ANTECEDENTS AND IMPACT OF KNOWLEDGE MANAGEMENT CAPABILITY IN PUBLIC ORGANIZATIONS

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Abstract

Public organizations are increasingly embracing knowledge management (KM) tools and practices. However, there is a lack of understanding and empirical research in the public context to offer relevant insights. This study examines how KM influences public organizations’ performance through the concept of KM capability. KM capability represents an organization’s ability to capture, share, apply, and create knowledge. The salient resources influencing KM capability are identified and their direct and interaction effects are examined. The effect of KM capability on organizational performance is also assessed. Findings from a survey of 101 public organizations indicate that the physical KM resources of KM technology support and non-IT KM investments significantly influence the level of KM capability. Physical KM resources also have stronger effect on KM capability when the organizational KM resource of senior management championship exists. In contrast, the effects of physical KM resources are weakened by centralized and formalized organizational structure. Implications of these findings for KM research and practice in public organizations are discussed.

Keywords: Knowledge Management Capability, Public Administration, Resource-based View, Organizational Performance.


1 INTRODUCTION

There has been a general surge of interest in implementing knowledge management (KM) tools and practices to improve public organizations’ capturing, sharing, application, and creation of knowledge in recent years (Metaxiotis 2009). KM implementation is currently high on many governments’ agenda (United Nations 2008). For example, the United States government’s investment in KM is expected to reach $1.3 billion by 2010 (INPUT 2005). With many public administration tasks (e.g., legislative supervision, casework, and policy formulation) being knowledge-intensive in nature (Willem and Buelsens 2007), the potential of applying KM tools and practices in public organizations is significant.

As the private sector has been leading in the application of KM tools and practices (McAdam and Reid 2000), many public organizations have attempted to learn from the experiences of private organizations (e.g., Bate and Robert 2002). However, public administration and management scholars have cautioned that public and private organizations are different in many important aspects (Rainey 2009). For example, it has been observed that economic resource considerations are less dominant than political factors in public-sector decisions (Nutt 2005). Public organizations also face a different set of challenges from private organizations, such as having to maintain equity and accountability to the public and to address the needs of disparate stakeholders. These and other specificities may have impact on public organization’s KM. For example, Kim and Lee (2005) found that user-friendly information technologies improve knowledge sharing capability in private organizations but not in public organizations. It is therefore necessary to study public organizations in their own right. Yet, existing studies of KM in public organizations are scarce compared to that of private organizations (Bate and Robert 2002). The few larger-scale quantitative studies have focused mainly on individuals’ participation in specific activities such as knowledge sharing (Kim and Lee 2005) or managers’ expectations of KM’s use and benefits (McAdam and Reid 2000). Further, no prior study has examined the effect of KM on public organizations’ performance.

In this essay, we examine how public organizations’ performance is influenced by KM capability. KM capability represents an organization’s ability to capture, share, apply, and create knowledge (Pee and Kankanhalli 2009). Past research in public organizations has mostly focused on knowledge sharing and not other activities. For example, Kim and Lee (2005) identified organizational factors affecting knowledge sharing. There is also a lack of integrated view of how physical resources (e.g., KM technology) and organizational resources (e.g., organizational structure) jointly influence the KM capability of public organizations. The interplay among these factors also has not been examined in the context. Motivated by these gaps, we seek to address the following research questions:

RQ1: Does KM capability influence the performance of public organizations?
RQ2: How do physical resources interact with organizational resources in public organizations to influence KM capability?

2 CONCEPTUAL BACKGROUND

2.1 Nature of Public Organizations

Significant scholarly attention has been devoted to understand the nature of public organizations, especially in comparison to private organizations. One of the earliest theories is offered by Dahl and Lindbli (1953). They posit that public organization is one key variant of the fundamental decision systems in a society. Unlike private organizations whose activities are primarily directed by economic markets, activities in public organizations are mainly guided by politically constituted power structure. Therefore, agencies tend to have more intangible goals, less incentive for cost reduction, and more dysfunctions of bureaucracy.

Bureaucracy refers to an organizational setting that is formalized, standardized, and hierarchical, with a clear functional division of labor and demarcation of jurisdiction (Olsen 2006). Public administration theorists assert that public organizations have higher levels of rules, red tape, and personnel constraints because these are the mechanisms through which they assure accountability to
the public in the absence of market signals such as profits (Wilson 1989). Similarly, economists have shown that bureaucracy may be necessary in public organizations. For example, based on the transaction cost theory, Williamson (1999) demonstrated that public organizations rely on convoluted bureaucratic procedures to serve legitimate purposes in performing certain transactions (e.g., foreign affairs) that cannot be economically conducted by private organizations.

However, analyzing the economics of non-market-based decision making, the public choice theory demonstrates that budgetary processes in public organizations are generally less efficient than market-based allocation of resources in private organizations (Eskridge 1988). It also suggests that public managers are more likely to support decisions to serve their own ends compared to their private counterparts. Relating to the lack of a clear market, the principal-agent theory suggests that compared to private organizations, it is more difficult for public organizations to clearly determine who their principals (i.e., stakeholders) are (Waterman and Meier 1998).

In sum, while the theories diverge in that some consider public organizations as inherently dysfunctional and inferior to private organizations and some emphasize the critical role of public organizations in delivering public goods (e.g., national defence) and managing externalities that cannot be corrected by free market (Rainey 2009), both perspectives tend to agree that public and private organizations differ on many characteristics. As we will show later, organizational goals, structure, and senior management support have important effects on KM. Therefore, findings of KM studies in private organizations may not be readily generalizable to public organizations and it is necessary to specifically study public organizations.

2.2 Capability under the Resource-Based View

Since the objective of this study is to understand KM capability, identify its antecedents, and examine its influence on public organizations’ performance, we adopt the resource-based view (RBV), where capability is a central concept, as the theoretical basis for the proposed model. In RBV, capability refers to an organization’s ability in exploiting and deploying resources (Barney 1991). To improve organizational performance, organizations need to build upon and exploit the pool of resources they own or have access to (Barney 1991). Public administration research is increasingly recognizing the usefulness of RBV in understanding public administration activities (e.g., Jackson and Roe 2009). RBV clearly has relevance for public administration as public organizations rely on resources and capabilities to produce public value (Bryson et al. 2007).

RBV highlights two important categories of resources, namely physical and organizational resources (Barney 1991). Physical resources are often tangible and include the physical technology used, equipment, and supplies. Organizational resources include formal reporting structure, formal and informal planning, and controlling and coordinating systems. In many conceptual and empirical works, researchers have described the importance of complementarity among resources (e.g., Black and Boal 1994). They have emphasized that resources are likely to have significant and sustainable effect on organizational performance only when they form complementary relationships with one another. Black and Boal (1994) note that resources can have enhancing and suppressing effects on one another: an enhancing relationship exists when one resource magnifies the impact of another resource. A suppressing relationship exists when the presence of one resource diminishes the impact of another. Accordingly, this study looks beyond the direct effects of resources and examine how their interactions influence KM capability in public organizations.

2.3 KM Capability and KM Resources

As with previous studies, KM capability is construed as the additive or formative aggregate of an organization’s ability in the four key KM activities of knowledge capturing, sharing, application, and creation (e.g., Gold et al. 2001; Tanriverdi 2005). Various physical and organizational resources influencing KM capability have been identified (see Pee and Kankanhalli 2009 for a review). Significant physical resources include KM technology support (e.g., Kim and Lee 2005; Tanriverdi 2005) and non-IT KM investments in rewards, training, and helpdesk support (e.g., Kulkarni et al. 2006-2007; Markus 2001). Important organizational resources include KM-organizational strategy
alignment (e.g., Kim and Lee 2005; Tanriverdi 2005), organizational structure (e.g., Lee and Choi 2003), and senior management championship (e.g., King and Marks 2008). Although a few studies of public organizations have examined some of these factors (e.g., Kim and Lee 2005), they have not studied the simultaneous effects of all the factors. To address this gap, we consider all these physical and organizational resources for a more comprehensive understanding of public organizations.

3 RESEARCH MODEL AND HYPOTHESES

The literature on RBV suggests that resources are the basis for building capabilities in organizations (Ravichandran and Lertwongsatien 2005). Accordingly, we propose that a public organization’s KM capability depends on the level of physical and organizational KM resources it possesses (see Figure 1). Further, drawing on the notion of resource complementarities (Black and Boal 1994), we posit that the effects of physical resources invested in KM are moderated by organizational resources. In addition, KM capability is expected to improve organizational performance. To account for rival explanations, the effects of knowledge tacitness, number of staff members responsible for KM, and number of years KM implemented on KM capability and the effects of nature of service and organization size on organizational performance will be controlled for.

Figure 1. KM Capability Model

3.1 Effects of Physical Resources

As noted previously, physical KM resources that may influence KM capability are KM technology support and non-IT KM investments. **KM technology support** refers to the availability of information and communication technology to facilitate storage, retrieval, and sharing of knowledge (Kim and Lee 2005, Lee and Choi 2003). With strong KM technology support, public organizations are likely to be able to capture, share, apply, and create knowledge more efficiently and effectively (Gold et al. 2001) and develop stronger KM capability.

**H1:** KM technology support is positively related to KM capability.

**Non-IT KM investments** refer to non-technology-related financial investments in promoting KM (Holsapple and Joshi 2000). Three main types of non-IT KM investments are incentives, KM training, and helpdesk support. Incentives such as monetary bonus can motivate employees and facilitate a paradigm shift from knowledge hoarding based on internal competition, to a general willingness to share, apply, and create knowledge (Kulkarni et al. 2006-2007), especially at the early stages of KM implementation. In public organizations, it has been found that rewards can improve knowledge sharing capability (Kim and Lee 2005). Investments in KM-related training and helpdesk support are also essential to familiarize employees with KM processes (Jennex and Olfman 2001) and enable them to use technology to participate in KM activities. With greater employee participation in various KM activities, organizations are likely to develop stronger KM capability.

**H2:** Non-IT KM investments are positively related to KM capability.

3.2 Effects of Organizational Resources

Salient organizational resources are KM-organizational strategy alignment, organizational structure,
and senior management championship. KM strategy specifies the goals of KM initiatives and the methods adopted to achieve them (Choi et al. 2008). When there is KM-organizational strategy alignment, organizations are better able to focus on capturing, sharing, applying, and creating knowledge that is relevant for attaining organizational objectives and develop stronger KM capability. Although the relationship between KM-organizational strategy alignment and KM capability has not been empirically studied in public organizations, the significance of specifying a coherent KM strategy has been emphasized in opinion surveys (McAdam and Reid 2000) and case studies (Syed-Ikhsan and Rowland 2004). Therefore, we expect the effect of KM-organizational strategy alignment on KM capability to be significant in public organizations.

**H3:** KM-organizational strategy alignment is positively related to KM capability.

KM-organizational strategy alignment may also enhance the effects of physical resources. When KM and organizational strategies are aligned, physical resources are likely to be utilized for managing knowledge that has been identified to have relevance for attaining organizational objectives. This increases the utility organizations can generate from physical resources. In other words, considering two organizations that have invested similarly in physical KM resources, the organization with greater KM-organizational strategy alignment is likely to develop stronger KM capability.

**H3a:** When KM-organizational strategy alignment is strong, the positive effect of KM technology support on KM capability is enhanced.

**H3b:** When KM-organizational strategy alignment is strong, the positive effect of non-IT KM investments on KM capability is enhanced.

Organizational structure refers to the formal allocation of work roles and administrative mechanisms to control and integrate work activities (Robbins 1990). Two important aspects of organizational structure are centralization and formalization. Accordingly, organizational structure is construed as a second-order construct encompassing these dimensions. Centralization refers to the locus of decision authority and control within an organizational entity (Robbins 1990). Formalization refers to the degree to which decisions and working relationships are governed by formal rules and procedures (Robbins 1990). Highly centralized and formalized organizational structure imposes limits in the channels through which knowledge flows and is likely to hamper the development of KM capability in public organizations (Addicott et al. 2006).

**H4:** Organizational structure is negatively related to KM capability.

Highly centralized and formalized organizational structure may also constrain the effectiveness of physical resources in KM capability development: bureaucratic control, rules, and procedures may manifest in KM systems through functions such as access control and filtering. This limits the usefulness of KM technology in providing knowledge to fuel KM activities. In addition, the extra costs involved in verifying whether knowledge contributed in KM activities adheres to rules and is acceptable to authority may outweigh the perceived benefits of receiving participation incentive and improving KM-related computer efficacy.

**H4a:** When organizational structure is highly centralized and formalized, the positive effect of KM technology support on KM capability is weakened.

**H4b:** When organizational structure is highly centralized and formalized, the positive effect of non-IT KM investments on KM capability is weakened.

Senior management championship in the context of our study refers to the extent to which an organization’s senior management advocates the adoption of KM (Purvis et al. 2001). Through articulating the importance of KM, assigning knowledge champions, and encouraging employees’ participation in KM activities, senior managers can send strong signals regarding the significance of developing KM capability to employees (Purvis et al. 2001). This provides the political impetus for employees to engage in KM activities and contribute to the development of KM capability. Senior management has been identified to have a pivotal role in advancing the KM goals and vision in public organizations (Girard and McIntyre 2010).

**H5:** Senior management championship is positively related to KM capability.

With strong senior management championship, employees are likely to use the physical resources more to show their compliance with managerial expectations. This increases the amount of KM
activities, thereby further improving KM capability. Overall, when senior management championship for KM is strong, the positive effects of KM technology support and non-IT KM investments on KM capability are enhanced.

**H5a:** When senior management championship for KM is strong, the positive effect of KM technology support on KM capability is enhanced.

**H5b:** When senior management championship for KM is strong, the positive effect of non-IT KM investments on KM capability is enhanced.

### 3.3 Effect of KM Capability

Organizational performance refers to the degree to which an organization achieves its goals and objectives (Elenkov 2002). KM is typically viewed as a means for organizations to exploit their knowledge assets to improve performance (Becerra-Fernandez and Sabherwal 2001; Davenport and Prusak 1998). KM capability has been found to improve the performance of private organizations (e.g., Lee and Choi 2003). However, its impact on public organizations’ performance has not been empirically studied. We expect KM capability to improve public organizations’ performance because their tasks are mainly knowledge intensive (Willem and Buelens 2007).

**H6:** KM capability is positively related to organizational performance.

### 4 RESEARCH METHODOLOGY

Data for assessing the proposed model was collected through a survey. To develop the survey instrument, we followed the process described by Churchill (1979). Most constructs in this study were operationalized based on Pee and Kankanhalli’s (2009) validated scales. Items measuring KM technology support assess the degree to which technology support for sharing, search and access, systematic storage, and retrieval/gathering of knowledge are available in an organization. Items for non-IT KM investments measure the degree to which training and helpdesk support are provided and monetary rewards, bonuses, and gifts are awarded to employees for participating in KM activities. KM-organizational strategy alignment is assessed by the degree to which KM strategy is aligned with organizational strategy and whether KM strategy contains quantified goals and objectives supporting organization’s strategic direction. Organizational structure is measured by the extent to which employees need to seek approval from senior management in decision making and the degree to which rules and procedures are detailed. Items for senior management championship assess the extent to which senior management articulates the vision and goals of KM, supports the development of KM, and is actively involved in the promotion of KM. KM capability is measured by the extent to which organizations are able to capture, share, apply, and create knowledge related to citizens and businesses, products and services, work processes, and organizational performance. For organizational performance, in addition to cost efficiency, increase in budget allocated/income, responsiveness, and service quality, an additional item to measure public organizations’ ability to accomplish its core mission was adapted from Moynihan and Pandey (2005) considering that public organizations are more service oriented. All items were rated on seven-point Likert scales anchored by strongly disagree, neutral, and strongly agree. A pilot survey was conducted to refine the survey questionnaire prior to the full-scale survey.

To ensure methodological soundness, we clearly distinguished between reflective and formative constructs. Reflective constructs have observed indicators that are affected by an underlying latent, unobservable construct and changes in the underlying construct are expected to cause changes in the indicators (Petter et al. 2007). On the other hand, formative constructs are composites of multiple indicators capturing different aspects of the construct (Petter et al. 2007). In this study, KM technology support, non-IT KM investments, first-order constructs of KM capability (i.e., knowledge capture, sharing, application, and creation), organizational performance, and all second-order constructs (i.e., organizational structure and KM capability) are considered to be formative. In contrast, KM-organizational strategy alignment, first-order constructs of organizational structure (i.e., centralization and formalization), and senior management championship are considered to be reflective.
Since a complete sampling frame of public organizations was not available, we collected data from organizations listed in the Singapore government directory. The final sampling frame consisted of 367 organizations. A survey questionnaire accompanied by a cover letter explaining the purpose and significance of the study and a postage-paid reply envelop was mailed to the organizations. To increase response rate, we followed up with an email invitation and a phone call reminder. We received a total of 101 valid responses, yielding a response rate of 27.5%. The sample was sufficient for detecting small effect size of 0.15 at 95% power in our model consisting of 16 first-order and second-order predicting variables.

5 DATA ANALYSIS

The proposed model was analyzed using Partial Least Squares (PLS), a structural equation modeling technique that concurrently assesses the psychometric property of measurement scales (through tests of measurement model) and analyzes the strength and direction of hypothesized relationships (through tests of structural model) (Chin et al. 2003). PLS analysis was chosen because it is able to account for formative and reflective constructs jointly occurring in a single structural model.

5.1 Descriptive Statistics

The participating organizations provided a wide range of services including finance/trade/economic development (15.8%), education (13.9%), environment/land development (13.9%), and healthcare (13.9%). Most organizations had 50-199 employees (49.5%), 18.8% had 200-599 employees and 13.9% had less than 50 employees. Common KM technologies implemented included knowledge repository (83.2%), document management system (71.3%), and learning management system (35.6%). Most organizations had adopted KM tools and practices for 2 years or more (73.3%) and had appointed at least two staff members to oversee KM initiatives (69.3%). Nature of service, organization size, number of staff members responsible for KM, and number of years KM implemented were included as control variables in analyzing the structural model.

5.2 Measurement Model Analysis

Psychometric adequacy of the measurement model was evaluated by examining the reliability, convergent validity, and discriminant validity of each scale as suggested by Chin et al. (2003) and Gefen and Straub (2005). Reflective and formative constructs were treated differently during examination. For reflective constructs, reliability was assessed with Cronbach’s alpha coefficient, composite reliability, and item loadings (see Table 1). All constructs achieved scores above the recommended 0.70 for Cronbach’s alpha coefficient and composite reliability (Chin et al. 2003). All item loadings were significant at 0.001 level (Chin et al. 2003). This indicated that reliability was adequate. Convergent validity was assessed with AVE and factor analysis. All AVEs were above the required value of 0.5 (Chin et al. 2003) (see Table 1). In factor analysis, all items loaded highly on their stipulated constructs but not highly on other constructs, indicating satisfactory convergent validity. Discriminant validity was assessed by comparing AVEs and construct correlations as suggested by Gefen and Straub (2005). Results showed that none of the construct correlations exceeded the corresponding square root of AVE, indicating adequate discriminant validity (see Table 2). Therefore, we concluded that the discriminant validity of all scales was adequate.

Since a single data collection method was employed, the extent of common method bias was examined with Harman’s one-factor test. The test involves entering all constructs into an unrotated principal components factor analysis and examining the resultant variance (Podsakoff and Organ 1986). The threat of common method bias is high if a single factor accounts for more than 50% of the variance (Harman 1960; Mattila and Enz 2002). Our results indicated that none of the factors significantly dominated the variance (see Table 1) and we therefore concluded that significant common method bias was unlikely.

For formative constructs, significance of item weights was examined to determine the relative contribution of items constituting each construct. All items were significant at p<0.001, indicating that
the formative constructs had satisfactory content validity.

<table>
<thead>
<tr>
<th>Reflective Construct</th>
<th>Item</th>
<th>Loading</th>
<th>T Value</th>
<th>Formative Construct</th>
<th>Item</th>
<th>Weight</th>
<th>T Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>KM-Organizational Strategy Alignment (SA) (a=0.95, CR=0.97, AVE=0.91, UV=4.18)</td>
<td>SA1</td>
<td>0.97</td>
<td>115.77</td>
<td>Knowledge Capture (CP)</td>
<td>CP1</td>
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<td></td>
<td>SA2</td>
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<td>113.91</td>
<td></td>
<td>CP2</td>
<td>0.35</td>
<td>18.53</td>
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<tr>
<td></td>
<td>SA3</td>
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<td>76.19</td>
<td></td>
<td>CP3</td>
<td>0.28</td>
<td>12.60</td>
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<td>Centralization (CT) (a=0.89, CR=0.93, AVE=0.82, UV=5.64)</td>
<td>CT1</td>
<td>0.78</td>
<td>21.34</td>
<td>Knowledge Sharing (SH)</td>
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<td>CT3</td>
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<td>Formalization (FM) (a=0.79, CR=0.88, AVE=0.71, UV=5.84)</td>
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<td>Knowledge Application (AP)</td>
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<td>Senior Management Championship (SC) (a=0.90, CR=0.93, AVE=0.83, UV=3.53)</td>
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<td>SC3</td>
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<td>Knowledge Tacitness (KT) (a=0.94, CR=0.96, AVE=0.89, UV=2.39)</td>
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<td>Organizational Performance (OP)</td>
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<td>OP4</td>
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<td>OP5</td>
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Table 1. Psychometric Properties of Reflective and Formative Constructs

5.3 Structural Model Analysis

The PLS latent variable modeling approach for analyzing interaction effects (Chin et al. 2003) was used to test the moderating relationships. The procedure involves computing interaction terms by multiplying the predicting and moderating constructs. For interaction terms involving formative constructs, the formative indicators were first used in conjunction with PLS to create underlying construct scores for the predictor and moderator variables before creating interaction terms (Chin et al. 2003).

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Path Coefficient</th>
<th>T Value</th>
<th>Result</th>
</tr>
</thead>
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<td>H1: TS→KC</td>
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<td>1.68</td>
<td>Supported</td>
</tr>
<tr>
<td>H2: MS→KC</td>
<td>0.19**</td>
<td>2.44</td>
<td>Supported</td>
</tr>
<tr>
<td>H3: SA→KC</td>
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<td>0.46</td>
<td>Not supported</td>
</tr>
<tr>
<td>H3a: TS*SA→KC</td>
<td>0.08</td>
<td>0.76</td>
<td>Not supported</td>
</tr>
<tr>
<td>H3b: MS*SA→KC</td>
<td>0.04</td>
<td>0.56</td>
<td>Not supported</td>
</tr>
<tr>
<td>H4: OS→KC</td>
<td>-0.23*</td>
<td>2.70</td>
<td>Supported</td>
</tr>
<tr>
<td>H4a: TS*OS→KC</td>
<td>-0.17*</td>
<td>1.78</td>
<td>Supported</td>
</tr>
<tr>
<td>H4b: MS*OS→KC</td>
<td>-0.05</td>
<td>0.52</td>
<td>Not supported</td>
</tr>
<tr>
<td>H5: SC→KC</td>
<td>0.21*</td>
<td>1.84</td>
<td>Supported</td>
</tr>
<tr>
<td>H5a: TS*SC→KC</td>
<td>0.26**</td>
<td>2.72</td>
<td>Supported</td>
</tr>
<tr>
<td>H5b: MS*SC→KC</td>
<td>0.35***</td>
<td>3.14</td>
<td>Supported</td>
</tr>
<tr>
<td>H6: SC→OP</td>
<td>0.39***</td>
<td>3.72</td>
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</tr>
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</table>

*Significant at p<0.05 (T=1.65); **p<0.01 (T=2.34); ***p<0.001 (T=3.12)

Table 2. Square Root of AVE vs. Correlation

Table 3. Results of Structural Model Analysis

Results of structural model analysis are shown in Table 3. We found that both KM technology support (H1) and non-IT KM investments (H2) influenced KM capability. The effect of KM technology
support was moderated by organizational structure (H4a) and senior management championship (H5a). The effect of non-IT KM Investments was moderated by senior management championship (H5b). Organizational structure (H4), and senior management championship (H5) also had significant direct effects on KM capability. KM capability, in turn, influenced organizational performance (H6). None of the control variables were significant. Together, these resources accounted for 51% of the variance in KM capability, which in turn explained 42% of the variance in public organizations’ performance. Among the organizational resources, senior management championship had the strongest direct and interaction effects.

6 DISCUSSION AND IMPLICATIONS

As hypothesized, physical resources (i.e., KM technology support and non-IT KM investments) significantly affected the level of KM capability. Physical resources also had stronger effect on KM capability with supportive organizational resources. Specifically, the effect of KM technology support was enhanced by senior management championship but suppressed by centralization and formalization of organizational structure. The effect of non-IT KM investments was enhanced by senior management championship.

There were some unexpected findings. Among organizational KM resources, we found that KM-organizational strategy alignment did not moderate the effects of physical resources (i.e., H3a and H3b). Its direct effect on KM capability was also insignificant. These suggest that in public organizations, the effectiveness of physical resources in the development of KM capability is unaffected by the alignment in KM and organizational strategies. Instead, senior management championship plays a more prominent role in enhancing the effectiveness of physical resources, as indicated by its significant direct and interaction effects. While strategies serve to guide the implementation of KM and use of physical KM resources to achieve organizational objectives, senior management championship provides the political motivations for employees to participate in KM activities. This finding indicates that employees in public organizations are more motivated to contribute to the development of KM capability by the desire to comply with senior management than the need to attain organizational objectives. This may be because in public organizations, organizational goals are more elusive and less visible than the actions of managers.

We also found that organizational structure significantly reduced the effect of KM technology support but not non-IT KM investments. Combined with the finding that non-IT-KM investments significantly influence KM capability, this suggests that rewards, training, and helpdesk support are as effective in organizations with formalized and centralized structures as in organizations with less restrictive structure. When attractive incentives and adequate technical support are provided, individuals are likely to be willing to expend extra effort to transcend barriers imposed by a stringent organizational structure to participate in KM activities. A plausible explanation may be that the accrued benefits of incentives, learning about KM tools through KM training, and increase in individual and organizational competencies through participation in KM activities are believed to outweigh the inconveniences associated with a rigid organizational structure.

6.1 Implications for Research

This study contributes to research by applying RBV to understand KM in public organizations. Public administration research is increasingly recognizing the value of RBV in understanding public administration activities (Jackson and Roe 2009). Our findings support the predictions of RBV in general: we found that KM resources influence KM capability, which in turn influences public organizations’ performance. These findings indicate that RBV is a relevant theory for understanding KM capability in public organizations.

Further, inspired by the concept of resource complementarity in RBV, we examined how physical resources interact with organizational resources to influence KM capability. We found that significant interactions exist among the resources. Together, these resources and their interactions accounted for 51% of the variance in KM capability. This suggests that the interaction effects between physical
resources and other resources account for considerable variance in the KM capability of public organizations and should be considered in future research.

Distinguishing between IT and non-IT related physical resources provided interesting insights on how they are differentially influenced by organizational resources. For example, while organizational structure enhances the effect of KM technology support in the development of KM capability, it has no significant effect on non-IT KM investments. Revealing these subtle yet valid effects clarifies our theoretical understanding of the effects of KM resources.

This study also extends previous research on KM in public organizations. First, while prior studies have highlighted the importance of KM strategy (McAdam and Reid 2000; Syed-Ikhsan and Rowland 2004), our findings indicate that KM-organizational strategy alignment does not have significant influence on KM capability. Therefore, more studies are needed to understand the role and value of KM strategy. Second, we provide empirical evidence for the significance of organizational structure and senior management championship. This lends support to previous studies that have highlighted their importance (Addicott et al. 2006; Girard and McIntyre 2010). Further, we contribute additional understanding by showing their interaction effects with physical resources. This study is among the earliest to provide empirical evidence for both the direct and relative effects of these organizational resources in public organizations.

6.2 Implications for Practice

Consistent with the views of KM researchers (e.g., Holsapple and Joshi 2000), we found that both KM technology and non-IT KM investments significantly contribute to the development of KM capability in public organizations. This suggests that organizations need to balance their investments in IT and non-IT physical resources to ensure that they are both adequate. Other than implementing technology to support knowledge capture, sharing, and application, managers also need to institute rewards, training, and helpdesk support and communicate their availability to employees.

We also found that senior management championship strongly enhances the effect of physical resources on KM capability, while KM-organizational strategy alignment does not have a significant effect. This suggests that while strategic planning is an important part of senior executives’ work, they should focus more on ensuring that their support is visible to employees to promote KM capability. Senior management can encourage employees by highlighting their availability in KM campaigns. Senior KM-specific roles such as chief knowledge officer (CKO) for spearheading KM initiatives may also be established. CKO, with the support of knowledge champions, may promote KM capability development by facilitating the identification of knowledge sources and needs and persuading employees to contribute their knowledge.

Our findings also suggest that public organizations should minimize the constraints imposed by organizational structure in KM activities since the effectiveness of KM technology support is weaker in more centralized and formalized structure. While organizational structure can rarely be reshaped to address KM needs, public organizations can seek to add some degree of flexibility into their structures. This can be achieved by combining formal hierarchical structure with a more self-organizing structure (Nonaka and Takeuchi 1995). One example is a matrix organization, where individuals have dual citizenship in the standard hierarchical structure and in any number of cross-department or cross-agency project teams at the same time. This can, to a certain degree, encourage knowledge sharing, application, and creation and facilitate collaboration across boundaries.

6.3 Limitations and Suggestions for Future Research

The limitations of this study present opportunities for future research. First, as data was collected in a cross-sectional survey, it did not allow us to draw conclusive evidence of causality, despite strong theoretical arguments based on RBV. Nevertheless, this study’s results provide preliminary evidences for the relationships among KM resources, KM capability, and organizational performance and highlight relationships that warrant further longitudinal studies to assess their causal validity.

Second, both independent and dependent constructs were measured through senior executive’s self
reports. This was considered to be a suitable approach because the senior executives were insiders. They were therefore likely to have unique perspectives and were better able to make judgments concerning KM-related issues in their organizations. Most importantly, their position in the organizational hierarchy required them to oversee the organization’s development and they were thus likely to be better informed of the organization’s investments in various resources, environmental dynamism, and performance. Nonetheless, future studies may consider collecting and triangulating data from multiple stakeholders from each organization.

Third, the sample is restricted to public organizations in Singapore. While Singapore presents a suitable context for this study because applications of IT and KM abound in public organizations, some of its characteristics may not prevail in other countries and our findings therefore may not be generalizable. More studies in other countries are needed to establish the robustness of our findings.

Other than improving upon the limitations of this study, future study can also examine other resources that may contribute to the development of KM capability in public organizations. An example is human resource such as employee expertise and relationships among employees. Extending the proposed model with human resource factors is likely to further improve our understanding of KM capability in public organizations.

References


Holsapple, C. W. and Joshi, K. D. (2000). An Investigation of Factors That Influence the


