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Knowledge management as a strategic tool for human resource management at higher education institutions

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Background: Higher education institutions (HEIs) the world over are beginning to recognise the importance of knowledge management; however, such institutions are still in their formative stages of addressing, evaluating and implementing the benefits of knowledge management with particular reference to human resource management (HRM). Knowledge management is a viable means through which HEIs could gainfully capitalise on their intellectual and social capital.

Objectives: This study explores knowledge management as a strategic tool for HRM in HEIs. Specifically, the dimensions such as organisational culture, organisational performance, technology, management support and the institutions' mission and vision will be evaluated to understand knowledge management within HEIs.

Method: Using a cross-sectional survey design, a self-administered questionnaire was sent to 91 individuals representing senior, middle and junior human resource managers at selected HEIs in South Africa, Mauritius and India. The study investigated the impact of policies, systems and processes that the HEIs implemented in support of knowledge management and knowledge sharing.

Results: A total of 91 human resource practitioners responded to the survey, the majority of whom were male (56%). Respondents from the different countries have similar perceptions regarding the issues that encourage knowledge generation and knowledge sharing ($p = 0.209$), and how characteristics of their institutions compare with those applicable to learning organisations ($p = 0.422$). Respondents disagreed to differing extents across countries that organisational or departmental structures, political interference, communication channels between employees and command and control procedures retarded knowledge generation and sharing ($p = 0.001$). Respondents from the different countries have differing perceptions regarding the speed at which knowledge is transferred ($p = 0.000$), the reliability of the knowledge that is transferred as well as the extent to which decisions can be made in using the available knowledge ($p = 0.000$), the ease with which knowledge is transferred in their context ($p = 0.016$), the transfer of tacit knowledge in their organisations ($p = 0.000$), whether individual employees use personal knowledge as a source of power ($p = 0.025$) and the role of the information and communications technology (ICT), infrastructure in knowledge creation and sharing ($p = 0.000$).

Conclusion: The results provide convincing arguments to support the integration of HRM and knowledge management initiatives in HEIs. Whilst the HRM function at HEIs has demonstrated that it has the capability and resources to implement knowledge management initiatives, the results reflect that much ground needs to be covered to realise the full benefits of this endeavour. The study confirms that an effective knowledge management strategy for HRM that is aligned to the organisation's strategic objectives is imperative for HEIs in South Africa.

Background

The South African human resources environment has experienced unprecedented change in the last decade as economies have become increasingly knowledge-driven (Chigada & Ngulube 2015). Knowledge management (KM) strategies have become important to ensure that South Africa's knowledge gaps are appropriately identified and filled. This will help organisations cope with the national human resource (HR) skills deficits at all levels (Omotayo 2015). Knowledge management is the process of capturing the collective expertise and intelligence in an organisation and utilising them to create innovation through continuous organisational learning (Davenport & Prusak 1998:5). According to Bassi (1997), KM is the process of creating, capturing and using knowledge to enhance organisational performance, such as documenting and codifying knowledge and

disseminating it through databases and other communication channels. The South African government (Nzimande 2009) placed emphasis on the need for higher education institutions (HEIs) to recruit and sustain highly skilled and qualified academic and support staff. A national skills deficiency has created a need to pursue human resource management (HRM) strategies to attract and sustain talent and stem the ongoing exodus of highly skilled human resources a national imperative. It is necessary for organisations to take cognisance of the critical level of knowledge gaps and develop appropriate HR strategies and KM interventions to curb knowledge flows and find mechanisms to generate, capture, retain and harness knowledge to achieve the organisation's HR objectives. Economists, researchers and industrialists believe that the shortage of skills is the most significant challenge faced by the economy in the 21st century. This challenge is attributed to emigration, early retirement, deteriorating work conditions and poor salaries. Hunter (2010:41) posits that South Africa is in denial as far as the shortage of skills is concerned. He further claimed, that owing to the acute shortage of skills, organisations are being forced to use under-qualified and inexperienced staff, resulting in declining standards, thus compromising on the quality of service delivery and productivity.

According to Momberg (2008), the greatest impediment in South African organisations is the country's acute shortage of skills. Momberg (2008) further submits that a similar problem is also prevalent in the higher education sector. As a result, this problem could impact negatively on the future operations of HEIs if urgent solutions are not found. Higher education, therefore, needs to devise strategies to respond positively to the problem of the continuous exodus of skilled employees, together with the stock of knowledge that exits with such employees. It is evident that senior management plays a critical leadership role in creating an environment conducive for the implementation of HR policies and practices with positive KM outcomes (Smith & Schurink 2005:6). The growing awareness of the value of knowledge embedded in the experiences, skills and abilities of people is emerging as a significant challenge to improving organisations and, in particular, HEIs. The success of higher education depends on the intellectual capital of its employees and their capacity to grow and survive in a complex and competitive environment. Higher education institutions are yet to address and evaluate the advantages offered by KM initiatives. The application of KM principles could significantly improve higher education performance thus fostering a culture of excellence (Kaniki 2005). A major goal of a HEI is to transmit, evoke or acquire knowledge through deliberate, sustained and systematic effort. The responsibility for the management of the knowledge amongst employees within the HEI is entrusted to its HR department (Nel et al. 2004:426).

According to Sydanmaanlakka (2002:154), the external environment represented by social, cultural, economic and technological factors are critical for the success of KM projects. Skyrme (2000:33) concurs with this position by stating that successful KM strategies require organisations to exploit technology such as Internet and electronic commerce to create global markets for new products and services. According to Nel et al. (2004:7), the external environment is an important stakeholder that impacts on the internal environment. The factors in the economic environment that influence organisations include availability of capital, current interest rates, rate of inflation and the level of employment. Nel et al. (2004:7) claim that the social environment is largely influenced by the society in which the organisation is located. The customers and employees of the organisation shape the social environment through their attitudes, values, education and skill levels, and their expectations. Nel et al. (2004:7) posit that the political environment impacts organisations to an ever-increasing extent in the present South Africa. Organisations must conform to the laws and regulations at central, provincial and local levels. In this regard, several legislations have been enacted post-democracy that impact on the HRM function in South Africa. Schwella (1991:20) maintains that the technological environment impacts on efficiency, effectiveness, accuracy, speed and precision. According to Nel et al. (2004:8), the technological environment has a significant influence on management philosophy in that there is a positive correlation between technology and productivity. Technology transforms inputs (raw material) into outputs (products and services).

Whilst there is extensive literature covering KM, HRM and higher education as separate and distinct disciplines, there is a paucity of research linking these subjects (Massaro, Dumay & Garlatti 2015).

The aim of the study was to examine the relationships between the broad domain of KM and HRM in HR departments at HEIs in South Africa, Mauritius and India.

The objectives of the study were to:

- Ascertain whether the HR departments of the selected HEIs have KM strategies and if so, to identify such strategies.
- Assess the perceived factors that encourage and/or create barriers with respect to knowledge generation and knowledge sharing within HR departments at the selected HEIs.
- Evaluate perceptions of knowledge transfer in relation to speed, reliability and ease of knowledge transfer within HR departments at the selected HEIs.
- Assess the perceived influence of organisational structure on KM.
- Determine the extent of the use of information and communications technology (ICT) in KM practices within HR departments at the selected HEIs.

Methods

A cross-sectional survey design was employed using a self-administered structured 5-point Likert scale questionnaire. Electronic invitations to participate in the study were sent to HR practitioners in HEIs based in South Africa, Mauritius

and India. The study employed an integrated KM and HRM questionnaire which was divided into the following sections: personal details, organisational characteristics, knowledge generation and sharing, knowledge transfer, knowledge assets, organisational culture, technology and learning organisations. Apart from the section on personal details, the questionnaire consisted of closed-ended questions requiring a response on a 5-point Likert scale. The questionnaire was assessed for validity and reliability in a pilot study of 12 participants which resulted in the final questionnaire. Five HEIs in South Africa, three in Mauritius and three in India participated in the study. All HEIs included in this study were comprehensive public universities operating within the higher education landscape of the respective country. The respondents comprised senior HR managers, HR line managers and HR supervisors of the participating institutions and were deemed representative of the population under study. An important reason for international comparison is the fact that South Africa continues to feature poorly in terms of HR development compared to the international sector as reported in world competitiveness reports in the last decade (Institute for Management Development [IMD] 2007). In terms of the IMD *World competitiveness yearbook 2007*, South Africa was positioned 50th out of 55 countries in the category of HRM and development. The United States of America (USA) was rated first and India was rated 27th. According to the *Global Competitiveness Report 2007–2008* (Lopez-Claros 2007), South Africa and Mauritius were ranked as the first and second most competitive economies in the sub-Saharan African region. However, both these countries have highlighted higher education and skills development as obstacles to such competition. Therefore, the implementation of quality education and HR development are deemed appropriate interventions to boost economic performance. Whilst there is sufficient literary material and case studies in the USA and European countries in the area of study, very little information could be sourced from the Indian continent. India is a growing economy and a leader in the information technology (IT) industry and information management. Both India and Mauritius represent KM challenges in developing countries which closely resemble the South African scenario. Therefore, the selection of India and Mauritius as international comparators was regarded as appropriate for the study.

All data were analysed using SPSS software (SPSS 23.0, Armonk, NY: IBM Corp). For all statistical comparisons, a 5% level of significance was used. All data were assessed for normality, and non-parametric tests were used where necessary. Internal consistency of the study instrument was assessed by Cronbach's alpha. One-way analysis of variance (ANOVA) was used to test for differences between groups.

Ethical consideration

Ethical clearance was obtained from the Human Social Science Ethics Committee of the University of KwaZulu-Natal, and necessary permissions were obtained from institutional authorities. Informed consent was obtained from all study participants.

Results

A total of 91 HR practitioners responded to the survey, reflecting a response rate of 91%. Male respondents accounted for the majority (56%) of the total sample. The Mauritian study site comprised a majority (63.2%) of female respondents. Overall, the majority of respondents were between the ages of 36 and 55. In Mauritius, respondents between the ages of 26 and 35 comprised more than one half of the sample (Table 1).

The results (Table 2) indicate that the respondents from the different countries have similar perceptions regarding the issues that encourage knowledge generation and knowledge sharing ($p = 0.209$). Participants across nations tend to agree that current policies, unwritten practices, job manuals, filing systems and workflow encourage knowledge generation and knowledge sharing. Respondents disagreed to differing extents across countries that organisational or departmental structures, political interference (internal office politics and bureaucratic elements in the workplace), communication channels between employees and command and control procedures retarded knowledge generation and sharing ($p = 0.001$). In the complete analysis (Itemised Likert scale data based on elements on Table 3), South Africans were more concerned than their counterparts in the other two countries about organisational structure and political interference serving as barriers to knowledge sharing. Indian respondents disagreed most strongly about the presence of barriers to knowledge generation and sharing. Rigid hierarchical structures mean strict command and control procedures leaving very little opportunity for flexibility for innovation and introducing new knowledge. Political interference and bureaucratic communication channels mean working to rule and under instruction which does not auger well for knowledge generation and sharing. Respondents from the different countries have differing perceptions regarding the speed at which knowledge is transferred ($p = 0.000$). Respondents from India reported the greatest speed in the transfer of knowledge, whilst South Africans tended towards disagreement about the speed with which knowledge can be transferred. Knowledge sharing relies on the speed of communication and access to information and data. Speed is closely aligned to the extent to which knowledge sharing is supported by technological capacities

TABLE 1: Demographic characteristics of respondents across survey sites.

Characteristic	Country						Total	
	India		Mauritius		South Africa			
	Count	%	Count	%	Count	%	Count	%
Sex								
Male	13	59.1	7	36.8	31	62	51	56
Female	9	40.9	12	63.2	19	38	40	44
Total	**22**	**100**	**19**	**100**	**50**	**100**	**91**	**100**
Age								
≤ 25	1	4.5	0	0	1	2	2	2.2
26–35	3	13.6	11	57.9	11	22	25	27.4
36–45	9	40.9	33	15.8	16	32	28	30.8
46–55	6	27.3	3	15.8	19	38	28	30.8
≥ 56	3	13.6	2	10.5	3	6	8	8.8
Total	**22**	**100**	**19**	**100**	**50**	**100**	**91**	**100**

TABLE 2: Perceptions of knowledge management dimensions across survey sites.

Dimension	India mean (n = 22)	Mauritius mean (n = 19)	South Africa mean (n = 50)	p*
Encouragement of knowledge generation and sharing	3.04	3.26	3.19	0.209
Barriers to knowledge generation and sharing	1.97	2.55	2.66	0.001
Speed of knowledge transfer	3.64	3.26	2.84	0.000
Reliability of knowledge transfer	4.11	3.72	3.18	0.000
Ease of knowledge transfer	3.84	3.29	3.27	0.016
Explicit knowledge	4.66	3.97	3.94	0.000
Tacit knowledge	3.59	3.39	2.76	0.000
Knowledge-sharing culture	3.80	3.79	3.05	0.000
Individualism	2.80	2.45	3.21	0.025
ICT infrastructure	4.5	3.61	3.99	0.000
Learning organisation	3.89	3.64	3.80	0.422

ICT, information and communications technology.

*, One-way analysis of variance.

TABLE 3: Elements within dimensions included in the 5-point Likert scale questionnaire.

Dimensions (Elements within dimensions, Cronbach's alpha 0.77)	Elements
Encouragement of knowledge generation and sharing	• Policies and procedures • Unwritten practices • Job manuals • Filing system • Workflow
Ease of knowledge transfer	• Intra-departmental transfer • Inter-departmental transfer
Individualism	• Knowledge for personal power • Knowledge for control
Barriers to knowledge generation and sharing	• Organisational structures • Political interference • Communication channels • Command and control
Explicit knowledge	• Documented knowledge • Electronic knowledge
ICT infrastructure	• Computer technology • ICT for speed • ICT for ease
Speed of knowledge transfer	• Ease of accessibility • Intra-departmental access • Inter-departmental access
Tacit knowledge	• Language • Skills • Networks
Learning organisation	• Flat organisational structure • Open door policy • Team learning • Best practices
Reliability of knowledge transfer	• Reliability • Up to date • Confidence
Knowledge-sharing culture	• Formal processes • Informal processes • Retention of knowledge • Organisational culture • Willingness to assist • Inter-disciplinary team work

ICT, information and communications technology.

which enable the dissemination of knowledge. The results indicate significantly varying strengths of agreement with the reliability of the knowledge that is transferred as well as the extent to which decisions can be made in using the available knowledge (p = 0.000). The mean scores indicate that the respondents show different levels of agreement that knowledge or information that is transferred is reasonably reliable and accurate. Whilst South Africans reported the least agreement about the reliability of transferred knowledge, respondents from India reported the greatest confidence in transferred knowledge. Confidence in the outcome of decision-making could only be as good as the quality, accuracy and reliability of the knowledge that is accessed. The results reflect a general consensus that the knowledge transferred within these institutions is perceived to be reliable. Respondents reported similar levels of agreement about the ease with which knowledge is transferred in their context (p = 0.016). Respondents were of the general view that the transfer of internal knowledge within departments as well as across departments was an easy task. This outcome could have been influenced by the investment in communication and technological infrastructures in these institutions. Networking within and across institutions, with organisational structures supporting team working, also encourage the ease of knowledge transfer. There were significantly varying levels of positive agreement across nations that explicit knowledge was easily accessed and shared (p = 0.000). Accessing explicit knowledge requires good infrastructure related to filing systems for the maintenance of knowledge, information and data resources to be able to identify these immediately when the need arises. These must be supported with policies, ICT and the creation of a culture conducive to transforming tacit to explicit knowledge. The results indicate that the participants from the countries surveyed have differing perceptions regarding the transfer of tacit knowledge in their organisations (p = 0.000). Respondents from South Africa tended towards a neutral response with regard to the ease with which tacit knowledge is accessed and shared, whilst respondents from India and Mauritius agreed that tacit knowledge was easily accessed and shared in their setting. Whilst respondents from Mauritius and India agreed that they enjoyed a knowledge sharing culture which promoted KM, South African respondents tended towards a neutral response on this dimension (p = 0.000). Participants from the countries surveyed have differing perceptions regarding whether individual employees use personal knowledge as a source of power (p = 0.025). South African respondents recorded slight agreement, whilst those from Mauritius disagreed that a selfish approach to knowledge was present in their context. Respondents from the countries surveyed reported significantly varying levels of agreement about the role of the ICT infrastructure in knowledge creation and sharing (p = 0.000). Both India and South Africa expressed strong agreement about the role of ICT in KM, reflecting the expanding ICT infrastructure in these countries. Participants across nations have similar levels of agreement that characteristics of their institutions compare with those applicable to learning organisations (p = 0.422).

Discussion

Knowledge generation and sharing

Holsapple and Joshi (1998) contend that HR managers are beginning to acknowledge that knowledge resources are more important than the conventional resources such as material, labour and capital. Therefore, policies and processes related to knowledge generation are crucial as a means of managing these vital resources. Viljoen (2008) states that considerable time and effort could be saved if past and existing policies and procedures are documented and implemented accordingly. There is a growing recognition within HR departments in HEIs about the importance of knowledge and KM policies and procedures to encourage knowledge generation and knowledge sharing. Leopold, Harris and Watson (2005:25) state that unwritten HR practices must be documented to ensure that decisions are taken consistently and that such practices are correctly interpreted. The response to this issue yielded mixed responses from the participants in this study, with a substantial proportion of the respondents from India and Mauritius choosing the neutral response. This could be attributed to either the HR managers' preference for written policies or an indication of the respondents' indecision regarding this question. Respondents from South Africa have; however, reported an overwhelming support for unwritten HR practices and procedures as a means to encourage knowledge generation and knowledge sharing. It does appear that HEIs in South Africa are moving towards flexible decision-making and hence policies are not written down to achieve the organisation's HR objectives. As HEIs are generally complex operations, often with multiple sites and functions, it would be reasonable to document all HR practices and procedures to assist with consistent decision-making and, more importantly, to facilitate knowledge generation and sharing in a structured and consistent manner. Viljoen (2008) accentuates the need for proper filing systems claiming that failure to file important documentation could lead to the demise of the institution. Proper filing systems mean easy access to information and documentation which could save the institution from unnecessary time wastage on unproductive and costly tasks and raise productivity levels. *The Promotion of Access to Information Act 2* of 2000 cited by Wessels (2000:2) reinforces the need for organisations to maintain a good records classification system that provides for the identification, arrangement, storage and retrieval of accurate records. The purpose of the *Act* includes the right to access information and to foster a culture of transparency and accountability in organisations. The results of this study yielded overwhelming support for the maintenance of proper HR filing systems. Respondents from South Africa, followed closely by Mauritius, reported high levels of support for the maintenance of HR filing systems. This could be an affirmation of an over-reliance on manual HR information systems. The results from India seem to indicate that the HR filing system is being gradually replaced by electronic filing systems for easier accessibility to information. According to Johnson (1998:123–124), proper workflows amongst employees in organisations contribute significantly to the achievement of organisational aims and objectives. Proper workflow processes facilitate information and knowledge sharing with an entire team of employees rather than on an individual basis.

Castells (1989:221) argues that effective workflows in institutions create access to flows of information and resources that encourage worker participation and improved decision-making.

Barriers to knowledge generation and sharing

According to Von Krogh, Ichijo and Nonaka (2000:18), there are two types of barriers to knowledge generation and knowledge sharing. One is individual and the other is organisational. Newell et al. (2002:14) posit that organisations are changing from the traditional command and control structures to flatter, decentralised structures which are flexible, fluid, networked and integrated. This leads to the creation of *business units that are interdependent, relying on one another for critical skills and knowledge.* According to Dess and Picken (1999), a survey of nearly 200 organisations concluded that competitive organisations design and configure the organisation's structure in a manner that yields maximum performance. Bahrami (1998:189) cites the highly successful organisational structures implemented by Apple Computers®. The structure promotes a mixed representation of top management teams working with corporate functionaries, which include HRM, to collectively participate in providing direction in the core activities. This type of structure encourages the movement of employees between units and fosters relationship building to enhance inter-unit cooperation. The results of this study reflect that HEIs in India have flat structures with decentralised teams and a high work ethic. In addition, this is supported with proper policies, procedures and job manuals. The results showed that over 50% of the respondents in Mauritius and over 60% in South Africa agreed or strongly agreed that organisational structures are barriers to knowledge generation and knowledge sharing. Marshall and Brady (2001:103) state that the potential for conflict in organisations is created owing to the divergent interests between individuals and groups. The *Divergent Interests, Political Struggles and Power Relations Act* as barriers to knowledge generation and knowledge sharing. Craib (1997:21) accentuates that politics stem from individuals and groups competing over scarce resources, or through clashes between personal objectives in receiving acknowledgement for their knowledge or attracting financial rewards or promotions. According to a study undertaken by Storey and Barnett (2000), the findings revealed that one of the main reasons for the failure of KM projects in a company case study was the inter-functional conflict over the ownership of the project amongst functional groups in using the project as a political tool to advance their personal agenda. The conclusion that they drew from this study was that KM initiatives are often shaped and subjected to political struggles to satisfy a broader agenda. From the results of this study, it would appear that political interference in Mauritius and South Africa does pose as a barrier to knowledge generation and sharing and to a lesser degree in India. However, a significant

proportion of respondents in all countries reported a neutral result denoting indecision. Little, Quintas and Ray (2002:11) state that communication between employees is fundamental to KM processes. They stress that if organisations want to aspire to manage knowledge, good communication channels must be encouraged within and between organisations. The results of this study reflect that communication channels between employees require much attention in South Africa, followed by Mauritius and India to a lesser degree. In overcoming communication barriers, an environment conducive to knowledge generation and knowledge sharing must be fostered. Straker (1998) states that command and control processes are strong in institutions where managers uphold the belief that subordinate employees cannot think by themselves and that they rely implicitly on their managers for the requisite knowledge and wisdom. Watson (1999) draws a relationship between level of commitment and command and control exerted by managers. He posits that low commitment is associated with high levels of command and control, whereas high level of commitment is linked to indirect control. In this context, control and command are organisational means of controlling employees' behaviour. Whilst the majority of participants from India state that command and control procedures do not pose as barriers to knowledge generation and sharing in their setting, the results reveal that Mauritius and South Africa maintain strong command and control processes that inhibit knowledge generation and sharing.

Knowledge transfer

According to Ahmed, Lim and Loh (2002:122), many institutions invest resources in knowledge creation and developing KM best practices but experience great difficulty in transferring the acquired knowledge from one part of the institution to the other. Sveiby's (2001) model of knowledge transfer is in great support of ICT as a means of knowledge transfer. The model consists of nine knowledge transfer mechanisms, some of which entail:

- knowledge transfer between individuals
- knowledge transfer from individual competence to internal structure
- knowledge transfer from internal structure to individual competence
- knowledge transfer within the internal structure.

The results of this study demonstrate that Mauritius and South Africa are lagging behind in terms of knowledge accessibility within HR departments.

The results signal concerns regarding the perceptions of knowledge transfer from department to department, more significantly in South African institutions. There is a dire need to evaluate the barriers to knowledge transfer between departments in the institutions so that mechanisms could be created to overcome such obstacles. Working in silos could have serious implications for organisational effectiveness, efficiency and the economy. Gottschalk (2005:143) states that many researchers and professionals argue that management commitment has a significant influence over knowledge sharing between employees intra- and inter-departmentally. In addition, the findings of this study revealed a close relationship between knowledge sharing and rewards. Proper reward systems encourage knowledge exchange. This was followed by the view that end-user satisfaction and user-friendly IT systems are important motivators for knowledge transfer and knowledge sharing. Grover and Davenport (2001) found that in western countries, the most common objective of KM projects involves knowledge repositories. The reason cited for this objective is to capture knowledge for later use and the broader access by others within the same organisation. Based on the findings, it would appear that South Africa, Mauritius and India are yet to embrace the importance of broader access to knowledge to other sectors within the institution. As each institution would have unique reasons for the barriers to knowledge sharing between departments, it is important for these reasons to be evaluated by the leadership and management so that a culture of knowledge exchange between departments is fostered (Chang & Lin 2015). According to Alavi and Leidner (2001), empirical studies have shown that whilst organisations create knowledge on the one hand, paradoxically, they also lose track of acquired knowledge. They, therefore, posit that storage, organisation and retrieval of organisational knowledge, also termed organisational memory, is an important aspect of effective KM. They claim that the knowledge transfer would include knowledge residing in various mediums, including written documentation, structured information stored in electronic databases, codified human knowledge stored in expert systems, documented procedures and processes, and tacit knowledge acquired by individuals and networks of individuals.

The results of this tri-nation study demonstrate that knowledge that is transferred is to a large extent reliable. This bodes well for the organisations in that confident decisions could be made based on the reliability of the knowledge that is accessed. Comparatively, South Africa is behind the other countries surveyed, with a large contingent of respondents recording neutral responses, signalling an indecisiveness about the reliability of transferred knowledge. The fact that transferred knowledge is reliable is generally an indication that proper infrastructure is in place to ensure accurate capture, storage, retrieval and transfer of such knowledge. Newell et al. (2002) ascribe ineffective decision-making owing to lack of information or knowledge resources to two key reasons. Firstly, organisations grapple with the codification and capture of critical knowledge, and secondly, employees are reluctant to have their personal knowledge committed to organisational memory as they view such an act as a reduction of their personal knowledge power base.

Reliability of knowledge transfer

Whilst respondents from India and Mauritius reported high levels of agreement that decisions could be made confidently using available explicit knowledge resources, South African respondents were more reserved with a significant proportion

selecting a neutral response. This result could be an indication that South African institutions are not sufficiently codifying and storing knowledge. The results of this survey demonstrate that there is reasonable consensus that knowledge or information can be transferred to other sectors or persons within departments with relative ease. The results confirm that explicit knowledge in hard copy format is available and easily accessible in the institutions. Whilst respondents in India were unanimous in strongly affirming that knowledge or information in document format is easily accessible, Mauritius and South Africa followed very closely. These results auger well for HEIs in that the file records are accessible to employees in the line of duty. The findings of the survey show that knowledge in electronic format is easily accessed by users in all three countries. Alavi and Leidner (2001) state that empirical studies confirm that storage, organisation and retrieval of electronic knowledge resources constitute a significant component of KM. They view this process as one means of organisational memory. Electronic methods could include the use of groupware, intranet and Internet facilities. Information technology plays a significant role in storage and retrieval of electronic and codified human knowledge. As HEIs have the infrastructure described, there is opportunity for these institutions to develop and explore the potential to derive maximum benefits.

Nonaka and Takeuchi (1995) cited in Newell et al. (2002:5) state that individuals interacting with others in an organisational context create new tacit knowledge. This includes the expression of codified explicit knowledge in that it might mean different things to different people based on interpretation. Nonaka and Takeuchi (1995), therefore, encourage that organisations should support the interaction of creative individuals to provide the context to share and create new knowledge. The results show that India has very strong formal personal networks that support knowledge sharing. South Africa in contrast shows the lowest level of agreement denoting that the respondents do not view formal meetings as a significant means of knowledge sharing. A study undertaken by Koch et al. (2002) concluded that accessing knowledge on a personal basis is much quicker and the knowledge is communicated in a qualitative manner compared to the formal, non-personal methods. The knowledge-sharing activities included conversations, meetings and informal communications, including email. The findings rated the impact of social factors in the workplace as more important than the ICT used in supporting a KM environment. The results of the HEIs are similar to the findings of Koch et al.'s (2002) study in that the majority of the respondents agree that knowledge sharing is conducted through social and informal means. However, South African respondents showed poor support for this method of knowledge sharing. The reasons could be varied, including but not limited to rigid organisational structures. Another reason could be a general reluctance to share knowledge as it represents a significant power resource. This study suggested that generally none of the countries surveyed have mechanisms that could capture the knowledge profile of exiting employees with scarce knowledge resources for the benefit of the organisation. This does not auger well for the institutions concerned, as failure to recruit knowledgeable replacements will cause the institution to suffer a knowledge paralysis with major setbacks. According to Alvesson (2000), organisations could be in grave danger if staff turnover rates are high. This problem is more severe if the employees exiting the organisations possess specialised knowledge which is in great demand in the market. Organisations should, therefore, have knowledge retention strategies to ensure that the knowledge is retained to support the institution's knowledge strategy. A study of the Post Office in the United Kingdom by Ahmed et al. (2002:253) identified an important tool that was developed to leverage employee knowledge and disseminate it throughout the organisation. They termed this the 'knowledge interview'. This interview is a systematic process of capturing tacit knowledge from employees with scarce skills and expert knowledge, and displaying the outputs on a regular basis. These interviews are most appropriate in three situations. Firstly, when key employees with scarce knowledge leave the organisation. Secondly, when a knowledgeable employee is recruited to the organisation. Thirdly, when employees are identified as possessing vital knowledge resources which adds significant value to the organisation.

Organisational culture

According to Koch et al. (2002:13), organisational culture has a significant influence over employees' behaviour in terms of performing KM activities. The importance of communication between individuals within and between departments, and the integration of organisational arrangements supported by a culture conducive to knowledge transfer and knowledge sharing are very important for the creation of an environment conducive for the performance of knowledge work (Newell et al. 2002:25). However, such processes are often thwarted by the divergence of interests amongst employees, managers and employers. Central to these are political struggles and power relations which often clash between personal objectives and organisational strategies (Marshall & Brady 2001). The results of this study show that participants from India have a strong affiliation for interpersonal relationships amongst employees with open communication and mutual support. Nel et al. (2004:365) attribute such characteristics to successful work teams as well as a clear organisational vision and goal which are internalised by each employee.

The results from Mauritius have indicated a good communication flow of knowledge, ideas and experiences amongst employees. Generally, the culture amongst Mauritians is conducive to healthy social relations amongst employees. This is important for effective collaboration and the development of trust amongst employees. Bechky (2003) states that trust amongst employees brings about a greater level of sensitivity and understanding of the knowledge, values and assumptions of other members of the same work group. The results for South Africa, comparatively, reflect the lowest level of agreement that prevailing organisational culture encourages communication of ideas, knowledge and experience amongst employees in their institutions. This does not bode well for

knowledge flows in South African organisations and needs urgent intervention to address the situation. Hislop (2005:130) posits that human and social aspects of knowledge processes impacting on organisational culture go beyond behaviour and attitudes of employees. Human resource practices and policies are important means of changing attitudes of employees to foster a culture of knowledge sharing and enhanced communication amongst employees. India, followed by Mauritius, recorded high levels of agreement that employees are willing to provide advice and assistance to co-workers. According to Brown and Duguid (1991), such behaviour is displayed in organisations where employees work in close-knit teams known as 'communities of practice'. It, therefore, appears that such features are common amongst the institutions in India and Mauritius. South Africa recorded a low level of agreement compared to the other countries in terms of employees' willingness to provide advice and assistance when the need arises. Developing communities of practice and encouraging teamwork through revised organisational structures may result in the desired outcomes. This study revealed that whilst knowledge is widely disseminated to employees in India and Mauritius, South African respondents expressed a marginal rate of knowledge dissemination amongst employees of the institution. Karakanian (2000) posits that wide circulation of knowledge resources integrates HR activities with other corporate functions such as finance, supply chain and customer service. Marquardt (2002:31) accentuates this view and states that circulation of HR knowledge resources to employees, managers, executives, HR service providers and relevant communities will reduce the distance between the HR department and its internal customers. Storey and Quintas (2001:347/8) suggest that easy access to knowledge and information resources develops trust, motivation and commitment amongst employees and that employees in this environment are more willing to share their knowledge within the organisation. Burke et al. (2006) state that cross-functional teams that represent members of staff from other functional subunits come together as a flexible and efficient team to solve problems spontaneously. In view of the different backgrounds of the team members, cross-functional teams create and generate innovative solutions to problems. Although cross-functional teams have major benefits for the organisation, the practical assembly of team members to participate sufficiently is not easy and is time consuming. Inter-disciplinary and cross-functional teamwork is more prominently practised in India and Mauritius than in South Africa. This could be attributed to the organisational structures in South Africa being bureaucratic and restricting teamwork and cross-functional activity. Other possibilities include the departments and units working in silos, without proper consultation or integration with other allied functions. Hislop's (2005:92) statement that *deep-seated and historically embedded attitudes of mutual suspicion, mistrust and antagonism* aptly explains the reluctance of staff to share knowledge across functions in South Africa. Furthermore, employees in such organisations believe that participation in cross-functional projects would diminish their power and status by sharing their expert knowledge. The results from South Africa could be linked to the concerns highlighted by Hislop (2005) as South Africa has emerged from an apartheid history with a work environment representative of class and race divisions. Hales (1993:20) defines power resources as *those things which bestow the means whereby the behaviour of others may be influenced and power relations arise out of the uneven distribution of these resources.* In applying this definition to knowledge, Hales (1993:20) argues that the properties of knowledge that could make it a power resource are scarcity of specialist knowledge, which is largely tacit, and knowledge that satisfy individual wants, such as a means to rewards and status. The results of this study show that a significant proportion of respondents in India and South Africa tend to strongly agree or agree that knowledge is used as a source of power for personal gains. This outcome shows a close relationship between power and knowledge. Hislop (2005:95) states that power is not only vested in those that have specialised knowledge but also in those in senior positions in the organisation who have access to confidential information. A study which investigated KM at a university IT department by Koch et al. (2002), found that a culture that is designed to encourage teamwork and socialisation leads to a voluntary contribution of knowledge to project-related work thus increasing organisational knowledge. However, whilst a high level of knowledge could be transferred in this way, Koch et al. (2002) claim that a major concern is that knowledge is not documented or computed for later reference. Koch et al. (2002) cite Schultze's (2000) findings where the participants in her study maintained extensive records documenting thoughts and actions of important knowledge experiences because of the anti-social culture in the environment. A study undertaken by Al-Athari and Zairi (2001) examined KM systems in 77 Kuwaiti organisations. Their findings revealed that 65% and 75% of respondents in the public and private sectors, respectively, viewed knowledge as a source of power in their organisations.

Information and communications technology

The results reflect that of the countries surveyed, South African institutions have reasonably good computer technologies to manage knowledge resources. Although South African respondents reported the presence of good ICT infrastructure, capabilities to manage the knowledge resources were reported to be lacking. A study conducted by Hansen and Haas (2002) found that electronic information and document dissemination is one of the best means of marketing internal knowledge. However, they caution that this process must be selective, filtered and edited to yield positive outcomes. Markus (2001) states that the reuse of knowledge saves much time, effort and money in avoiding 're-inventing the wheel'. Knowledge re-users may be close or distant from the knowledge producers, and computer technologies are useful tools to store and disseminate knowledge resources to areas or people in need of such resources. In a study undertaken by Kim and Lee (2006), amongst 10 public and private sector organisations in South Korea, IT application utilisation was the most significant factor that affected employee knowledge sharing capabilities. They posit that by investing in IT applications and knowledge-sharing systems, employees perceive management and

executive as supportive of knowledge sharing. Employee usage of IT applications and user-friendly IT systems were significant predictors of employee knowledge sharing. Information and communications technology plays an important role in the turn-around time of locating information. Easy and quick access to information has the potential to increase productivity and efficiency of employees through faster response time to HR problems (Lee 2004:62). The opportunity to exploit this facility for maximum organisational advantage must, therefore, be explored. These findings reveal that ICT has become an indispensable tool for capturing, organising and transferring information on a daily basis. The ICT infrastructure also has the potential to communicate quickly and effectively through the intranet and Internet. Owing to the acknowledgement that ICT plays an important role in information management processes, institutions should explore the use of ICT for KM to a larger degree, especially the storage and dissemination of knowledge resources (Soto-Acosta & Cegarra-Navarro 2016). The findings are consistent with results of a similar study undertaken by Shih and Chiang (2005) which investigated the strategic alignment between HRM, KM and corporate development. The findings revealed that information and computer technology make it convenient for employees to repeatedly communicate existing and newly created knowledge through information systems, thus making a great impact on work improvement (Shih & Chiang 2005). The ICT infrastructure could, therefore, be an excellent form of communication and network tool to ensure that employees stay connected, irrespective of their location. According to Meyer (2002:73), those organisations that do not keep pace with changing technology, systems and techniques will not be able to survive the information and knowledge era. Meyer (2002:73) posits that in order to remain competitive and strive for excellence in service, organisations must identify with the characteristics of learning organisations.

Conclusion

Higher education institutions are well positioned and have the necessary infrastructure to create a culture, through the HR department, that would encourage a free flow of knowledge within and across departments. However, there appears to be a lack of cohesion in this paradigm which is demonstrated by the absence of strategic linkages to KM. This study enhances the universalistic approach to the relationship between KM, HRM and HEIs. The research findings are important because the research was conducted in HEIs in three countries which drew useful comparisons. This research provides information to HRM practitioners in general, as it measures the KM orientation of HRM functions at HEIs. This could lead to the development of a practical tool that could be used by HRM professionals in HEIs, whilst addressing contextspecific challenges. There is an urgent need for HR departments in HEIs to seriously consider formulating KM strategies. The formulation of such strategies will enable HEIs to create and/or formalise existing HR policies and practices with an integrated KM focus.

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Competing interests

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Authors' contributions

N.G. collected the data and conceptualised the study. R.P. performed the data analysis and prepared the manuscript. S.P. prepared the manuscript and conceptualised the study.

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