Aligning Knowledge Sharing Interventions with the Promotion of Firm Success: The Need for Strategic HRM to Balance Tensions and Challenges

Abstract

Knowledge sharing plays a key role in facilitating organizational goals. However, the extensive digitization of employee knowledge can potentially undermine the full realization of the premises for sustainable competitive advantage advanced by the knowledge-based view. As a corollary, it is crucial that the generation and exchange of knowledge remains continuous, but this presents tensions and challenges for management. Thus, the roles of knowledge management interventions and recognition and reward in influencing knowledge-sharing views and behaviors are examined in this paper through the investigation of four propositions. The findings reveal tensions that extend beyond firm borders and shape employee views and behaviors in relation to strategic knowledge management initiatives. In addressing the challenges presented, a framework for enhancing and sustaining knowledge-based success is developed, which contributes to the refinement of the knowledge-based view and strategic HRM aligned with it.

Keywords: Knowledge Sharing; Strategic Knowledge Management; Strategic Human Resource Management; Recognition; Reward

1. Introduction

Knowledge sharing is a key contributor to the sustainability of knowledge-based organizational success and competitive advantage (Cegarra-Navarro, Soto-Acosta, & Wensley, 2016; Kianto, Sáenz, & Aramburu, 2017), but it also engenders significant tensions and challenges (Mabey & Zhao, 2017). Much of the existing research into managerial efforts to enhance the diffusion of knowledge within organizations has adopted a meso-level lens, focusing on the use of software systems (see Alavi & Tiwana, 2003; Olivo, Guzmàn, Colomo-Palacios, & Stantchev, 2016). In comparison, our understanding of the role of human resources in sharing knowledge is more limited (Minbaeva, 2013), even though they make use of such systems and participate in knowledge exchange at a micro level, not only with other organizational members, but also with external parties such as clients.

Numerous scholars assume that employees will freely share their knowledge to support organizational interests (Anand & Walsh, 2016; Hekman, Steensma, Bigley, & Hereford, 2009). This can be attributed to a communal perspective on knowledge (Benkler, 2006), which is implicit in the knowledge-based view (KBV). However, emerging arguments from a microfoundational standpoint suggest that the propensity to share knowledge is moderated by competing interests and the extension of direct reward and/or recognition. These differing interpretations present complex management challenges that need to be addressed, particularly in the case of knowledge-intensive businesses, such as software and IT services firms. Thus, attendant propositions are advanced through this paper and investigated through the lens of employees working for these types of firms.

With regard to the structure of this paper, the next section establishes the bases for these propositions by first setting out the strategic importance of knowledge and its management to firm interests. After which, communal and microfoundational perspectives are examined because of the tensions they foster for strategic HRM and technological interventions, followed by recognition and reward. The research design is then explained before presenting the findings and their contributions to the refinement of the KBV and strategic practice, which are encapsulated in figure 1.

2. Knowledge and the Importance of Its Strategic Management to Organizations

The resource-based view has been instrumental in drawing attention to the differential contributions made by the physical and intangible assets available to a firm and its ongoing competitive advantage (Barney, Ketchen, & Wright, 2011). Human resources play a primary role in enabling a firm to generate and/or capitalize on these types of assets. Over recent years, interest has increasingly concentrated on organizing human contributions to knowledge-based resources that are valuable, rare, and imperfectly replicable. Indeed, a focus on assets of this nature is championed by the KBV, which constitutes an extension of the resource-based view and is of greater relevance in examining the strategic management of knowledge resources (Nonaka, Toyama, & Hirata, 2015; Takeuchi, 2013).

Such resources are heterogeneous with respect to their character and strategic importance. Much of the knowledge management (KM) literature adopts the established dichotomy between tacit and explicit knowledge, with implications for the codification and digitization of these forms of knowledge (see Mabey & Zhao, 2017). Both types of knowledge stem from human resources and involve their contributions. Tacit knowledge best meets the valuable,

rare, and imperfectly imitable criteria. However, given that the tacitness of knowledge varies in degree and may change over time (Styhre, 2004), knowledge is viewed here as a spectrum from subconscious tacit to explicit codifiable knowledge.

This range of knowledge is derived from various sources including organizational, human, and social capital. Organizational capital is drawn from a firm's structures, routines, and explicit knowledge (Morabito, Sack, & Bhate, 2017). Human capital includes the talent, intellectual capabilities, and tacit knowledge of human resources (Coppin, 2017; Swart & Kinnie, 2013), while social capital stems from the formal and informal structure and content of relationships and networks in and outside organizations (Dolfsma & Koppius, 2014).

The utility of the knowledge derived from these sources is likely to differ, so we need to gain insight into this from the perspective of the users of organizational knowledge themselves because of the potential effect on their behaviors. As the knowledge used by an organization and its members is drawn from within and across its borders, there is also a need to move beyond a firm bound perspective on knowledge sharing, which the majority of existing studies have not done. The tensions and challenges generated in this context are discussed in the following sections, which lead to the formation of four propositions that require empirical investigation.

2.1. Knowledge sharing and its management through strategic HRM interventions

The exchange and effective management of knowledge that is distributed and of various forms play a key role in supporting organizational learning, high performance, and a knowledge-based competitive advantage (Birasnav, 2014; Cegarra-Navarro, Soto-Acosta, &

Wensley, 2016; Kianto, Sáenz, & Aramburu, 2017; Michaelis, Wagner, & Schweizer, 2015; Mikalef & Pateli, 2017; Morabito, Sack, & Bhate, 2017). Existing analyses in the KM literature have primarily adopted an organization-level focus on the role played by software in facilitating the digital codification of tacit knowledge and its accessibility to organizational members (Olivo, Guzmàn, Colomo-Palacios, & Stantchev, 2016). Similarly, a meso-level perspective has dominated much of the HR- and technology-related literature, drawing on a communal interpretation of knowledge (Felin et al., 2009). This can be partly attributed to the expectation that intrinsic motivation drives knowledge exchange and that individuals will voluntarily engage in knowledge-sharing activities because of shared interests and personal values (Lin, 2007; Carvalho de Ameida, Lesca, & Canton, 2016). Unitarist assumptions of collaborative and reciprocal relations are constituent in this line of reasoning, reinforced through strategically aligned HRM interventions.

Such interventions typically seek to encourage knowledge exchange by signaling desired behaviors (Bowen & Ostroff, 2004; Minbaeva, 2013). In doing so, they aim to steer employees' individual engagement with knowledge sharing through influencing their perceptions, actions, and interactions (Minbaeva, Mäkelä, & Rabbiosi, 2012). Insight into the effect of these meso-level practices at an individual level is therefore critical because it is human resources who primarily diffuse and process/integrate knowledge through their interpersonal interactions and engagement with firm routines and digitization (Foss et al., 2009).

This intersection between strategic HRM practices and individual behaviors is important to understand because of the potential implications for knowledge sharing and its management. If the organizational context in which an individual operates is collaborative and/or

characterized by a high-commitment approach to HRM, knowledge is likely to be shared more freely (Anand & Walsh, 2016; Chiang, Han, & Chuang, 2011; Yu, Yen, Barnes, & Huang, *forthcoming*). In such a case, individuals may be less likely to view their knowledge as proprietary and hoard valuable elements of it from interpersonal exchange and/or disengage with codification initiatives and activities (Serenko & Bontis, 2016). Indeed, from a communal perspective, ownership is diffuse because no single person has ownership of knowledge and it cannot be meaningfully owned (Benkler, 2006). Yet this interpretation is likely to vary according to standpoints (Solinger, Hofmans, & Olffen, 2015).

A communal viewpoint is supportive of open boundary-less knowledge sharing, but conflicting interests are likely to arise. Employees providing client services operate in the context of a multiplex of relations with their employing organization, peers, management, and clients (Fidel, Schlesinger, & Cervera, 2015; Kinnie & Swart, 2012). The nature and strength of these various relations are important in mediating knowledge-sharing behaviors (Aalbers, Dolfsma, & Koppius, 2014). However, few studies have examined staff knowledge exchange with both internal and external parties. Such exchange relations generate multiple foci for gains and commitments that can cause conflicting tensions (Meyer, 2016; Swart, Kinnie, van Rosenberg, & Yalabik, 2014). As a consequence, 'they may feel pulled in different directions by the various parties with whom they interact and consequently respond by sharing or withholding their knowledge accordingly' (Swart et al., 2014: 284). Hence, proposition 1.

> ***P1***. *Employee engagement with knowledge-sharing initiatives is influenced by dialectics between communal and microfoundational perspectives on knowledge,*

which affect their views on knowledge and the exchange of it within and outside their employing firm

Empirical analysis of this proposition is needed because it generates implications for the premises of the KBV and strategically aligned HRM. The balance between communal and microfoundational perspectives is in turn likely to be affected by employee relations with peers, managers, and clients and perceptions of any recognition and/or reward for sharing their knowledge with these parties.

2.2. The importance of recognition and reward (R&R) in influencing the propensity to share knowledge

In contrast to a communal perspective, a microfoundational one suggests that extrinsic R&R is needed to encourage individuals to share their knowledge (Foss et al., 2009; Minbaeva, 2013; Minbaeva, Mäkelä, & Rabbiosi, 2012). On the basis of such, engagement with knowledge sharing is likely to be influenced by an individual's cost-benefit analysis, based on expectancy with regard to the recognition and/or reward offered and their satisfaction with it (Vroom, 1964).

As well as withholding their knowledge, individuals dissatisfied with the R&R they receive may for example seek an alternative employer or set up their own business to capitalize on their proprietary knowledge (Foss, 2009). This again underscores the need to recognize that R&R may be derived internally or externally, yet most existing studies have not incorporated this into their analysis (see Felin et al., 2009).

It is unlikely that all organizational members uniformly share either a communal or microfoundational perspective. Consequently, the examination of aggregate micro-level views is needed to gain insight into employee assessments of the recognition and reward they receive from internal and external parties for sharing their knowledge. Hence, propositions 2 to 4.

> ***P2***. *Employee satisfaction over internal and external recognition for their knowledge sharing influences their willingness to share their knowledge within and outside their employing firm*

> ***P3***. *Employee satisfaction over internal and external reward for their knowledge sharing influences their willingness to share their knowledge within and outside their employing firm*

> ***P4***. *The nature of the recognition and reward they receive for their knowledge sharing are interlinked*

These propositions need to be examined because they provide insight into the role of recognition and/or reward perceptions in shaping knowledge-sharing views and behaviors. If supported, they highlight the need for strategic HRM interventions to balance internal R&R with that received by employees from outside their employing organization, if knowledge-based advantages are to be sustained.

3. Methods

To address the propositions posed above and gain a multilayered insight into knowledge sharing and its management, the views of employees engaged in client software development services and those acting as line and HR managers in S&ITS firms were initially targeted for this study. This type of firm setting was chosen because S&ITS firms are very much knowledge intensive and interdependency between the sources of knowledge capital identified above is salient in these firms (Ejler, Poulfelt, & Czerniawska, 2011; Morabito, Sack, & Bhate, 2017). The work undertaken in S&ITS firms often involves the digitization of knowledge, so they provide a prime context for the focus of this research. Empirical evidence also indicates that R&R for the contributions made by knowledge employees in these types of firms affects their motivation, behaviors and commitment (Lazaric & Raybaut, 2014).

S&ITS multinationals were targeted for the research because they were likely to be at the forefront of KM and act as vectors of practice developments externally. Firms with high levels of organizational capital were sought. For example, the firms targeted and incorporated in the study featured in leading brand and IT firm lists, including the Global Most Admired Knowledge Enterprises. They also had a reputation for well-developed HRM and employment policies from the perspective of internal employees (Top Employers to Work For, Glassdoor). Studies suggest that large firms encounter greater challenges in aligning reward with knowledge sharing (Felin et al., 2009), so firms of this size were targeted to provide rich settings for tensions and challenges to be examined.

Contact was successfully established with HR representatives from two firms and then extended to include participants from their UK and US operations. Access to additional firms

was pursued, but this was not sufficiently forthcoming. Nevertheless, it was possible to gain a multidimensional insight through the use of mixed methods and data, which facilitated triangulation and enhanced the validity of the findings.

3.1. Data collection and analysis

Numerous KM texts underscore the primacy of internal knowledge exchange (Aalbers, Dolfsma, & Koppius, 2014; Hislop, 2013). While maintaining this focus, the lens adopted in this paper is distinctive in that it incorporates participants' knowledge sharing with external clients.

Data were collated using interviews and an online survey. Participants for the primary data collection were targeted because they occupied a position that would enable them to provide valid insights into the lines of inquiry investigated through the study (Rubin & Rubin, 2012; Saunders, 2012).

HR representatives with responsibility for supporting the firms' knowledge-sharing goals were interviewed first. A semi-structured guide was formulated not only to frame the interviews in line with the focus of the research but also to allow the participants to express their views in their own words and permit the flexibility to probe emergent areas of interest in the participants' accounts (Alvesson & Ashcroft, 2012). They were asked about the HRM policies and practices in place to support knowledge sharing, along with the tensions and challenges encountered.

To gain a multifaceted insight, software developers who provided knowledge-intensive services to clients were also interviewed in each firm, along with those occupying line management positions (see table 1). Again, a semi-structured interview schedule was used and adjusted according to the role of the participant. The software developers were asked about their views and experiences in sharing their knowledge with internal and external parties and any R&R for this, while the line managers were also asked about the management of knowledge and the challenges they faced in recognizing and rewarding knowledge sharing.

Table 1 about here

The interview data was coded according to the aims of the research using a template-based approach (King, 2012). An initial framework was developed using *a priori* codes such as meso- and micro-level knowledge, knowledge sharing, and HRM interventions along with appropriate subcategories including sources and forms of R&R and tensions and challenges. The coding applied was then examined and reviewed to enhance its inter-rater validity and reliability.

To examine the broader validity and reliability of the propositions, an online survey was deployed to capture the views and experiences of a larger sample of developers. The construction of the survey was reviewed and trialed before disseminating it through referral to a hyperlink. The data collected allowed for aggregate patterns and relationships in the respondents' perceptions and experiences in relation to knowledge sharing and R&R to be examined. There were 431 who initiated the survey, and 388 of them completed it. Of the

respondents, 64.5% were male, 90% were educated to degree level or above and 83.5% worked full-time.

The analysis of the survey indicated a good level of reliability, with an overall Cronbach's alpha score of 0.82 rounded to two decimal points. Patterns and relationships in the data were examined using chi-squared tests. A significance level of p=<0.05 was adopted. The effect size was assessed using Cramér's V. Large, medium, or small effect sizes are indicated as appropriate (Cohen, 1988, as cited in Gravetter & Wallnau, 2013: 615). The results were compared with the analysis of the qualitative data to triangulate and contextualize the patterns detected (Creswell, 2014). The findings are presented below.

4. Findings

This section of the paper reflects the focus of the propositions and the subdivision of the literature analysis. Patterns and variations in the data are identified where they were evident.

4.1. Knowledge sharing and HRM: Tensions and conflicting signals

Knowledge sharing was a feature of each firm's strategy for competitive success and the values and culture promoted at a meso level, based on the accounts of the line and HR management participants. The nature and degree of this emphasis on sharing was embraced by the developers interviewed from both firms because of the benefits associated with reciprocal relations and the desire or need to continue learning and accumulating knowledge as part of their jobs. According to the HR participants from each firm, the alignment of these

interests and service provision were used to inform the design of their firm's HR-related KM interventions.

For example, reciprocity was encouraged through job design and performance assessment by defining knowledge-sharing competencies, commitments, and accountabilities. Members of the firms typically agreed to six to ten commitments and accountabilities with their line manager (LM). Some of these related to their business unit and time spent on billable projects, but most involved sharing their knowledge. Arguably, this served to ascribe boundaries to these types of activities.

Such boundaries were reinforced through utilization targets, which were set substantially below 100% for most staff (67% Firm 1, 70% Firm 2). There were numerous aims behind these work parameters. These included signaling the value placed on knowledge sharing, setting aside time for organizational members to engage in this activity and notionally circumscribing the potential for these targets to make an impact on the balance between these activities for individuals and their effect on their work-life relationship. However, adherence to these rough divisions was problematic because of the presence of conflicting messages and interests between parties, as exemplified by the following quotes from two of the developers:

> *There's commitment based incentives . . . but there's also utilization-based incentives. [We] have an accelerator, so if you work more than 67% it accelerates your bonus . . . So it's possible to work at 100% utilization . . . Really the manager's job is to stop them doing that because they can burn themselves out . . . but this is countered by the [bonus] system . . . I would decelerate it. (Firm 1, Developer)*

We have utilisation targets, but if you just achieve your target, you're not going to get very far. (Firm 2, Developer)

Along with job design and performance commitments, the HRM departments in each firm implemented a range of KM initiatives in collaboration with managers responsible for leading particular activities within the businesses. As might be expected, the interview data revealed that valuable tacit knowledge was primarily communicated informally via interpersonal exchanges. These potentially fertile exchanges were encouraged through a range of channels,[1] most of which the HR departments were involved in facilitating and promoting. However, the HR participants indicated competing tensions between knowledge sharing and other objectives/time pressures. For example, in firm 2, HR representatives sought to liaise with managers at various levels to convince them to carve out weekly time slots to focus on the development of new ideas, but the realization of this goal had been politically and administratively time-consuming, so little progress toward this goal had been achieved.

Explicit and articulable tacit knowledge that could be digitized was stored in repositories, such as internal wikis and databases. These repositories were used to varying degrees by members of the firms but primarily for knowledge extraction rather than for formal documentation of their own approaches and solutions. Indeed, each set of participants underscored countervailing tensions with regard to the input of knowledge and the level of apathy toward engagement with these communal repositories. This could be partly attributed to the intersection between the primacy of the relationship between billing time pressures, the

1. Examples included Scrum or project meetings, business briefings, think tanks, conferences, networking events, guest speakers, job/team rotation, learning labs, training on supporting an innovative culture.

appeal of the systems in place, and the problem-solving and creative disposition of these types of workers.

> *Recording information in the right places is seen as a chore . . . it's often something that comes up in exit interviews. (Firm 1, HRM)*

> *I do think there is a lot of reinventing the wheel . . . It's not necessarily easy to find something . . . at the exact moment that you need it . . . I quite often find . . . them recreating . . . I don't know whether it's particular to some types of IT skills more than others, like architects, but they just love to create. So trying to actually force everybody to use one framework . . . can be quite exhausting. (Firm 2, HRM)*

Valuable knowledge and information added to these repositories were disseminated using e-mail distribution lists, social media tools, webinars, and podcasts. These sources of knowledge provided means of gaining access to thought leadership within the firms or insight into precedent. However, e-mail distribution, while self-subscribed and somewhat targeted, contributed to information overload and so attenuated the impact of these knowledge-sharing efforts. From the perspective of each set of participants, this was because of time pressures and tensions between a generalized (communal) and targeted (microfoundational) approach to the digitization and dissemination of knowledge.

> *People are lazy and don't actually use it in the way that it should be used, otherwise you wouldn't see all these emails flying around . . . [and often] they just end up becoming random . . . chatter. (Firm 1, LM)*

To address this type of problem, firm 2 had established a small communications team to moderate the diffusion of staff/organizational knowledge and enhance its impact. In addition, the HRM department had sought to break down internal communication barriers by permeating conventional work and firm boundaries, using personal Facebook accounts to communicate with staff. This was on the basis that the content of these messages was more likely to be picked up when staff were viewing posts from their friends and colleagues, both in and outside of work.

> *We have a Facebook page that allows us to share new ideas and updates on key projects. It's more informal, taking the initiative to reach out to a co-worker. I think that that's something that we want to continue to work on because it ties I think into the feedback, how do you get people to break down the walls a little bit and be able to more openly share things? (Firm 2, HRM)*

Part of the reason the developers did not engage substantially with either firm's repositories was because of concern over how their entries might be interpreted by peers and managers because this could influence perceptions of the quality and depth of their knowledge. Indeed, the participants indicated that they preferred to share their knowledge through interpersonal communication rather than recording it in a database, given they were unsure that it was a worthwhile activity. In response to these concerns, communities of practice had been introduced in firm 1 to blend the exchange of tacit with more explicit knowledge. Example communities focused on databases, web application development, systems integration, technologies, and user experience. These communities interacted virtually and on a face-to-

face basis. They were perceived to play a role in helping to support interpersonal trust and the exchange of tacit knowledge through, for instance, the organization of social events.

> *Trust and respect starts getting built. If everything is done via a database then that just doesn't occur. You need face time. You need to have a beer or a coffee and a chat and help each other out. (Firm 1, LM)*

Such events were often organized outside working time. In turn, this added to the work-life balance pressures encountered by individuals and so affected the engagement of those less willing or able to attend these events.

From a management perspective, these communities of practice were partly created to tackle hierarchical barriers to knowledge sharing. However, while they did not replicate the formal structure of the firm as such, hierarchical status, relations, and influence were still exercised in these groupings.

> *Obviously organizations are hierarchical, but the worldwide communities kind of come in from the side, so it becomes more like a matrix organization than a hierarchy. So the guys that come in on the side, they don't have any authority over you. They're not your boss . . . They can't tell you what to do. They have to use a different type of currency, and that's usually around influence. (Firm 1, LM)*

The survey data shed light on the relative importance of the value of the various sources of internal and external knowledge available to developers from their perspective. Of the survey

respondents, 95% rated their own personal knowledge as important or very important, ranking it higher than other relevant sources of knowledge (peers, managers, clients and databases). The relative importance of personal knowledge to these other sources was significant (p=<0.05 with a large effect in each case) based on the responses of the developers. This is unsurprising given the standpoint of the respondents and the need for this knowledge in the delivery of their work.

Interestingly, client knowledge was considered to be least important from the perspective of the respondents when compared to peers, managers and firm databases (p=<0.05 with a large effect in each case). The interview data revealed that client knowledge was useful in gaining insight into the challenges faced by clients and the scope for additional service provision. Some of this knowledge could be applied to work undertaken for other clients, but this required apposite contextualization. Colleague knowledge was useful as a means of accessing their own personal knowledge as well as organizational capital, policies and systems. While manager knowledge was used for similar reasons, not all this was considered to be directly relevant to their work, as underscored by the following interview excerpt:

> *I guess because I'm working in the nuts and bolts of things and the kind of knowledge my manager is holding is meeting the budget, resource planning, and that . . . all has its place, but at the end of the day . . . it's less directly relevant. (Firm 2, Developer)*

The interview data from the HR participants highlighted the concerns of the firms' leaders and managers in relation to the ownership of knowledge, particularly with respect to their reliance on certain individuals with key skills or knowledge for particular activities.

However, their accounts also illustrated tensions with regard to their views concerning communal and individual ownership of knowledge.

> *[Knowledge sharing] is part of our company culture . . . It's one of our values and we work hard to support it . . . [as a company] we do quite a bit of R&D . . . but whatever someone produces can be seen as their baby. (Firm 2, HRM)*

The survey data revealed that 50% of the respondents withheld their knowledge, providing an indication of the extent to which this tendency and its connection with R&R, may limit the sharing of knowledge meeting the criteria of the KBV. The interview data revealed that the propensity to withhold knowledge was influenced by the perceived value of their knowledge at a given time, the particular nature of the work that they performed, their career ambitions, and individual standpoint.

> *You do get [people withholding knowledge]. It's like knowledge is power. I think it manifests more where people are seen as a subject matter. People always want them on projects because they have some specific knowledge . . . what usually happens to these people is that they think they're doing a really good job but they keep getting a middle grade every year, and they have a problem with that, because they're very knowledgeable. Really good managers should work with them to help them understand that the actual behavior that they're exhibiting isn't beneficial to the business . . . Knowledge sharing is critical. You won't get very far in [the firm] if you don't share. (Firm 1, Developer)*

Yet despite the need to share knowledge to progress within the firms, the software developers conceded that they still withheld elements of knowledge from all the parties/systems that they engaged with, to maintain an advantage or avoid exposing weaknesses in their capabilities. The findings therefore support the proposition that tensions between communal and microfoundational views on knowledge affect the use and exchange of knowledge and engagement with meso-level strategic HRM interventions (P1). In light of which, partial knowledge sharing is likely to be inevitable without aligned R&R to address the tensions and challenges identified in this section of the paper. While accumulating a mass of explicit organizational knowledge offers organizational benefits, the findings indicate that much of this knowledge can lack micro-level relevance and lose its currency. Consequently, it is important to encourage employees to continue to divulge articulable tacit knowledge that may be valuable to a firm, its members, and its clients by satisfying their expectations if the premises for a sustainable competitive advantage extolled by the KBV are to be maintained. However, there is a need to avoid over-digitization and to balance the formal and informal encouragement of knowledge exchange.

4.2. Internal and external R&R for knowledge sharing

The study data revealed that R&R played key roles in fostering knowledge sharing behaviors and the degree to which individuals engage in interpersonal exchanges and with KM initiatives. This was not confined solely to the performance review process because R&R could take a variety of forms and stem from internal as well as external sources.

Both formal and informal recognition of knowledge sharing was encouraged in each firm to support engagement with this activity. Formal organizational recognition of knowledge-

sharing behavior by managers was principally relayed through awards and performance appraisals, for example. Informal recognition was typically extended through oral praise, feedback and coaching. However, managers were not the only sources of these forms of recognition. Peers also provided informal recognition through interpersonal feedback and/or formal recognition through mechanisms including award nominations and online tools. An example of the use of these tools for this type of recognition is provided below:

> *We've launched a social media platform on our intranet to enable staff to post about what they're working, get feedback from colleagues and express their thanks. (Firm 2, HRM)*

External recognition of knowledge sharing was primarily extended through a combination of formal and informal recognition delivered through client feedback to managers and developers themselves. See table 2.

Table 2 about here

Lack of recognition varied by source. It is perhaps unsurprising that this was least evident from peers. The paucity of recognition from managers and clients could be because of the limited contributions of the respondents from their perspectives or the failure or disinclination of these parties to recognize the various contributions of all staff, but this would need to be investigated further by future research.

Most of the survey respondents indicated that they were satisfied or very satisfied with the recognition they received from clients (66%), peers (69%), and managers (62%). A minority was dissatisfied or very dissatisfied with the recognition they received from clients (5%) and peers (6%) while 12% expressed dissatisfaction with the recognition they received from managers. The survey results would indicate that mismatches between the expectations of the respondents and the recognition they received from each party was evident in a minority of cases. A microfoundational perspective was clearly pronounced in these cases, with a varying balance between microfoundational and communal views likely to be influencing the responses of those satisfied or very satisfied with the recognition they received. Most of the respondents indicated that their satisfaction with such recognition influenced their willingness to share their knowledge (77%), statistically significant to p=<0.05 with medium effect, with the exception of sharing knowledge with peers at p=0.13. These findings support proposition 2. Thus, highlighting the need for organizational managers to take into account these sources and levels of satisfaction in recognizing and seeking to manage individual knowledge-sharing behaviors within and outside a firm.

Knowledge sharing was included as an explicit competency and commitment in performance appraisals and so contributed to rewards. This presented organizational tensions between creating a free-flowing knowledge sharing culture and the need to reward such behavior because of the limitations of cultural influences and intrinsic motivation.

> *Say you give a presentation; you can start adding that into your accountabilities … you've written or some documentation you've done on a project you did . . . if you submitted it into the worldwide community, that's another tick. If it then got uprated by an SME . . . that's another. The best tick is if you can find people that*

have reused that IP to deliver value . . . Again, that's rewarded financially at the end of the year. (Firm 1, LM)

There's a bonus every year . . . and then there's also stock awards that you get given based on commitments as well. They're kind of like golden handcuffs because you don't get them all at once. You get 20 percent of them every year over five years. So there's a long- and a short-term payment essentially. (Firm 1, LM)

In addition to bonus payments, recorded contributions to knowledge sharing could be used to support a case for promotion. The aim here was to incentivize developers to openly share rather than retain their knowledge.

Everything isn't just short term . . . based on the financial year . . . For example, if I have just given a presentation to some colleagues that I submit to my peers and all of a sudden there's three people all over the world that are using your IP. That's really good evidence if you're going for a promotion. That means that you're probably acting at a higher level than you currently are. And that's based around knowledge sharing. That's what's demonstrating that. (Firm 2, LM)

However, evidence of the broader use of this knowledge was required, and this could be subject to differing assessments over the extent and value of its use at the point at which the case was reviewed. In addition, other criteria were used in making promotion decisions, which were likely to be more highly weighted, including an individual's utilization levels.

Performance appraisals were not the only source of R&R for knowledge sharing. The scope for R&R crossed national and organizational boundaries. Arguably, this assuaged the difficulties encountered in recognizing and rewarding individual contributions in large firms to some extent (Felin et al., 2009).

> *We hold what we call innovation showcases where teams and individuals put forward their ideas. These innovations are then reviewed at regional and global levels . . . the winners are then celebrated at corporate events. (Firm 2, LM)*

> *We have an internal website where [people] can upload documents and within each community there are subject matter experts, who are committed to assess submitted intellectual property in the documents. They rate and vote on them . . . to try and communicate out the IP that's there and market it to SMEs. (Firm 1, LM)*

Such R&R is however only likely to affect a minority of firm software developers. The sources and types of R&R received by the respondents are summarized in table 2. Their responses revealed that most were satisfied or very satisfied with the reward they received from clients (56%), peers (56%), and managers (54%). Most were satisfied rather than very satisfied at a ratio of 2:1. The highest levels of dissatisfaction were over the rewards extended by managers (16%). This was perhaps because they were viewed as the primary source of rewards. However, this suggests a need to improve meso-level reward for knowledge sharing through managers at a micro level to balance communal and microfoundational perspectives and behaviors.

The majority of respondents indicated that their satisfaction with these rewards influenced their willingness to share their knowledge (79%), supporting proposition 3 (p=<0.05 with medium effect for managers and clients and small for peers). The relationship between reward satisfaction and the reported withholding of knowledge was significant in the case of satisfaction levels with rewards from managers for knowledge sharing (p<0.05 with small effect). As a consequence, there is a need to manage organizational rewards accordingly.

The receipt of a combination of formal and informal recognition correlated with the receipt of financial and nonfinancial rewards from each of the sources categorized in table 2 above (p=<0.05 with large to medium effect in each case). Likewise, the relationships between formal recognition and the receipt of financial rewards and informal recognition and nonfinancial rewards were statistically significant with large to medium effect in each case, supporting proposition 4.

Some of the respondents indicated that one or more of the following factors influenced the R&R they received for knowledge sharing: their seniority level (69%), age (44%), gender (30%). The intersectional relationship between these factors was statistically significant with a large effect. Therefore, there is a need for strategic HRM to address these bases for differential R&R if knowledge sharing is to be enhanced. Devolving more scope for R&R to peers may help in tackling these differences and influence the knowledge-sharing behaviors and R&R satisfaction of those affected but would need to be monitored to ensure that perceived and actual differences along these lines became less evident and more transparent in its justification.

The relationships between sources of R&R and satisfaction levels were statistically significant in each case with a medium effect for managers and clients and small for peers. This indicates that the degree of satisfaction is likely to be relatively consistent by source. This may be because of the expectancy of these respondents or the quality of their contributions, but this would need to be investigated by subsequent research.

If dissatisfied with the R&R they received, 53% of the survey sample indicated that they would leave their employer and seek alternative employment, while 37% would seek to operate independently. While the departure of some of these human resources may be beneficial to an organization and its managers, the proportion indicating these responses underscore the importance of effectively managing R&R to reduce the loss of knowledgeable staff that managers may prefer to retain.

5. Discussion

Effective knowledge sharing is of critical importance to individual and organizational learning and success in the delivery of client services, together with the achievement of a sustainable knowledge-based competitive advantage (Cegarra-Navarro, Soto-Acosta, & Wensley, 2016). Existing literature has mainly focused attention on this activity within firms (Aalbers, Dolfsma, & Koppius, 2014; Hislop, 2013). While this provides an appropriate framework for analysis, knowledge sharing also permeates organizational contours and is driven by human resources as well as software. Knowledge exchange in such a complex relational and transactional environment gives rise to multiple foci for commitment and conflicting tensions, which are important for parties in the relationship to balance to derive mutual gains and counter undesirable knowledge hoarding and firm departure. The research

reported in this paper sought to investigate the nature and degree of these tensions through the application of a distinctive lens in prime environments for knowledge sharing and these tensions and behaviors, combining the integrated examination of meso and micro perspectives.

The proposition findings shed light on a variety of contrasting tensions and enable contributions to existing literature and practice, as depicted in figure 1. With respect to the KBV (Nonaka, Toyama, & Hirata, 2015; Takeuchi, 2013), they demonstrate the need to address the challenges stemming from variable interpretations of communal and microfoundations of knowledge (Barney & Felin, 2013; Felin et al., 2009) because they shape employee engagement with knowledge sharing. If these challenges are not addressed, a knowledge-based competitive advantage could be cut short. In addition, they highlight the need to combine meso and micro levels and sources of knowledge (see figure 1).

Insert figure 1 about here

High-commitment HRM is advocated for the management of knowledge employees to strengthen relations between a firm and these staff (Adler & Heckscher, 2006; Chiang, Han, & Chuang, 2011). This may support a communal view of knowledge ownership and exchange (Anand & Walsh, 2016; Lam, 2005; Lin, 2007). However, the findings revealed a transactional emphasis on working time, knowledge sharing, and R&R. In light of which, it is not surprising that knowledge was interpreted as a commodifiable possession to be used to maximize the receipt of extrinsic rewards. Not all firm members may adopt this perspective,

but based on the data collected, this is likely to depend on the currency of their knowledge and their personal career ambitions. The firms' HR policies sought to engender a knowledge-sharing culture, but the HR participants voiced contradictory messages, which may be a product of their position, straddling business and staff interests.

A bundle of different types of complementary practices are needed to encourage organizational members to participate in the documentation and interpersonal communication of ideas and solutions, drawing parallels with arguments advanced in the literature on employee involvement (Wilkinson, Donaghey, Dundon, & Freeman, 2014). Motivation is variable. It cannot be assumed that all staff will be sufficiently or continuously motivated by intrinsic values and interests. Extrinsic motivators are required to support and encourage knowledge-sharing behaviors. Firm size may play a role in influencing referent reward interpretations, but it is also about the effectiveness of the strategic mechanisms in place.

This is because of the multiplex of internal and external relations, commitments, and transactions in place. Knowledge sharing traverses organizational borders and is recognized and rewarded not just at a meso-firm level but also by individual colleagues and clients. These various sources of R&R are likely to affect individual perceptions of organizational R&R and may lead to knowledge hoarding and/or firm exit. It is therefore important for HRM to take into account the multiple sources of R&R when seeking to recognize and reward individual contributions strategically (see figure 1).

5.1 Limitations and future research

The findings are likely to have been influenced to a degree by the character of the participants' work environment and relations and the methods of data collection. Observation of knowledge-sharing interactions and behaviors could provide further insight into the delivery of R&R and the responses of R&R recipients. Future research also ought to examine the variable impact of differing types and levels of R&R and the duration and quality of interpersonal relations. In addition, subsequent research is needed to examine the broader resonance of the findings in the context of other settings, including public sector and nonprofit environments, where a stronger communal ethos may be present and less emphasis may be placed on financial rewards for knowledge sharing.

6. Conclusions

The findings from this original study shed light on tensions and challenges generated by knowledge sharing for the KBV and strategically aligned HRM. It is acknowledged that the focus and intensity of the tensions encountered by organizations and individuals are likely to be subject to variation. Consequently, the findings drawn from multiple firms, national settings, and participants have been used to formulate an indicative framework that would need to be contextualized at meso and micro levels when applied. From a practical perspective, they demonstrate the need for knowledge sharing to be recognized and rewarded by an organization and its members, taking into account external R&R, if negative staff behaviors and talent loss are to be limited and organizational success and competitive advantages are to be maintained.

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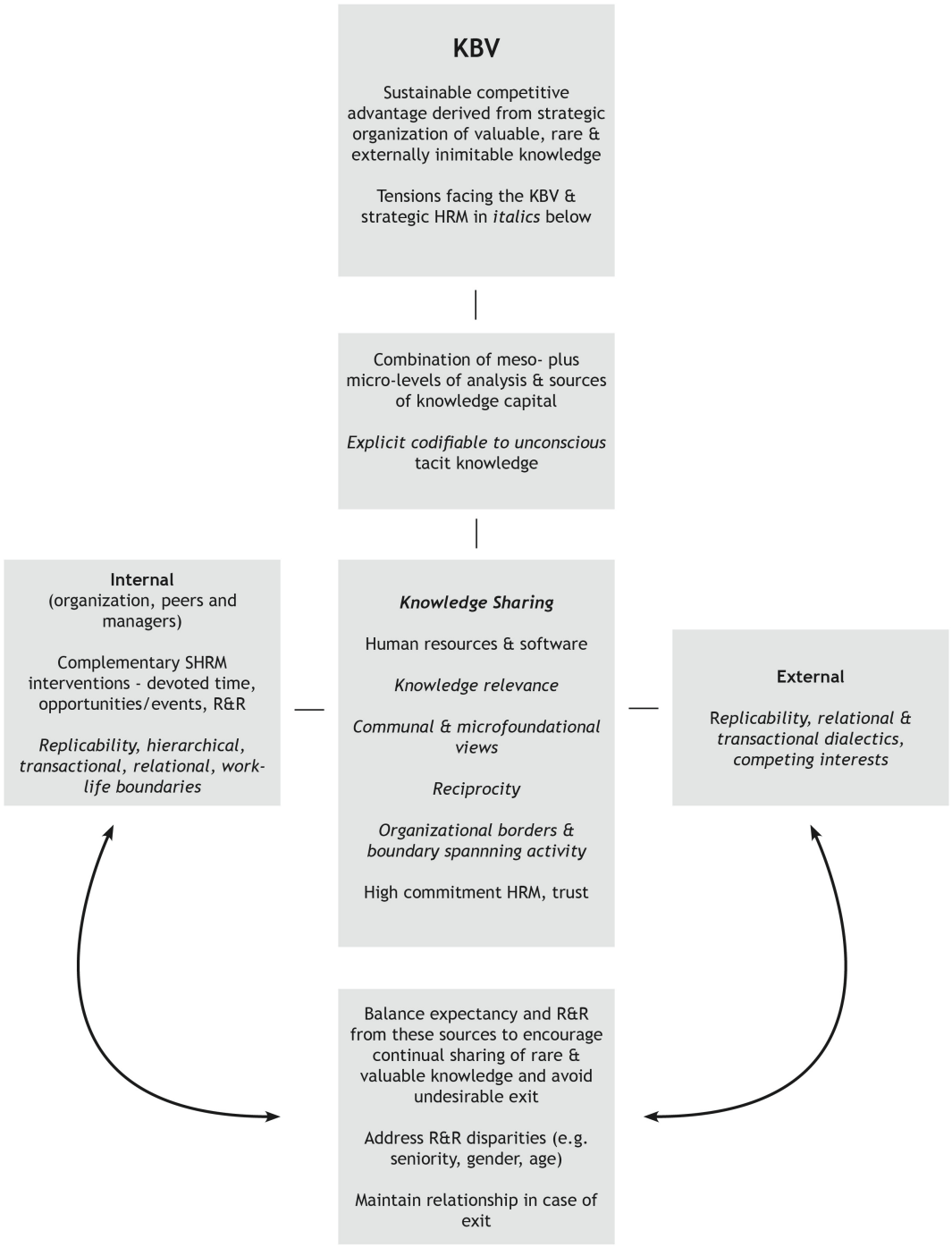
Table 1: Interview Sample Profile

S&ITS1	**S&ITS2**
Large firm by number of employees and annual revenues. Range of software and IT services offered.	Large firm by number of employees and annual revenues. Range of software and IT services offered.
All participants educated to degree level or above. N and gender in brackets	
HR Leaders/Managers	
HRM (4M/4F)	HRM (3M/5F)
Line Managers	
LM (3M, 1F)	LM (2M/2F)
Software Developers	
SD (5M/7F)	SD (8M/4F)

Table 2: Forms and sources of recognition and reward for knowledge sharing (indicated by % of respondents)

	Formal recognition only	Informal recognition only	Both formal and informal recognition	No recognition
Managers	28	31	25	16.5
Peers	6	58	19	12
Clients	19.5	30.5	28	21.5
	Financial rewards only	Non-financial rewards only	Both financial and non-financial rewards	No rewards
Managers	23	31	20	26.5
Peers	10.5	48.5	10.5	30.5
Clients	14	32.5	18	35.5

Figure 1: Challenges and tensions for the KBV and strategically aligned HRM



Appendix: Abbreviations

KBV	Knowledge Based View
IT	Information Technology
KM	Knowledge Management
R&R	Recognition and Reward
S&ITS	Software and Information Technology Services
LM	Line Manager