (that implies the transfer of existing products, concepts and ideas to a new locality). Within the domain of UoTs, this paper contextualises Knowledge Management and reflects on the Knowledge Management practices of a typical UoT.

## 2. KNOWLEDGE AND KNOWLEDGE MANAGEMENT

Knowledge could be described as 'a person's range of information' or the 'sum of what is known' (The Little Oxford Dictionary, 1988). Knowledge has different meanings and interpretations for people of different cultures and societies. Knowledge is also part of human culture (part of what individuals need to know in order to survive and fit in as members of particular cultural groups). In an organisational sense, Harlow (2008:149) describes knowledge as a shared space for emerging relationships that could either be physical, virtual or mental or a combination of these aspects. This means that employees share a designated space (physical) where they need to perform particular duties and fulfil certain roles and responsibilities (virtual), which connects them mentally (or psychologically) to one another and to the organisation.

Knowledge Management is specifically aimed at organising the availability and use of existing knowledge and is a comprehensive term for the full range of processes involved in disseminating knowledge (Moss & Kubacki, 2007:297; Burnstein, 2009:1). Knowledge Management enables the organisation to accurately ascertain the skills and abilities of employees and to provide training where skills are lacking. It further assists organisations with performance reviews, to manage employee benefits and to improve morale. In essence, it allows organisations to continuously update their information regarding the skills and abilities they have at their disposal, which means that managerial decision making could be enhanced. Information and Communication Technology (ICT), like the Internet and cellular technology, facilitates the capturing and dissemination of organisational knowledge, making it a prominent feature of Knowledge Management (Hellriegel, Jackson, Slocum, Staude, Amos, Klopper, Louw & Oosthuizen, 2008:183).

Knowledge has both a tacit and explicit dimension. The tacit dimension could be described as a resource locked in the human mind (Kim & Mauborgne, 1998; Chilton & Bloodgood, 2007; Zucker, Darby, Furner, Liu & Ma, 2007:851). Tacit knowledge could be regarded as the 'know how' possessed by individuals, as well as the information, competencies, experiences, advice and best practices employees bring to an organisation. Some authors (such as Kesti & Syväjärvi, 2009; Chilton & Bloodgood, 2007) emphasise not only the importance of tacit knowledge, but even link it with firm performance (Harlow, 2008). Kesti and Syväjärvi (2009:213) argue that, when organisations are committed to the development of their employees' tacit knowledge, they are more successful in the long term.

A focus on tacit knowledge implies that individual competencies are continuously developed, contributing to organisational success. Knowledge has to be communicated in order to be transferred and for it to become explicit or expressed. Explicit knowledge is rational and could be visualised by means of documents (such as policies) and pictures (such as organisational charts) (Kesti & Syväjärvi, 2009:213). The question then arises as to how knowledge could be incorporated into the creation of a competitive advantage. Universities, as an integral part of society and with their three-tier mission statements of teaching, research and community service, are obligated not only to share their knowledge with the entire community, but also to engage with the community for mutually beneficial development.

There is contention in the literature as to whether or not knowledge could really be managed (Drucker, 1969; Alvesson & Karreman, 2001; Nadkarni, 2008). It is argued that tacit knowledge is intrinsically related to meaning and comprehension, which are aspects that are difficult to manage. It is further argued that data (which usually represents raw facts) and information could be managed, whereas tacit knowledge cannot (Wilson, 2002; Drucker, 1969; Buckingham Shum, 1998; Hildreth & Kimble, 2002). Contrary to this, Harlow (2008:151) argues that tacit knowledge could be managed and cites Japanese multinationals, such as NEC, Honda and Matshushita, as examples of where this has been successfully accomplished. This paper supports the view of Harlow (2008) and concedes that both tacit and explicit knowledge can be managed through a continuous emphasis on training and development (Richardson, 2001:3). Furthermore, it is important for universities and, specifically, UoTs to conceptualise how Knowledge Management could be applied within their context. This will be addressed in the following sections.

## 3. KNOWLEDGE MANAGEMENT IN A UoT CONTEXT

In order to strategically manage knowledge, it is imperative that the types of knowledge applicable to universities be clearly articulated. Firstly, there is organisational knowledge which enables employees to perform their duties on a daily basis. This is referred to by Gottschalk (2002:8) as core knowledge and represents the basic knowledge organisations needed to exist.

This can include aspects such as behaviour towards supervisors and the amount of freedom managers have in decision making. Gottschalk (2002:8) also refers to advanced knowledge that enables organisations to be visible and active and to empower them to compete with competitors in their respective fields. This may involve the external positioning of a university and its ability to attract suitable students and academic staff. The most sophisticated type of knowledge is, according to Gottschalk (2002:8), innovative knowledge. Innovative knowledge clearly differentiates organisations from their competitors and allows institutions to change the rules of the game by introducing cutting-edge ideas in striving towards excellence.

Universities need to have a strong dosage of innovative knowledge as they need to create and apply knowledge to business and societal problems. Knowledge could thus be viewed as a commodity that could be packaged and sold (Grayson & O'Dell, 1998) for commercial purposes. The commercialisation of knowledge could also provide tangible advantages to universities and could include patents, new product technology and new or improved operational and management practices and processes (thus explicit knowledge). From a strategic business perspective, Knowledge Management is an action-oriented process that translates information and decisions into achievable value propositions (Malhotra, 2003). It is important to realise that Knowledge Management is not a separate managerial function, but rather an integrated process that should combine the tacit knowledge of individuals with the explicit knowledge recorded in organisational documentation.

The management of knowledge is thus a dynamic process of utilising existing knowledge, creating new knowledge, applying new and existing knowledge and absorbing it into the organisational structures. If knowledge and best practices are successfully transferred within the organisation, it will most likely lead to increased levels of service delivery which could, in turn, lead to increased organisational performance. With this in mind, the strategic knowledge goals of universities could be explained by means of Figure 1.

| | | | |
|---|---|---|---|
| Core strategic goals | Excellence in teaching and learning | Excellence in research | Excellence in community engagement (knowledge transfer and commercialisation) |
| Cross-cutting supporting goals | Quality infrastructure | | |
| | Quality services | | |
| | Quality Knowledge Management | | |
| Operational priorities | Promoting opportunity and diversity<br>Developing leadership and management<br>Advancing internationalisation<br>Engaging with the wider community<br>Building effective partnerships and collaboration<br>Effective governance and ensuring sustainability<br>Reducing cost and risk for the institution<br>Improving and fast-tracking decision making<br>Increasing productivity<br>Supporting higher quality product/service development<br>Fostering more robust problem solving<br>Enhancing functional effectiveness<br>Increasing organisational adaptability | | |

*Adapted from Gilbert (1998); De Long, Davenport and Beers (1997)
**Figure 1:** Strategic knowledge goals of universities

The strategic knowledge goals of universities, as reflected in Figure 1, are teaching and learning, research and community engagement. Cross-cutting goals support the strategic goals and include aspects such as appropriate infrastructure (buildings, classrooms, laboratories, etc.), administrative support (student administration, student counselling and wellness, etc.) and knowledgeable employees (lecturers, academic and support staff management, etc.). Once the cross-cutting goals have been accounted for, the operational goals such as prompting opportunity and diversity, developing leadership and management, advancing internationalisation, engaging with the wider community, building effective partnerships and collaboration, effective governance and ensuring sustainability, reducing cost and risk, fast tracking decision making, increasing productivity, supporting product/service development, fostering better problem solving, enhancing functional effectiveness and increasing organisational adaptability, could be realised.

With this in mind, the next section incorporates the strategic management goals of universities into a UoT context. As UoTs have an applied and innovative way of solving societal problems and challenges, this section provides a theoretical grounding for the Knowledge Management practices of UoTs by using the matrix of Doval (2008:238) as conceptual guide (Table 1).

**Table 1:** Knowledge Management in a UoT context

| Competitive advantages for UoTs | Major benefits for: | | |
|---|---|---|---|
| | **Individual** | **Business and Industry** | **Society** |
| Intellectual capital creation (through teaching, learning and research) | • Knowledge-intensive skills are cultivated<br>• Employability and improved quality of life | • Increase the competitiveness of businesses<br>• Development of new products and services | • New knowledge creation to satisfy the needs of society<br>• Entrepreneurship and new business development are stimulated |
| Community engagement | • Uplifting community members through service learning and other community-oriented programmes<br>• Providing access to knowledge and skills | • Small businesses are created by community members | • Employment is created<br>• Setting societal priorities that reflect greater public accountability |
| Management proficiency | • Managers have access to up-to-date, relevant information | • Improved performance and competitiveness | • Stable and sustainable organisations are created<br>• Reliable public decisions and actions |

**Adapted from Doval (2008:238)*

Table 1 presents the competitive advantage of Knowledge Management for UoTs on three levels: individual, business/industry and societal level (Nagy & Burch, 2009:227). The matrix is completed by adding the core strategic elements of UoTs to the mix. This includes the creation of intellectual capital (through teaching, learning and research) and community engagement. As management proficiency is strategically important, it is also reflected in the matrix. On an individual level, the development of intellectual capital creation means that knowledge-intensive skills are cultivated and the employability of students is enhanced. High-level skills lead to increased competitiveness on a business level, as well as to the development of new products and services, resulting in increased entrepreneurship and new business development.

On an individual level, community engagement implies that UoTs involve themselves with the challenges and problems communities face, mainly through service learning and other community-oriented programmes. This implies skills transfer that could benefit individuals in gaining adequate knowledge to start their own business ventures. Furthermore, it has the potential to create employment and establish societal priorities that reflect greater public accountability. In the last instance, Knowledge Management ensures that managers have greater access to relevant and up-to-date information. This could ensure improved decision making culminating in enhanced organisational performance and competitiveness. Proficient managers benefit society in the sense that stability and sustainability are created and that reliable public decisions and actions are taken.

## 4. METHODOLOGY

In order to ascertain the Knowledge Management practices of the UoT under investigation, a self-administered questionnaire was distributed to the full cohort of academic staff and support staff in key positions such as the head of the financial department. The questionnaire was based on the work of KPMG (1998) and other authors (see Montequìn, Fernández, Cabal & Gutierrez, 2006:526; Perez-Soltero, Barcelo-Valenzuela, Sanchez-Schmitz, Martin-Rubio & Palma-Mendez, 2006:2). It consisted of three sections: communicating and rewarding Knowledge Management, knowledge acquisition and training, and knowledge dissemination and integration. The questionnaires were distributed anonymously and returned to the researchers via the university's internal mail system. The data analysis is mostly descriptive and a qualitative discussion on the research findings is presented. This method of data analysis was selected due to the rich nature of the findings that warrants in-depth discussion and reflection (Salkind, 2006:14). A total of 483 questionnaires were distributed and a total of 76 questionnaires were returned, yielding a 15.7 per cent response rate. Due to the poor response rate, the findings cannot be generalised to the entire population. The findings, however, contain valuable insights into the management practices of the UoT under investigation.

## 4.1 Data analysis

This section presents an analysis of the findings of the questionnaire. The majority of the respondents (55 per cent) were academic staff members and 45 per cent were support staff members.

Respondent's awareness of Knowledge Management is reflected in Figure 2.

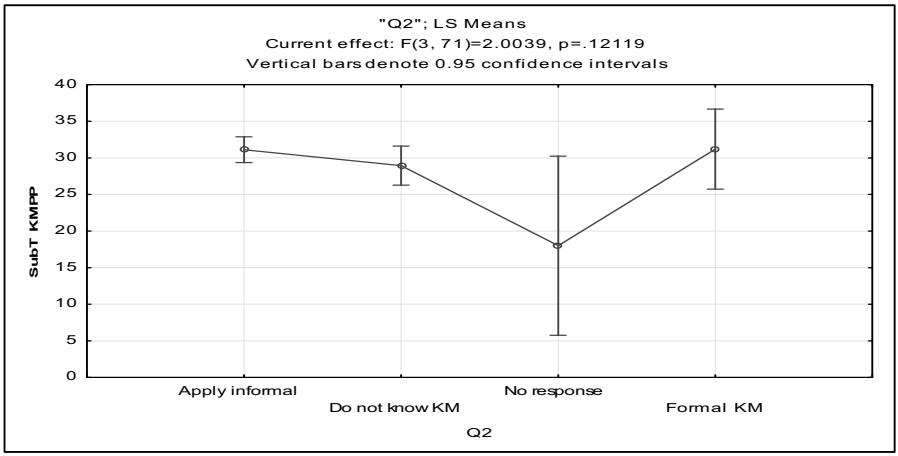


**Figure 2:** Respondents' awareness of Knowledge Management

Figure 2 indicates that most respondents (62 per cent) apply Knowledge Management either formally or informally and that 29 per cent have never heard of the term.

The assessment of the Knowledge Management practices of the UoT consisted of three sections: communicating and rewarding Knowledge Management, knowledge acquisition and training, and knowledge dissemination and integration. The findings will be presented below.

***Communicating and rewarding Knowledge Management***

Table 2 reflects the responses related to communicating and rewarding Knowledge Management.

**Table 2:** Communicating and rewarding Knowledge Management

| Statement | Disagree/ Strongly disagree | Don't know | Agree/ Strongly agree |
|---|---|---|---|
| 2.1 An official Knowledge Management policy or strategy exists. | 31% | 21% | 48% |
| 2.2 The university has a value system that promotes a culture of knowledge sharing. | 50% | 21% | 30% |
| 3.3 The university has policies or programmes that improve worker retention. | 28% | 7% | 65% |
| 2.4 The university allocates resources (such as time, financial assistance and effort) to improve organisational effectiveness. | 47% | 8% | 45% |
| 2.5 Knowledge Management is the responsibility of management. | 9% | 12% | 78% |
| 2.6 Knowledge Management is the responsibility of all staff. | 50% | 34% | 16% |
| 2.7 Knowledge Management is rewarded in terms of monetary incentives. | 41% | 36% | 23% |
| 2.8 Knowledge Management is rewarded in terms of non-monetary incentives. | 44% | 19% | 37% |
| 2.9 Staff is coached and trained utilising their knowledge skills. | 61% | 20% | 19% |
| 2.10 Staff is aware of the key knowledge assets of the university. | 30% | 18% | 53% |

Table 2 indicates that 48 per cent of respondents agree with the existence of a Knowledge Management policy. There is no clear indication as to whether a culture of knowledge sharing exists as only 30 per cent of respondents either agree or strongly agree with the statement. A total of 65 per cent of respondents indicated that they either agreed or strongly agreed that a retention programme exists at the university. A total of 47 per cent of respondents indicated that the allocation of resources is not sufficient and most respondents (78 per cent) pointed out that management is responsible for Knowledge Management.

A total of 34 per cent of respondents did not know whether staff was responsible for Knowledge Management and 23 per cent agreed that Knowledge Management is rewarded in monetary terms. A total of 44 per cent of the respondents indicated that Knowledge Management is rewarded in non-monetary terms and 19 per cent said that they did not know. A total of 61 per cent of respondents indicated that coaching and training are not sufficient and 53 per cent of respondents indicated that they were aware of the key knowledge assets of the university.

### *Knowledge acquisition and training*

Table 3 reflects the responses related to knowledge acquisition and training.

**Table 3:** Knowledge acquisition and training

| Statement | Disagree/ Strongly disagree | Don't know | Agree/ Strongly agree |
|---|---|---|---|
| 3.1 The university integrates knowledge obtained from other industry sources into best practice. | 41% | 0% | 59% |
| 3.2 The knowledge extrapolated from data is effectively captured by the Information and Communication Technology (ICT) systems of the university. | 15% | 0% | 85% |
| 3.3 The university dedicates resources (such as funding) to obtain knowledge from external experts. | 22% | 0% | 72% |
| 3.4 The university encourages workers to participate in project teams with external experts. | 54% | 0% | 46% |
| 3.5 The university provides formal training related to the utilisation of Knowledge Management practices. | 52% | 19% | 29% |
| 3.6 The university provides informal training related to the utilisation of Knowledge Management practices. | 57% | 24% | 18% |
| 3.7 The university uses a formal mentoring process to assist employees in Knowledge Management development. | 36% | 7% | 57% |
| 3.8 The university encourages more experienced staff to transfer their knowledge to less experienced staff. | 7% | 1% | 92% |
| 3.9 The university encourages staff to continue their education/training by providing assistance such as paying tuition fees. | 48% | 14% | 33% |

A total of 59 per cent of respondents agreed that the university integrates knowledge into best practices and the majority (85 per cent) agreed that data is effectively captured by the ICT systems. The majority (72 per cent) also agreed that external expert knowledge is obtained and it seems that some staff members are encouraged to participate with external experts (46 per cent), while others are not (54 per cent). A total of 52 per cent of respondents indicated that formal training on Knowledge Management is not provided and 57 per cent indicated that informal training is not provided. A total of 57 per cent of respondents indicated that they were aware of a formal mentoring programme and most respondents agreed that more experienced staff transfer their skills to less experienced staff. A total of 48 per cent of respondents indicated that they were not encouraged to continue their studies and 14 per cent said that they did not know.

### *Knowledge dissemination and integration*

Table 4 reflects the responses on organisational communication and dissemination.

**Table 4:** Knowledge dissemination and integration

| Statement | Disagree/ Strongly disagree | Don't know | Agree/ Strongly agree |
|---|---|---|---|
| 4.1 The university provides regular updates on good work practice and lessons learnt. | 64% | 16% | 19% |
| 4.2 Updates on good work practice and lessons learned are disseminated to all staff. | 55% | 17% | 28% |
| 4.3 Job descriptions acknowledge the importance of creating, sharing and disseminating knowledge. | 47% | 26% | 27% |
| 4.4 Performance assessments acknowledge the importance of creating, sharing and disseminating knowledge. | 54% | 17% | 29% |
| 4.5 Knowledge is being shared horizontally (across departments or business units). | 41% | 18% | 42% |
| 4.6 Knowledge is being shared vertically (among the hierarchical levels). | 23% | 9% | 68% |
| 4.7 Knowledge is shared outside the university to the benefit of the community and the business environment. | 2% | 8% | 87% |
| 4.8 Knowledge Management has the potential to improve the productivity of staff. | 12 | 5% | 92% |
| 4.9 Knowledge Management has the potential to improve customer relations. | 2% | 1% | 96% |
| 4.10 Knowing what knowledge assets are available increases the university's ability to offer better services to customers. | 12% | 5% | 83% |
| 4.11 Staff does not understand the benefits of Knowledge Management. | 72% | 12% | 16% |
| 4.12 There is a lack of commitment to knowledge sharing from senior/executive management. | 74% | 15% | 11% |
| 4.13 Staff does not know how to utilise knowledge sharing techniques. | 61% | 23% | 16% |
| 4.14 Informal knowledge sharing opportunities exist, both internally and externally. | 37% | 25% | 38% |
| 4.15 Formal knowledge sharing opportunities are created both internally and externally. | 29% | 13% | 57% |
| 4.16 Intellectual Property (IP) could be regarded as a barrier to knowledge sharing. | 70% | 11% | 20% |
| 4.17 Securing data and information could be regarded as a barrier to knowledge sharing. | 0 | 0 | 100% |

The results from the above table show that updates on good work practices and lessons learnt are not always provided (64 per cent indicated that they disagreed) and 55 per cent of respondents indicated that updates are not communicated. Job descriptions do not acknowledge the importance of creating, sharing and disseminating knowledge – 72 per cent of the respondents either indicated that they disagreed with the statement or that they did not know.

The same tendency applies to whether performance assessments acknowledge the importance of creating, sharing and disseminating knowledge (71 per cent indicated they either disagreed or that they did not know).

A total of 42 per cent of respondents agreed that knowledge is shared horizontally and the majority of respondents (68 per cent) agreed that knowledge is shared vertically. The majority of respondents indicated that knowledge is shared outside the university (87 per cent) and that Knowledge Management could improve the productivity of staff (92 per cent) and customer relations (96 per cent).

The majority of respondents conceded that being informed about the available knowledge assets assists them in providing better services to customers. A total of 72 per cent of respondents also indicated that staff did not always understand the benefits of Knowledge Management and 74 per cent indicated a lack of knowledge sharing from senior and executive management. A total of 61 per cent of respondents indicated that staff knew how to utilise knowledge-sharing techniques and 25 per cent did not know whether informal knowledge sharing opportunities exist. A total of 57 per cent of respondents agreed that formal knowledge sharing opportunities exist. A total of 70 per cent of respondents also disagreed that Intellectual Property (IP) could be a barrier to knowledge sharing, and all respondents (100 per cent) indicated that secure data and information is a barrier to knowledge sharing.

## 5. CONCLUSIONS

This investigation employed a self-administered questionnaire as method of data collection. As the response rate was low, the conclusions drawn in this paper cannot be generalised to the broader population. It is clear from the data analysis that not all aspects relating to Knowledge Management are sufficiently emphasised. This especially applies to the fact that not all staff is adequately informed about the Knowledge Management policy (Question 2.1) or the policies and programmes aimed at improving worker retention (Question 2.3). This correlates with Questions 4.1, 4.2 and 3.1 where respondents indicated that neither are good work practices and lessons learnt nor the importance of knowledge creation, sharing and dissemination reflected in job descriptions and performance assessments readily communicated to them (Question 4.3 and 4.4).

Therefore, coupled with the fact that not all Knowledge Management endeavours are rewarded (Question 2.7 and 2.8), it is not surprising that there is not a clear culture of knowledge sharing at the university (Question 2.2). This observation also correlates with the fact that only 53 per cent of respondents were aware of the knowledge assets of the university (Question 2.10). To be competitive in the Age of Knowledge, it is imperative that all staff be fully aware of the key knowledge assets of the university.

It is, however, encouraging that 87 per cent of respondents indicated that knowledge is shared outside the university (Question 4.7) and that knowledge sharing could impact positively on productivity and customer relations (Questions 4.8, 4.9 and 4.10).

Formal knowledge-sharing opportunities (Question 4.15) were more prominent than informal knowledge-sharing opportunities (Question 4.14) and it is evident that employees do not comprehend the importance of knowledge sharing (Questions 4.11 and 2.9). Respondents also indicated that they were not adequately trained in utilising knowledge-sharing techniques (Questions 3.5, 3.6 and 4.13).

There is a perceived lack of commitment from management to share knowledge (Question 4.12) and the majority of respondents observe Knowledge Management as the responsibility of management (Question 2.5). Although knowledge sharing should be driven by management, all employees have a role to play. It may be particularly problematic if employees cannot visualise the part they have to play (Question 2.6). Data and information are adequately captured by the ICT systems (Question 3.2) of the university and there is a strong emphasis on sourcing expertise from outside experts (Question 3.3). Experienced staff transfers their skills to less experienced staff, indicating that there is a measure of knowledge sharing on departmental level (Question 3.8). What is of particular concern is that 48 per cent of respondents reported that they are not encouraged to further their studies (Question 3.9).

In addition, the findings show that knowledge is shared more readily among individuals on the same hierarchical levels (Question 4.5) than across departments and business units (Question 4.6). A possible explanation for this could be a lack of inter-faculty or inter-departmental collaboration where staff essentially operates in silos. This notion could be supported by the fact that most respondents regard IP as a barrier to knowledge sharing (Question 4.16). Respondents might refrain from sharing knowledge that might benefit the careers of others.

As previously alluded to, knowledge is the driving force behind the Age of Knowledge (Zaim, 2006:1; Rebernik & Širec, 2007:406). Knowledge could also be seen as the core business of any university and it should therefore be adequately managed to ensure its optimal utilisation (Gottschalk, 2002:8). By reflecting on the data analysis and findings of the study, it is imperative that the following aspects be considered by the UoT under investigation:

- Effective internal communication structures: Organisational communication is possibly the most prominent method of sharing knowledge in a university. Organisational communication structures are instituted and maintained by management and the way in which organisational communication takes place is sanctioned by the prevailing organisational culture. If the culture allows frank knowledge sharing and open communication among employees, knowledge sharing is likely to be more successful.

Organisational communication structures could include information sharing sessions not only for senior management, but also for the lower levels of the organisation. Organisational communication not only involves communication from management, but communication among organisational members that, in turn, shape the way employees communicate with customers and other external role players as well. This necessitates employees' knowing the key knowledge assets of the organisation.

- Formal and informal training in knowledge sharing: Knowledge sharing should be emphasised among all staff and training should be provided by adequately applying Knowledge Management techniques. Moreover, employees should be encouraged to share knowledge among themselves and to leave their silos for more engaged interaction.

- The role of staff in knowledge sharing: Staff should understand their role in the knowledge-sharing process. As knowledge has to be shared at all organisational levels, it is imperative that staff know what knowledge they are at liberty to share and what should be kept confidential.

- External knowledge sharing: Universities, as the reservoirs of knowledge, should be eager to share their knowledge with the community, business and industry. External knowledge sharing should be well structured and presented. It is also imperative that knowledge sharing take place on a continuous basis and that individuals with the right skills and competencies drive the external knowledge-sharing activities.

- A well-structured ICT system: The capturing, storing and retrieving of data and information are indispensable to the successful management of any university (Zaim, 2006:1). In a university setting, it is not only important to capture, store and retrieve data and information, but also to communicate with internal and external stakeholders. Appropriate methods of communication should be applied, for example, communicating with students via cellular technology and social networks.

## 6. REFERENCES

Alvesson, M. & Karreman, D. 2001. Odd couple: Making sense of the curious concepts of knowledge management. Journal of Management Studies, 38(7): 995-1018.

Buckingham Shum, S. 1998. Negotiating the construction of organisational memories. In U. Borghoff & R. Paresch (eds.) Information Technology in Knowledge Management (pp. 59-78). Berlin: Springer.

Burnstein, F. 2009. About the Knowledge Management Research Programme (KMRP). Available from: http://www.infotech.monash.edu.au. Accessed: 9 December 2009.

Chilton, M.A. & Bloodgood, J.M. 2007. The dimensions of tacit and explicit knowledge: A description and measure. Proceedings of the 40th Annual Hawaii International Conference on System Sciences.

De Long, D., Davenport, T. and Beers, M. 1997. What is a Knowledge Management Project? Research note: Knowledge project. Available from: http://www.capemetrorail.co.za. Accessed: 11 September 2009.

Doval, E. 2008. Organization competitive advantages related to societal Knowledge Management. Spiru Haret University.

Drucker, P.F. 1969. The age of discontinuity: Guidelines to our changing society. New York: Harper and Row.

Gilbert, J.B.P. 1998. Practical Knowledge Management: A model that works. Prism. Second Quarter: pp. 17-22.

Gottschalk, P. 2002. Towards a model of growth stages for knowledge management technology in law firms. Informing Science, 5(2): 81.

Grayson, C.J. & O'Dell, C. 1998. If only we know what we know: The transfer of internal knowledge and best practice. The York: The Free Press.

Harlow, H. 2008. The effect of tacit knowledge on firm performance. Journal of Knowledge Management, 12(1): 148-163.

Hellriegel, D., Jackson, S.E., Slocum, J., Staude, G., Amos, T., Klopper, H.B., Louw, L. & Oosthuizen, T. 2008. Management. 3rd ed. Cape Town: Oxford University Press Southern Africa (Pty) Ltd.

Hildreth, P.J. & Kimble, C. 2002. The duality of knowledge. Information Research 8(1), paper no 142. Available from: http://www.InformationR.net-/ir/8-1/paper142.html. Accessed 28 May 2010. Accessed: 27 May 2010.

Hsieh, P.J., Lin, B. & Lin, C. 2009. The construction and application of knowledge navigator model (KNM): An evaluation of knowledge management maturity. Expert Systems and Applications, 36: 4087-4100.

Jashapara, A. 2007. Moving beyond tacit and explicit distinctions: A realist theory of organizational knowledge. Journal of Information Science, 33(6): 752-766.

Kesti, M. & Syväjärvi, A. 2009. Human tacit signals at organizational performance development. Industrial Management and Data Systems, 110(2): 211-229.

Kim, W. & Mauborgne, R. 1998. Procedural justice, strategic decision making, and the knowledge economy. Strategic Management Journal, 19: 323-338.

Knowledge Management Gateway. 2006. Why Knowledge Management? Available from: http://knowledgemanagementgateway.com. Accessed: 7 September 2009.

KPMG Managing Consulting. 1998. Knowledge Management Research Report. Available from: www.brint.com/papers/submit/knowmgmt.pdf. Accessed: 21 June 2010.

Malhotra, Y. 2003. Is knowledge the ultimate competitive advantage? Business Management Asia. Available from: http://km.brint.com/BMA.html. Accessed: 11 September 2009.

Montequìn, V.R., Fernández, F.O., Cabal, V.A. & Gutierrez, N.R. 2006. An integrated framework for intellectual capital measurement and knowledge management implementation in small and medium-sized enterprises. Journal of Information Science, 32(6): 525-538.

Moss, G. & Kubacki, K. 2007. Researchers in higher education: a neglected focus of study? Journal of Further and Higher Education, 31(3): 297-310.

Nadkarni, S. 2008. Knowledge creation, retention, exchange, devolution, interpretation and treatment (K-CREDIT) as an economic growth driver for pro-poor tourism. Current Issues in Tourism, 11(5): 456-472.

Nagy, J. & Burch, T. 2009. Communities of practise in academe (CoP-iA): Understanding academic work practices to enable knowledge building capacities in corporate universities. Oxford Review of Education, 35(2): 227-247.

Perez-Soltero, A., Barcelo-Valenzuela, M., Sanchez-Schmitz, G., Martin-Rubio, F. & Palma-Mendez, J.T. 2006. Knowledge audit methodology with emphasis on core processes. European and Mediterranean Conference on Information Systems (EMCIS): 6-7 July, Spain.

Rebernik, M. & Širec, K. 2007. Fostering innovation by unleashing tacit knowledge. Kybetnetes, 36(3/4): 406-419.

Richardson, D. 2001. The practical reality of knowledge management within development initiatives. The International Fund for Agricultural Development's Electronic Networking for rural Asia/Pacific (ENRAP) 2nd Comprehensive Workshop, Singapore, 6-9 February.

Salkind, J.N. 2006. Exploring research. 6th ed. Upper Saddle River, NJ: Pearson Educational.

The Little Oxford Dictionary. 1988. 6th edn. Oxford: The Clarendon Press.

Wilson, T. 2002. The nonsense of knowledge management. Information Research 8(1): 1-21.

Zaim, H. 2006. Knowledge management implementation in IZGAZ. Journal of Economic and Social Research, 8(2): 1-25.

Zucker, L.G., Darby, M.R., Furner, J., Liu, R.C. & Ma, H. 2007. Minerva unbound: Knowledge stocks, knowledge flows and new knowledge production. Research Policy, 36, 850-863.