The impact of knowledge management on job satisfaction

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1 Introduction

From the knowledge-based perspective, the most important means of production are intangible. The knowledge-based view puts great emphasis on human capital – the skills, knowledge, competences, attitudes, and motivation of the people working for an organisation, and the way that they use these skills for the benefit of the organisation (Schultz, 1961; Crook *et al*., 2011). However, as human intelligence is tacit, embedded and at least partly individual, it cannot be simply "captured and codified", which makes its management problematic.

It has been suggested that the management of knowledge is mostly about creating, providing, energising and supporting suitable knowledge environments in an organisation, in order to motivate and enable knowledgeable individuals to use and share their knowledge and to create new knowledge. This paper examines if and how knowledge management (KM) can be used to promote employee job satisfaction. The authors suggest that KM can indeed nurture job satisfaction and, in so doing, foster high organisational performance.

A large number of studies have demonstrated that job satisfaction, the extent to which an employee feels positively or negatively towards his/her job (Locke, 1976; Odom *et al*., 1990; Spector, 1997), influences employee motivation, organisational commitment and, ultimately, the quantity and quality of performance (e.g., Petty *et al*., 1984; Bolon, 1997; Spector, 1997; Judge *et al*., 2001; Siguav *et al*., 2004).

Factors that support job satisfaction have been studied extensively and validated antecedents include job design, skill variety and role ambiguity (e.g., Glisson and Durick, 1988). However, KM issues have not yet been included among the many job satisfaction factors that have been examined. Although job satisfaction is *the* most researched topic in the field of organisational behaviour (Spector, 1997; Applebaum, *et al*., 2000), it has only rarely been approached from a knowledge-based perspective. To bridge this gap in the

literature, this paper examines how KM practices work to influence the satisfaction of individual employees with their jobs.

The paper is organised as follows. First, it presents a theoretical model of the connections between KM and job satisfaction. The authors examine five facets of KM: knowledge acquisition, knowledge sharing, knowledge creation, knowledge codification and knowledge retention, all of which are argued to affect job satisfaction. A number of hypotheses concerning the impact of KM on job satisfaction are then tested empirically by analysing a survey data set of 824 observations, collected from the employees of a Finnish municipal organisation. The data are analysed with structural equation modelling, conducted with the PLS package to examine connections between the study variables. Finally, the results are presented and their theoretical and practical implications discussed.

2   Theoretical background

This section defines and discusses the nature of job satisfaction and KM practices. The authors then present their research model and propose hypotheses concerning the impact of KM practices on job satisfaction.

2.1 Job satisfaction

According to Spector (1994), job satisfaction can be defined as the extent to which people like (satisfaction) or dislike (dissatisfaction) their jobs. The concept of job satisfaction can contribute to psychological wellbeing at work (Robbins *et al.,* 2003). Job satisfaction refers to the state in which employees take pleasure from their work, or the positive and emotional state of the employee after appraisal of his or her job and performance (Shaikh *et al.,* 2012). The meaning of job satisfaction varies (Fritzsche and Parrish, 2005) from the feelings a worker has about his/her job (Smith *et al.,*, 1969) to "an effective reaction to a job, that results from the incumbent's comparison of actual outcomes with those that are desired" (Cranny *et al.,*, 1992). Job satisfaction has also been defined as "a function of the perceived relationship between what one wants from one's job and what one perceives it as offering" (Locke, 1969) and as the extent to which an employee feels positively or negatively towards his/her job (Odom *et al.,*, 1990; Locke, 1976).

The term job satisfaction is close to the concept of employee wellbeing. According to Grant *et al.* (2007, p. 52), employee wellbeing is the overall quality of an employee's experience and functioning at work. The definition includes three dimensions of wellbeing: psychological, physical and social. Wellbeing is a critical factor in both individual and organisational performance. The impact of poor wellbeing is reflected in under-performance, absenteeism, presenteeism, sick leave and turnover (Baptiste, 2008). Job satisfaction also relates to motivation (Vroom, 1964; Herzberg *et al.*, 1959; Maslow, 1954), where the source of job satisfaction can be connected especially to social belonging, self-esteem and self-actualisation, at the top of Maslow's hierarchy of needs (Maslow, 1954). Vroom's (1964) expectancy theory hypothesises that situational and personality variables combine to enhance job satisfaction. Expectancies are based on the worker's belief that effort will lead to a strong performance, which will, in turn, lead to reward. Another concept closely related to job satisfaction is organisational commitment, which can be defined as an attachment to the organisation, characterised by an intention to remain in it, identification with the values and goals of the organisation and a willingness to exert extra effort on its behalf (Porter *et al.*, 1974). Commitment binds an individual to an organisation and thereby reduces the likelihood of turnover (Meyer *et al.,* 2004). It has been demonstrated that job satisfaction strongly impacts organisational commitment (e.g., Bolon, 1997).

Job (dis)satisfaction is usually defined as a negative or positive judgment regarding one's job situation (Weiss and Cropanzano, 1996). According to Blum and Naylor (1986; see also, e.g., Gustainiené and Endriulaitiené, 2009), job satisfaction is a general attitude among workers, which incorporates their feelings about wages and working conditions, control mechanisms, promotions related to the job, social relations at work, recognition of talent and other similar variables, personal characteristics, and group relations outside work. Job satisfaction is an accumulation of sentiments related to the job being performed. If people believe that their value is appreciated within the job, they develop a positive attitude towards it and experience satisfaction (McCormick and Tiffin, 1974). It is possible to increase job satisfaction by ensuring fair and satisfactory performance appraisals, reward systems and benefits. According to Herzberg (1968), the opposite of job satisfaction is not dissatisfaction, but rather a simple lack of satisfaction. Many studies have argued that an

individual will stay when a job is satisfying, but will leave a dissatisfying job (Judge *et al.*, 2005; Locke and Latham, 2002; Locke *et al.,* 1996).

Irvine and Evans (1995) note that the characteristics of work content − routinisation, autonomy, and role conflict − and the work environment − leadership, supervisory relations and participation − all relate to job satisfaction. Job satisfaction has been widely studied in connection with various organisational and individual characteristics including organisational commitment (Currivan, 1999; Yousef, 1998), performance (Tvorik and McGivern, 1997), organisational culture (Lund, 2003) and age/gender (Morgan *et al.,* 1995). However, very few existing studies have related KM to job satisfaction (Lee and Chang, 2007; Koseoglu *et al.,* 2010; Almahamid *et al.,* 2010; Singh and Sharma, 2011). This kind of approach seems to be quite new.

2.2 Knowledge management (KM) practices

KM refers to identifying and leveraging the collective knowledge in an organisation to help the organisation compete (von Krogh, 1998). Typically, KM is seen to consist of knowledge processes (such as knowledge creation, sharing, acquisition, transfer and application) together with infrastructures, capabilities and management activities that support and enhance the knowledge processes (e.g., Lee and Choi, 2003; Gold *et al.*, 2001).

The literature on KM includes several categorisations of KM practices and activities. For example, Nonaka and Takeuchi (1995) divide KM practices into knowledge creation, incorporation and dissemination. Demarest (1997) proposes four KM processes: knowledge construction, embodiment, dissemination and use. Alavi and Leidner (2001) discuss knowledge creation, knowledge storage/retrieval, knowledge transfer and knowledge application. In sum, the literature typically identifies four to six knowledge processes that are cyclically interrelated (Nonaka and Takeuchi, 1995; Demarest, 1997; Alavi and Leidner, 2001). Similar to these views, this paper proposes that KM processes can be divided into five main types: knowledge acquisition, knowledge sharing, knowledge creation, knowledge codification and knowledge retention. Although these types are, to some extent, interrelated and overlapping, and are cyclically interrelated, they are individually distinguishable due to their different foci. Each of these five KM processes is explained briefly below.

Knowledge acquisition stands for organisational practices aimed at collecting information from extra-organisational sources (Cohen and Levinthal, 1990; Zahra and George, 2002; Darroch, 2005). External networks and collaborative arrangements are important sources of knowledge for all types of organisation. Customers form an especially important group from whom knowledge should be acquired if the organisation is to succeed. For example, customer feedback systems, data mining, business intelligence and collaboration with partners and research institutions are characteristic of highly developed knowledge acquisition practices.

Tacit knowledge is embedded in human experiences and *shared in social interaction*. Although some tacit knowledge may be codified, much will remain tacit. As the only way to share it is in face-to-face interaction (Nonaka and Takeuchi, 1995), *knowledge sharing* is the key for managing tacit knowledge. Therefore, organisations should also encourage frequent face-to-face communication and the creation of shared learning experiences as well as building a knowledge sharing culture (Nonaka and Takeuchi, 1995; Ståhle and Grönroos, 2000; Carpenter and Rudge, 2003; Dalkir, 2005). Knowledge sharing activities include informal communication, brainstorming sessions, mentoring and coaching (Filius *et al.*, 2000).

Knowledge creation refers to the organisation's ability to develop new and useful ideas and solutions regarding various aspects of organisational activities, from products and technological processes to managerial practices (e.g., Nonaka, 1991; Kianto and Andreeva, 2011). Knowledge creation is a key factor in enabling sustained performance in turbulent environments (Teece *et al.*, 1997; Eisenhardt and Martin, 2000). Knowledge is created when an organisation and its members learn and innovate. Knowledge-creating organisations arrange for the development of potential and self-transcending knowledge in order to cultivate radically new insights (Scharmer, 2001) and to promote innovation and idea development at all levels of the organisation.

To allow for the re-use and integration of knowledge, its codification and storage is also important. *Knowledge codification* consists of the activities needed to codify tacit knowledge into explicit form, to store documented knowledge, and to provide up-to-date

documented knowledge to others in the organisation (Filius *et al.,* 2000). It is based on the availability of appropriate communication and information technology tools, platforms and systems, together with the related employee skills and the motivation to use them in order to make employee knowledge explicit and to codify and store it for use in company systems and documents. Ideally, employees should be equipped with information technology tools and platforms that facilitate the effective codification and storing of explicit knowledge in databases and manuals, as well as the search and transfer of this knowledge.

Finally, *knowledge retention* refers to activities related to managing personnel turnover and the associated loss of expert knowledge – a key strategic resource. Expert knowledge can be lost when employees leave the organisation for one reason or another. As baby boomers retire, attracting and maintaining the best employees will become an even more pressing challenge with regards to knowledge retention.

2.3 The research model: KM as a means of improving job satisfaction

Job satisfaction is one of the most-researched topics in organisational behaviour literature and has been actively studied since the 1930s. The prerequisites for high job satisfaction, which have also been widely studied and validated, include job satisfaction and job design, skill variety and role ambiguity (e.g., Glisson and Durick, 1988). Nevertheless, KM issues have not yet been included among the many job satisfaction factors to be examined. In general, it seems that KM literature has only rarely addressed the impact that KM can have on "soft" performance issues, such as job satisfaction.

In the literature review, the authors found only four previous papers that had explored the relationship between KM and employee job satisfaction (Koseoglu *et al.,* 2010; Almahamid *et al.,* 2010; Lee and Chang, 2007; Singh and Sharma, 2010). Lee and Chang (2007) examined the relationship between employee job satisfaction and KM in an electric wire and cable group in Taiwan. The results of their study demonstrate a mutually positive correlation between job satisfaction and KM. Singh and Sharma's research (2011) into Indian telecommunication industries also showed a positive association between KM and employee job satisfaction. Almahamid *et al.* (2010) focused more closely on the impact of knowledge sharing on job satisfaction in a sample of 160 employees in Jordan. Their study demonstrated that knowledge sharing practices significantly impact employees' job

satisfaction. However, Koseoglu *et al*. (2010), who examined the relationship between KM (knowledge sharing and knowledge transfer) and job satisfaction among 154 luxury hotel employees in Turkey, failed to find a connection between KM and job satisfaction. In sum, it can be stated that existing research evidence on the relationship of KM and job satisfaction is rather scant and inconclusive.

According to psychological expectancy-based job design theory (e.g., Hackman and Lawler, 1971; Hackman and Oldham, 1975), particular task attributes lead to an individual sense of meaningfulness, responsibility, and knowledge of results, which in turn promote job satisfaction, as well as work motivation, performance and effectiveness (Hackman, 1977). In the current knowledge era, KM processes constitute such contextual features of the work environment, which can enrich the job and increase job satisfaction (Mohrman, 2003; Morgenson and Humphrey, 2006). KM processes in organisations help workers in knowledge-intensive environments to establish shared understanding and to derive value from knowledge (Mohrman *et al.,* 2002). More specifically, knowledge acquisition improves job satisfaction because it involves access to new knowledge that improves efficiency in carrying out one's tasks. Knowledge codification also helps people to find the information and informants they need to carry out their tasks in a timely and effective manner. Knowledge creation processes, on the other hand, enable individuals to participate in planning and design activities and to utilise their creativity. Knowledge sharing also relates to the social needs of individuals. Knowledge retention increases the sense of recognition and appreciation of the employee, as it is based on recognising the value of the individual's expert knowledge. In sum, the authors suggest that employees will be more satisfied with their jobs to the extent that they experience KM processes in their working environment. This argument can be divided into five more specific hypotheses:

Hypothesis 1: Knowledge acquisition will be positively associated with job satisfaction.
Hypothesis 2: Knowledge sharing will be positively associated with job satisfaction.
Hypothesis 3: Knowledge creation will be positively associated with job satisfaction.
Hypothesis 4: Knowledge codification will be positively associated with job satisfaction.
Hypothesis 5: Knowledge retention will be positively associated with job satisfaction.

The research model is depicted in Figure 1. The paper argues that the five facets of KM – knowledge acquisition, knowledge creation, knowledge sharing, knowledge codification and knowledge retention – improve the likelihood of employee job satisfaction. Job satisfaction, in turn, is related to high performance at both the individual and the organisational level. The rest of this paper concentrates on the relationship between KM and satisfaction. Following the wide range of previous research on the consequences of job satisfaction (e.g., Cranny *et al.,* 1992; Judge *et al.,* 2001; Springer, 2011; Shaikh *et al.,* 2012), this paper assumes that there is a connection between satisfaction and performance, although this assumption is not tested empirically.

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3 Methods

3.1 Sample and data collection

The research data were collected from employees in a municipal organisation located in south-eastern Finland using a web-based questionnaire. In this public governmental organisation, responses were acquired from 824 respondents, representing the five functional sectors of the organisation: Administration; Social and Health Services; Education and Culture; Work, Entrepreneurships and Business Services; and Technical and Environmental Services. The respondents were categorised as follows: 506 (61%) were general employees; 156 (19%) were experts; 97 (12%) were supervisors; 51 (6%) were unit directors; and 14 (2%) belonged to the top management group of the organisation. With regards to gender, 630 (76.5%) were female and 194 (23.5%) male.

3.2 Measures

Knowledge management practices
Knowledge management practices were measured by asking the respondents to answer a set of items on a scale from 1 to 7 (1= totally disagree, 7= totally agree). Items were drawn from the Organisational Renewal Capability Inventory (ORCI) survey (Kianto, 2008). The

scale for knowledge acquisition examined the importance and fluency of knowledge acquired from extra-organisational sources, whereas the knowledge sharing scale addressed horizontal knowledge flows inside the organisation. Knowledge creation items looked at the frequency and the basis of new idea development in different groups of activities. Knowledge codification items identified the amount of storage and documentation and the scope of knowledge repositories. Knowledge retention addressed the continuity and preservation of knowledge within the organisation.

Job satisfaction

To measure job satisfaction, the authors used a three-item composite. Typically, job satisfaction measures focus either on overall satisfaction or on specific facets of satisfaction, e.g., pay, supervision or co-workers (Scarpello and Campbell, 2006). The authors wanted to explore general attitudes towards jobs and, therefore, focused on overall satisfaction. Job satisfaction was measured directly and indirectly, making use of items adopted from Hackman and Oldham (1975).

Control variables

Three variables (respondent's tenure, age and unit) were used as control variables in order to eliminate the effects they might have had on job satisfaction.

3.3 Assessment of bias

The data relied on self-reported measures and, accordingly, common method variance might have biased the findings. Common method bias is of particular concern when survey respondents are asked to complete items covering both independent and dependent variables. This study used Harman's one-factor test (Podsakoff *et al.,* 2003) in order to assess the risk of such bias, and the authors conducted a principal component analysis that incorporated all the items from all of the constructs. The study investigated the solution in order to determine the number of factors required to account for variance in all the items. The largest factor accounted for 36.5%, which suggests that common method bias was not a concern in this study.

4 Results

Partial least squares (PLS) was used for the analyses (version 2.0M3 of SmartPLS). The first step was to assess the reliability and validity of the measurement model. The structural model was then used to test the hypotheses.

4.1 Correlation analysis

First, the connections between job satisfaction and KM processes were examined using correlation analysis. Table 1 presents the mean and standard deviations and provides a correlation matrix. The results demonstrate that all KM process variables had a significant relation with job satisfaction, and with each other. This indicates and supports the study's expectations of interconnectedness between KM processes and job satisfaction.

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4. 2 Measurement model

In order to test the measurement model, internal consistency and discriminant validity were assessed.

Internal consistency. Construct reliability (CR) and convergent validity measures represent internal consistency. According to the CR test, all the constructs showed a value above the threshold (0.7, as adopted by Bagozzi and Yi, 1988) (see Appendix 1). In order to test for convergent validity, CR, factor loading and average variance extracted (AVE) were analysed. Loadings of all items were high and statistically significant (see Appendix 1). This means that they were all related to their specific constructs, verifying the suggested relationships between the indicators and constructs. Secondly, the AVE measure exceeded the cut-off (0.50, see e.g., Fornell and Larcker, 1981) for all the test constructs.

Discriminant validity. This indicates the extent to which any one construct differs from the others. The AVE should be greater than the variance shared between that construct and the other constructs in the model (i.e., the squared correlation between two constructs) (Fornell and Larcker, 1981). The constructs in this study fulfil this condition: in the model (see

Table 2), the diagonal elements (AVEs) are greater than the off-diagonal elements in the corresponding rows and columns.

In sum, the model assessments gave reliable evidence of validity and reliability for the operationalisation of the concepts.

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4.3 Testing the research model

As Table 3 shows, the research model was able to explain 42% of the variance in job satisfaction. The path model was estimated to reflect the proposed relationships between KM processes and job satisfaction in order to test the hypotheses. The path estimates from the KM processes to job satisfaction supported most of the hypotheses. The paths from knowledge sharing (H2), knowledge codification (H4) and knowledge retention (H5) to job satisfaction were as hypothesised. Knowledge sharing (B=0.439, $p < 0.005$), knowledge codification (B=0.125, $p < 0.005$) and knowledge retention (B=0.193, $p < 0.005$) each had a significant positive impact on job satisfaction. The research model also predicted direct paths from knowledge acquisition (H1) and knowledge creation (H3) to job satisfaction. However, these hypotheses were not supported.

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4.4 Testing models for employee groups

In addition to testing the research model, the authors wanted to explore the relationship between KM processes and job satisfaction in more detail. Thus, additional models for different groups of employees were tested as follows: general employees (N=506), experts (N=156), middle managers (N=97) and top management (N=65). Within the different

groups of employees, several highly diversified occupational groups were presented: general employees (e.g., cleaners, practice nurses, office secretaries, physiotherapists, caretakers, dental nurses and kitchen helps); experts (e.g., development managers, teachers, dentists, vets, nurses and engineers); middle managers (e.g., gardeners, master builders, principals, leading social workers and library directors); and top management (e.g., personnel directors, directors of culture and chief administration officers).

As Table 4 shows, the models for different employee groups account for between 34% and 58% of job satisfaction. Specifically, KM processes showed the largest variance in job satisfaction for middle managers and the smallest for top management. KM processes accounted for nearly 42% of variance for general employees and nearly half of the variance in the expert group. Path estimates from KM processes to job satisfaction show a significant positive relationship between knowledge sharing (B=0.424, $p < 0.005$), knowledge codification (B=0.207, $p < 0.005$), knowledge retention (B=0.160, $p < 0.01$) and job satisfaction in the general employee group. For both experts and middle managers, knowledge sharing (experts: B=0.537, $p < 0.005$; middle managers: B=0.504, $p < 0.005$) and knowledge retention (experts: B=0.205, $p < 0.05$; middle managers: B=0.248, $p < 0.01$) are related to job satisfaction. For top management, only knowledge retention is related to job satisfaction (B=0.450, $p < 0.01$).

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5 Discussion

Of the five KM processes examined in this study, only two had no connection to job satisfaction. Based on this study, therefore, it seems that knowledge acquisition and knowledge creation are not factors that affect job satisfaction. This might be because of the context of the study. It is possible that the nature of the work carried out in this municipal organisation requires neither knowledge acquisition (especially from sources or partners outside the organisation) nor the creation of the new knowledge. Such activities are not

encouraged by either support or reward in the organisation. Consequently, they have no effect on job satisfaction.

However, the remaining three KM processes (knowledge sharing, codification, and retention) had connections with job satisfaction. Specifically, the results indicate that intra-organisational knowledge sharing is the key KM process, promoting job satisfaction for most employee groups. Knowledge sharing mechanisms are probably the most intensively studied facet of KM, and also seem to be significant from the perspective of wellbeing at work. Collegial support and encouragement, and a positive work climate seem to be strong enablers of job satisfaction – as well as high job performance.

The results also demonstrate that the significant knowledge-based promoters of job satisfaction differ as a function of job characteristic. Specifically, KM processes account for 58% of the variance of job satisfaction for middle managers, the largest percentage in the study. For this group, knowledge sharing was the key issue, followed by knowledge retention. Judging by the large amount of variance in job satisfaction accounted for by KM issues, it appears that KM is especially important in ensuring positive attitudes towards work for middle managers. This is understandable, because their work mostly relates to coordinating activities between different resources within the organisation (Nonaka and Takeuchi, 1995).

The second largest variance was for the experts. For this group, KM processes accounted for almost half of the variance in job satisfaction. In addition, internal knowledge sharing and knowledge retention were the key processes that improved job satisfaction. As problem solving is a central characteristic of experts' work, it could be argued that experts find satisfaction in being able to share the solutions they have produced and in seeing how they impact organisational functioning. Although knowledge acquisition, creation and codification also play an important part in experts' work, they do not increase their job satisfaction, according to the results of this study.

Job satisfaction for the general employee group was also significantly influenced by KM processes, specifically, knowledge sharing, knowledge codification and knowledge retention. This means that the widest range of KM processes affects job satisfaction for

general employees. This is to be expected as tasks for this group are the most divergent. Interestingly, this group does not appear to view external knowledge flows in a favourable light: knowledge acquisition had a small negative impact on job satisfaction. In the strictly guided and routine tasks of the general municipality employee, knowledge acquisition may be seen as a hindrance, which could distract the employee from task performance.

KM processes seem to have the least impact on job satisfaction for the top management of the municipal organisation. This is a somewhat surprising finding as the work of high-level managers is all about knowledge work, handling complex issues and problem solving. It could therefore be assumed that they would particularly benefit from efficient knowledge flows. Knowledge retention was the key KM process for this group, meaning that knowledge continuity and preservation are important for ensuring their work satisfaction. This is to be expected as the strategic steering of an organisation requires an extensive and deep understanding of its history in order to construct path-dependent strategies. It is also important for this group to understand external forces and the institutional and legislative environment in which the organisation operates. Interestingly, intra-organisational knowledge sharing, which is the key factor for other occupational groups, does not seem to be an important KM process for top management job satisfaction. Perhaps the reference group of top management is located outside the organisation; as a result, the collaborative climate of intra-organisational knowledge sharing may not be particularly relevant for this group.

6 Conclusion

Although the impact of KM has typically been studied in terms of the benefit it brings to organisational-level performance, few previous studies have examined the impact of KM on "soft" human issues from the perspective of individual employees. This study provides knowledge on how KM impacts job satisfaction, an area that has been largely unexplored in previous research.

The key finding is that the existence of KM processes in the working environment is linked to high job satisfaction. Consequently, this study demonstrates a novel KM benefit for organisations, strengthening the argument that KM is an important driver of value creation, organisational competitiveness and success (Carneiro, 2000; Bhatt 2001; Zack *et al.,* 2009;

Andreeva and Kianto, 2012). Overall, the findings in the study show that KM is a novel organisational practice in terms of its positive impact on job satisfaction. Thus, KM can be added to the toolbox of managers, consultants and other organisational developers attempting to improve the conditions for wellbeing at work.

6.1 Implications for practitioners and researchers

The results of this study illustrate that KM has a strong impact on employee job satisfaction. It should therefore encourage managers to implement KM activities in their organisations, both to improve knowledge worker performance and wellbeing at work. In addition, the results demonstrate that different employee groups benefit from different kinds of KM activities. The paper, therefore, provides guidelines for a targeted implementation of KM in different intra-organisational working environments.

By demonstrating that the benefits of KM differ as a function of employee group, the paper supports moving KM research to the next stage where the impact of KM practices can be explored not as a "one size fits all" phenomenon, but rather as a contingent and contextual issue, taking into account the requirements and characteristics of the various types of tasks conducted in an organisation.

6.2 Limitations and future research

It should be noted that as the study design was cross-sectional, it is only possible to hypothesise the direction of the impact between KM processes and job satisfaction. It could be argued that those employees who feel satisfied with their jobs are more likely to engage in knowledge activities than those who do not feel so positively about their work (cf. De Vries *et al.,* 2006). Ascertaining the direction of impact would require a longitudinal research setting.

Another limitation of the study relates to the lack of an empirical analysis of work performance. Although it does not empirically address this question, this study makes the assumption that job satisfaction ultimately leads to high performance, based on the extensive empirical research available on this topic (e.g., Cranny *et al.,* 1992; Judge *et al.,* 2001; Springer, 2011; Shaikh *et al.,* 2012; Quedraogo and Leclerc, 2013). Although this link does not seem to need further justification, it should be noted that, to the authors'

knowledge, no previous study has addressed the impact of job satisfaction on knowledge worker performance. Examining the links between KM processes, job satisfaction and knowledge work performance could be an interesting topic for future research.

Finally, this study is among the first to examine the links between KM and job satisfaction. It has provided only an initial perspective on the topic and much more research remains to be done in order to deepen understanding of the topic. Potential fruitful avenues for future research include looking at knowledge types as contingency variables. Adding closely related issues to the research model, such as organisational commitment and work engagement, could also prove valuable.

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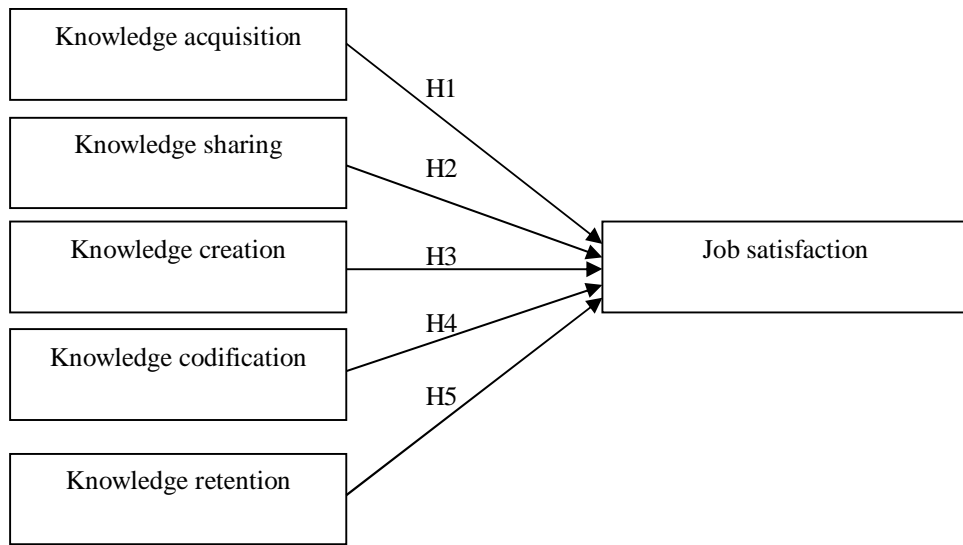
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Appendix 1: Measurement items

CONCEPT	ITEM	MEAN	SD	FACTOR LOADING	AVE	CR	ALPHA
KNOWLEDGE ACQUISITION	I easily find information needed in my work from sources outside my organization.	4,72	1,46	0,928***	.82	.91	.80
	I get much important information from collaboration partners outside my organization.	4,36	1,52	0,893***			
KNOWLEDGE SHARING	Communication with other members of my work group is efficient and beneficial.	5,45	1,30	0,810***	.58	.91	.88
	My colleagues are open and honest with each other.	4,95	1,47	0,802***			
	Our staff is interactive and exchanges ideas widely across the organization.	4,36	1,53	0,768***			
	I find it easy to communicate and co-operate with employees from other organizational units and functions.	5,56	1,23	0,710***			
	There is a mutual understanding between the various organizational units and functions.	4,21	1,38	0,707***			
	Our staff shares information and learns from each other.	5,22	1,43	0,784***			
	Different opinions are respected and listened to in this organization.	4,51	1,71	0,741***			
KNOWLEDGE CREATION	Information about the status, results and problems of different projects is easily available.	3,63	1,61	0,736***	.52	.90	.87
	Employees are encouraged to seek information actively outside the organization.	4,12	1,58	0,754***			
	My organization constantly gathers information about the external operating environment.	3,91	1,50	0,796***			
	Our organization actively collects development ideas.	3,78	1,66	0,822***			
	Our organization develops new methods for sharing knowledge (e.g. blogs, discussion forums) and encourages using them.	3,23	1,61	0,638***			
	Middle management facilitates sharing knowledge between staff and top management.	3,68	1,58	0,760***			
	Customers often participate in our innovation processes (i.e., in developing a new product or service or other solution).	2,51	1,29	0,570***			
	We have learning groups, where members can discuss their work experiences and problems.	3,60	1,80	0,687***			
KNOWLEDGE CODIFICATION	I easily find the documents and files needed in my work.	4,96	1,48	0,746***	.60	.88	.83
	Previously made solutions and documents are easily available.	4,49	1,56	0,799***			
	Electronic communication (e.g., e-mail) is smooth in my work.	5,29	1,57	0,679***			
	Our organization has efficient and appropriate information systems.	4,54	1,61	0,793***			
	Information systems are exploited efficiently.	4,44	1,60	0,840***			
KNOWLEDGE RETENTION	When an experienced employee leaves, they are encouraged to transfer and distribute their knowledge to others.	4,14	1,70	0,854***	.69	.87	.78
	Mentoring and coaching are used for familiarising new employees to their tasks.	3,60	1,64	0,800***			
	This organization encourages sharing information with colleagues.	4,83	1,66	0,837***			
JOB SATISFACTION	I enjoy my work very much.	5,49	1,42	0,847***	.64	.85	.73
	I can recommend my employer to others.	5,02	1,53	0,806***			
	There is a lot of room for improvements in the general satisfaction of our work community. (R)	4,13	1,92	0,757***			

Notes: *** Significance < 0.005; ** Significance < 0.01; * Significance < 0.05; ª Significance < 0.10. Reverse items are marked with (R)

Figure 1 The research model

Knowledge acquisition		

Knowledge sharing		

Knowledge creation		

Knowledge codification		

Knowledge retention		

H1
H2
H3
H4
H5

Job satisfaction

Table 1 Correlation matrix

	Mean	SD	1	2	3	4	5
1. Knowledge sharing	4.89	1.09					
2. Knowledge retention	4.19	1.38	0.596**				
3. Knowledge acquisition	4,54	1.36	0.302**	0.276**			
4. Knowledge codification	4.74	1.21	0.432**	0.529**	0.391**		
5. Knowledge creation	3.56	1.15	0.540**	0.672**	0.392**	0.458**	
6. Job satisfaction	4.88	1.30	0.599**	0.487**	0.193**	0.381**	0.391**

Notes: ** Correlation is significant at the 0.01 level

Table 2 Discriminant validity of the research model

	1	2	3	4	5	6
1. Knowledge sharing	**.58**					
2. Knowledge retention	.36	**.69**				
3. Knowledge acquisition	.09	.08	**.82**			
4. Knowledge codification	.19	.28	.15	**.60**		
5. Knowledge creation	.29	.45	.15	.21	**.52**	
6. Job satisfaction	.36	.24	.04	.15	.15	**.64**

Notes: AVE associated with the construct is presented diagonally.
 The squared correlations between the constructs are presented in the lower left triangle.

Table 3 Testing the research model

Path	Path coefficient	t-value
Control variables		
Tenure→Job satisfaction	-.057*	1.966
Age→ Job satisfaction	.142***	4.470
Unit→ Job satisfaction	-.003 n.s.	.167
Dependent variable		
Knowledge acquisition→ Job satisfaction	-.040[a]	1.508
Knowledge sharing→ Job satisfaction	.439***	10.401
Knowledge creation →Job satisfaction	.014 n.s.	.501
Knowledge codification→ Job satisfaction	.125***	3.501
Knowledge retention → Job satisfaction	.193***	3.939
R^2		.420

Notes: *** Significance < 0.005; ** Significance < 0.01; * Significance < 0.05; [a] Significance < 0.10

Table 4 Testing the research model for employee groups

Path	Employees	Experts	Middle managers	Top management
Control variables				
Tenure→Job satisfaction	-0,051[a]	-.071 n.s.	-.028 n.s.	-.061 n.s.
Age→ Job satisfaction	.149***	.041 n.s.	.220***	.192[a]
Unit→ Job satisfaction	.010 n.s.	.,008 n.s.	-.011 n.s.	.039 n.s.
Dependent variable				
Knowledge acquisition→ Job satisfaction	-0,068*	-.075[a]	-.070 n.s.	.096 n.s.
Knowledge sharing→ Job satisfaction	.424***	.537***	.504***	.251 n.s.
Knowledge creation →Job satisfaction	-.009 n.s.	.054 n.s.	.140[a]	-.156 n.s.
Knowledge codification→ Job satisfaction	.207***	-.011 n.s.	.049 n.s.	.096 n.s.
Knowledge retention → Job satisfaction	.160**	.205*	.248**	.450**
R^2	.419	.497	.581	.340

Notes: *** Significance < 0.005; ** Significance < 0.01; * Significance < 0.05; [a] Significance < 0.10