140. Stakeholder View of Enterprise System Knowledge Management Process

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Abstract

Knowledge Management (KM) has been identified as one of the most important antecedents of ES success. Managing an Enterprise System is a knowledge intensive task that necessarily draws upon the experience and involvement of a wide range of stakeholders with diverse knowledge capabilities. These stakeholders, ranging from top executives to data entry operators, have multiple and often conflicting objectives and priorities and rarely agree on a set of common aims. Using a four-phased Knowledge Management process, this paper seeks to identify common and specific requirements for the stakeholders in an Enterprise System Knowledge Management initiative. The empirical investigation, analyzing 310 responses, amplified the specific needs of stakeholders in relation to transfer of knowledge. Moreover, all stakeholders unanimously agreed on the importance of knowledge retention strategies and end-user training, when assessing the goodness of a KM initiative.

Keywords: Knowledge Management, Enterprise System, Stakeholders

Introduction

The importance of gathering perceptions of success at multiple levels in organizations has been discussed among academics for several decades (e.g. (Cameron and Whetten 1983; Leidner and Elam 1994; Tallon, Kraemer et al. 2000; Sedera and Gable 2004). An Enterprise System, unlike a traditional Information System, entails many ‘users’ ranging from top executives to data entry operators. These stakeholders (henceforth referred to as the employment cohorts due to the intra-organizational focus) typically have multiple and often conflicting objectives and priorities and rarely agree on a set of common aims (e.g. (Cameron and Whetten 1983; Quinn and Rohrbaugh 1983; Yoon 1995). Thus, gathering data from multiple employment cohorts enhance our understanding of the unique requirements, issues and benefits of each employment cohort. The purported differences are seldom investigated for the antecedents of Enterprise Systems (ES), where the focus of employment cohorts is as equally important.

The broad objective of this research is to better understand the ostensible differences of multiple employment cohorts associated with an Enterprise System Knowledge Management initiative. Managing knowledge – commonly referred to as Knowledge Management (KM) – has been identified as one of the most important antecedents of ES success (Davenport 1998; Markus, Axline et al. 2003). Many researchers have identified managing knowledge as a critical success factor of ES (Davenport 1996; Davenport 1998; Davenport 1998; Gable, Scott et al. 1998; Bingi, Sharma et al. 1999; Sumner 1999). Employing the knowledge classification of (Swanson 1994), (Sadagopan 2003) categorized ES projects as the most demanding innovation domains. Using qualitative methods, (Lee and Lee 2000; Pan, Newell et al. 2001; Jones and Price 2004) observed a positive relationship between effective ES-related KM and the maximization of positive ES impacts.
This paper has the following specific objectives: (1) to investigate incongruent views of employment cohorts on a KM initiative, (2) to identify specific aspects of KM that stakeholders may differ their opinions on, (3) to allude to possible reasons for observed differences, (4) to assess whether all employment cohorts are sufficiently informed to comment on all aspects of KM, and broadly (5) whether a study of employment cohorts increase our understanding of KM for management and research purposes. The study results would also increase our understanding of the unique requirements of employment cohorts in KM initiatives that may be generalized into other antecedents of ES. The paper begins with a review of literature. The a-priori model is described next, with a succinct description of the KM construct. The research context is discussed next, followed by the details of the survey instrument. Next, the paper reports the data analyses focusing on the five aforementioned research objectives. The paper concludes with a summary of findings and a discussion on future research directions.

**Literature Review**

The literature review focuses on employment cohorts and knowledge management (KM). The historical perspective of employment cohorts identifies the appropriate employment cohorts for the study context, while the review of KM studies aims to derive an appropriate framework for KM-process.

**Review of Employment Cohorts**

Anthony (1965) provided the main foundations for employment cohort classification in management science. He referred to three levels of employment in an organization; (1) Strategic, (2) Management and (3) Operational. The Strategic level focuses on deciding organizational-wide objectives and allocates necessary resources to achieve the objectives. The Strategic level is involved in complex, irregular decision making and focuses on providing policies to govern the entire organization. At the Strategic level, information requirements are ad-hoc in nature and there is reliance on predictive information for long term organizational goals. At the management level, information requirements are focused on assuring that the resources, both human and financial, are used effectively and efficiently to accomplish goals stated at the Strategic level. The characteristics of information required by the management level are different to those required at the Strategic level. The management level deals with rhythmic (but not repetitive) and prescribed procedures. Managers tend to prefer integrated, procedural information that is for a precise task. Furthermore, managers tend to prefer ‘goal congruent’ information systems. At the Operational level, employees are involved in highly structured and specific tasks that are routine and transactional. Tasks carried out at the Operational level are precise and are governed by the organizational rules and procedures. The Operational level tends to deal with real time data focused on individual events with little or no emphasis on key organizational performance indicators. The three levels of employment introduced by (Anthony 1965) tend to be hierarchical on several dimensions: (1) time span of decisions (i.e. long, medium and short term), (2) importance of a single action (i.e. critical, important and common) and (3) the level of judgment (i.e. strong, moderate and modest).

(Singleton, Mclean et al. 1988) used the employment classification of Anthony (1965) and concluded that contemporary organizations need a ‘shared vision’ across the ranks of employment. Furthermore, they emphasized the importance of gathering information from all
employment levels to evaluate a portfolio of Information Systems. (Alloway and Quillard 1983) reported that 79% of frequently used management support systems relied heavily on underlying transaction processing systems. (Cheney and Dickson 1982) found differences in levels of satisfaction across the employment cohorts. (Vlahos and Ferratt 1995) studied perceived value, use of information systems and satisfaction levels across employment cohorts. They found that the ‘line employees’ (similar to Operational level of Anthony, 1965) have a higher satisfaction levels compared to the management and Strategic levels. Furthermore, the (Vlahos and Ferratt 1995) study found higher satisfaction levels among Technical support staff. In the Enterprise Systems implementation success literature, (Bancroft, Seip et al. 1998) identified, (1) effective communication across the employees of the organization, (2) selecting a balanced implementation team, and (3) providing adequate training for employees at all level of the organization as important success factors, emphasizing the importance of full representativeness across the employment cohorts. (Wu, Wang et al. 2002) examined satisfaction levels of Enterprise System users in Taiwan. They identified two main classes of stakeholders in Enterprise Systems implementations: an internal project team and an external contractor. Their research was conducted within the internal implementation team focusing on top managers, key users, end users and the MIS staff. (Wu, Wang et al. 2002) found that in several areas, key users and end users have relatively low levels of satisfaction. Singletary et al. (2003) analyzed qualitative data to illustrate the importance of gathering views on ES-success at different levels in organizations. The three Enterprise Systems employment cohorts they established were (1) managers, (2) IT professionals and (3) end users. (Shang and Seddon 2000; Shang and Seddon 2002) introduced one of few existing Enterprise Systems benefits frameworks after completing in-depth case studies of four Australian utility companies. The Shang and Seddon framework classifies potential Enterprise Systems benefits into 21 lower level measures organized around 5 main categories: Operational benefits, managerial benefits, strategic benefits, IT infrastructure benefits and organizational benefits. The strategic benefits in the Shang and Seddon (2000) ERP benefits framework relate to the Strategic level of Anthony’s (1965) classification, while the operational and managerial benefits are related to the Operational and Management levels. The identification of the IT infrastructure benefits is an important contribution of the Shang and Seddon ERP benefits framework, highlighting the IT benefits that Enterprise Systems generate to an organization. Shang and Seddon (2000; 2002) and (Singletary, Pawlowski et al. 2003) identify Technical staff as a distinct and important employment cohort in Enterprise Systems evaluations. Furthermore, literature suggests that the management level employees as the most appropriate cohort from which to gather perceptions of Enterprise Systems benefits. To the contrary, (Tallon, Kraemer et al. 2000) highlighted the importance of capturing intangible benefits of Enterprise System, proposing Strategic managers as the most appropriate single employment cohort.

In summary, the review of related literature identified four employment cohorts applicable to IS: (1) Strategic, (2) Management, (3) Operational and (4) Technical. The review strongly advocated gathering data from all employment cohorts in IS-success. Moreover, the literature review provided characteristics of each employment cohort and helped to derive guidelines for identifying them in a large multi-respondent data analysis similar to this study. (Sedera, Tan et al. 2006) empirically identified significant differences between the four employment cohorts on Enterprise Systems performance.
**Review of Knowledge Management**

Literature on Knowledge Management and Enterprise Systems are mainly classified into two broad streams: (1) Enterprise Systems for KM, whereby the implemented ES offers KM tools and new organisational knowledge; and (2) KM for Enterprise Systems, where emphasis is on understanding the impact of KM that is required for ES lifecycle-wide health and longevity. This study focuses on the latter stream of research.

In the past years, there has been a growing interest in treating knowledge as a significant organizational resource. The knowledge-based perspective, which emerged in the strategic management literature (Nonaka and Takeuchi 1995; Spender 1996), postulates that the services rendered by tangible resources depend on how they are combined and applied, which is in turn a function of the firm’s knowledge (Nelson and Winter 1982; Grant 1996; Spender 1996). This knowledge (i.e. know-how) is embedded in and carried through multiple entities. Horwitch and Armacost (2002) suggests that managing Knowledge can be viewed as the process of creating, capturing, transferring, and accessing the right knowledge and information when needed to make better decisions, take actions, and deliver results in support of the underlying business strategy.

(Walker 1998) suggests that KM is a process of taking better advantage of an organizational data to determine such things as best practices, to retain tacit knowledge of individuals, to identify field experts, and to enable corporations to react more quickly and more decisively to problems and their competitors. (Hibbard 1997) defines KM as the process of capturing a collective expertise of the organization from different sources (i.e. databases, paper, people), and distributing it to areas to produce the biggest payoff. From a different viewpoint, (ODell and Grayson 1998) define KM as a systematic approach to finding, understanding, and using knowledge to create value. Similarly, (Davenport 1998; Davenport 1998) suggests KM as a process consisting of generation, codification, transfer, and application of knowledge. Adopting a control perspective, van der Speek and Spijkervet (1997) defined KM as the explicit control and management of knowledge within an organization aimed at achieving the objectives of the firm. On a similar note, Wiig (1997) asserts that KM is the systematic, explicit, deliberate building, renewal, and application of knowledge to maximize knowledge-related effectiveness and returns from all knowledge assets of the organization. Taking a technological incline, Raisinghani (2000) describes KM as a process that creates structures which combines the most advanced elements of technological resources and the indispensable input of human response and decision-making. Though technology could certainly facilitate KM, Ponelis and Fairer-Wessels (1998), point out that placing a higher emphasis on technology may lead to failures in KM initiatives.

Alavi and Leidner (2001) interpret KM as a four-staged process of related activities, including: knowledge creation, storage, transfer and application. (ODell and Grayson 1998) argue that many organizations commence KM efforts by focusing on identifying, collecting, and organizing their best practices and internal knowledge. Table 1, akin to Lai and Chu (2000), makes the following observations. The results are intended to present the frameworks without imposing any meta-structure. This is done with the objective of showing the diverse and sometimes conflicting thoughts on KM activities. First, though the level of detail described in each of the above studies differ substantially – with some studies encompassing the entire gamut of KM activities – the others provide a high level overview. Secondly, while there is some agreement with how the KM-process begins of, there is lack of consent on what
activities mark the end of the cycle. With the granularity of the frameworks varies and the number of phases ranging from seven (e.g. Allee 1997) to three (e.g. Walsh and Ungson 1991), four key phases are derived that are common to all literature: (1) acquisition / creation / generation, (2) retention / storage / capture, (3) share / transfer / disseminate and (4) application / utilization / use. Alavi and Leidner (2001) argue that four phases (creation, retention, transfer and use) form the KM-process.

### Table 5: Determining the phases of KM-Process

<table>
<thead>
<tr>
<th>Source</th>
<th>Knowledge Management Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alavi and Leidner (2001)</td>
<td>Creation, Storage, Transfer, Application</td>
</tr>
<tr>
<td>Alle (1997)</td>
<td>Collect, Identify, Create, Share, Apply, Organize, Adapt</td>
</tr>
<tr>
<td>Argote (1999)</td>
<td>Share, Generate, Evaluate, Combine</td>
</tr>
<tr>
<td>Bartezzaghi et al. (1997)</td>
<td>Abstraction and Generalization, Embodiment, Dissemination, Application</td>
</tr>
<tr>
<td>Davenport and Prusak (1998)</td>
<td>Determine Requirements, Capture, Distribute, Use</td>
</tr>
<tr>
<td>Dixon (1992)</td>
<td>Acquire, Distribute, Interpret, Making Meaning, Organizational Memory, Retrieve</td>
</tr>
<tr>
<td>Huber (1991)</td>
<td>Acquisition, Distribution, Interpretation, Organizational Memory</td>
</tr>
<tr>
<td>Nevis et al. (1995)</td>
<td>Acquisition, Sharing, Utilization</td>
</tr>
<tr>
<td>Stein and Zwass (1995)</td>
<td>Acquisition Learning, Retention, Maintenance, Retrieval</td>
</tr>
<tr>
<td>Szulanski (1996)</td>
<td>Initiation, Implementation, Ramp-up, Integration</td>
</tr>
<tr>
<td>Walsh and Ungson (1991)</td>
<td>Acquisition, Storage, Retrieval</td>
</tr>
<tr>
<td>Wiig (1997)</td>
<td>Creation, Capture, Transfer, Use</td>
</tr>
</tbody>
</table>

### The a-priori model

Derived from the review of literature and summarized in table 1, the a-priori model is conceptualized using four constructs to depict the four phases of the KM-process: (1) knowledge creation, (2) knowledge transfer, (3) knowledge retention and (4) knowledge Use / Re-use (See figure 1). The four constructs are operationalized using the ‘KM-process’ of Alavi and Leidner’s (2001), and were adapted from the framework of sociology of knowledge¹ (Berger and Luckman 1967; Gurvith 1971, Holzner and Marx 1979). It is argued that the goodness of KM-process facilitates to increased individual Enterprise Systems knowledge. The development phase (knowledge creation) of the KM-process corresponds with the planning and implementation stages of the ES lifecycle and entails all three key players - consultant, vendor and client (Gable, Heever et al. 1997). It involves developing new content and replacing existing content within the organization’s tacit and explicit

¹ Based on the framework of sociology of knowledge (Berger and Luckman 1967).
knowledge base (Alavi and Leidner, 2001). The external players bring new knowledge on the software and business processes (Davenport, 1998) to the client organization, and the client organization shares organizational knowledge (including business process knowledge) with the external parties.

![Figure 3: The a-priori model](image)

(Sedera, Gable et al. 2003) combine (2) and (3) and suggest 6 main ES knowledge sources, illustrating a 3x2 matrix cross-referencing the 3 key players with 2 knowledge types. (Gupta and Govindarajan 2000) conceptualized knowledge transfer in terms of five elements and emphasized the importance and the richness of the channels of knowledge transfer. Knowledge transfer channels can be informal or formal (Holtham and Courtney 1998). Unscheduled meetings, informal gatherings, and coffee break conversations are examples of the informal transfer of ES related knowledge. Although informal transfer promotes socialization and could be effective in small organizations, it precludes wide dissemination (Alavi and Leidner 2001; Holtham and Courtney 1998). Formal transfers, such as training programs, may ensure wider distribution of knowledge and suits highly context specific knowledge. In this study, the focus of knowledge transfer is limited to the formal knowledge transfer through training programs. Knowledge retention comprises organizational and personal knowledge retention. The individual’s knowledge retention is developed based on one’s observations, experiences and actions (Sanderlands and Stablein 1987). (Markus 2001) suggests that the source of competitive advantage resides not in the knowledge itself, but in the application of the knowledge (its use/re-use). In terms of the level of ES-success, knowledge re-use plays a vital role in every phase of the ES lifecycle, particularly in maintenance and upgrades. However, the effective reuse of knowledge is arguably a more frequent organizational concern and one that is clearly related to ES-success (Dixon, 2000).

The Study Context

The empirical data collection was conducted across 27 Queensland Government agencies that had implemented SAP R/3 in the late 1990s. Queensland is the first Australian state to implement common financial management software state-wide namely; The Queensland Government Financial Management System. In 1995 the state Government of Queensland commenced implementation of SAP Financials across all state Government agencies (later followed by Controlling, Materials Management and in some agencies Human Resources) and Queensland Government is one of the largest SAP installations in Australia. The Queensland Government provided an ideal context, being ‘relatively’ simple and homogenous: all Agencies were implementing the same ES (SAP R/3); all Agencies

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2 The other elements discussed by Gupta and Govindarajan (2000) include (1) perceived value of the source unit’s knowledge, (2) motivational disposition of the source (i.e. their willingness to share knowledge), (3) motivational disposition of the receiving unit, (4) the absorptive capacity of the receiving unit.
implemented around the same time and had been operational for approximately 4 years, and thus were at a similar point in the ES lifecycle, even more so given all are Agencies of the same State Government.

The Survey
A survey instrument was designed to operationalize constructs of KM-process of figure 1 using the items depicted in table 2 (The construct validity of items established by (Sedera and Gable 2006). All items were scored on a seven-point Likert scale with the end values (1) ‘Strongly disagree’ and (7) ‘Strongly Agree’, and the middle value (4) 'Neutral'. The survey gathered additional demographic details on respondents’ employment title (e.g. Director, Business Analyst, ABAP consultant). Furthermore, the respondents were asked to provide a brief description of their involvement with the SAP system. Supplementary information on the organizational structure, characteristics of the SAP system and the number of users was gathered from more objective sources. In addition to the items of table 2, the questionnaire included two criterion items aimed at gauging the respondent’s perception of overall KM-process: (1) ‘Overall, SAP system related knowledge has been managed satisfactorily’ and the gauging the adequacy of knowledge of employees: (2) ‘Users have sufficient SAP knowledge’.

Table 6: Measures employed in the study

<table>
<thead>
<tr>
<th>Survey Item</th>
<th>Type of Knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall, SAP help desk knowledge has been appropriate.</td>
<td>HelpDesk</td>
</tr>
<tr>
<td>Overall, SAP knowledge possessed by the vendor (SAP Australia) has been appropriate.</td>
<td>External Software Knowledge Creation</td>
</tr>
<tr>
<td>Overall, SAP knowledge possessed by the consultants has been appropriate.</td>
<td>External Software Knowledge Creation</td>
</tr>
<tr>
<td>Overall, SAP knowledge possessed by the agency has been appropriate.</td>
<td>Internal Knowledge</td>
</tr>
<tr>
<td>Training in SAP has been appropriate.</td>
<td>Knowledge Transfer</td>
</tr>
<tr>
<td>Overall, SAP staff and knowledge retention strategies have been effective.</td>
<td>Knowledge Retention</td>
</tr>
<tr>
<td>Overall, knowledge of the agency, possessed by the vendor (SAP Australia) has been appropriate.</td>
<td>External Process Knowledge Creation</td>
</tr>
<tr>
<td>Overall, knowledge of the agency, possessed by the consultants has been appropriate.</td>
<td>External Process Knowledge Creation</td>
</tr>
<tr>
<td>Overall, the agency's knowledge of itself (e.g. Business processes, information requirements, internal policies, etc.) has been appropriate.</td>
<td>Internal Process Knowledge Creation</td>
</tr>
<tr>
<td>Overall, SAP knowledge has been re-used effectively and efficiently by the agency.</td>
<td>Knowledge Re/ Use</td>
</tr>
<tr>
<td>The agency has retained the knowledge necessary to adapt the SAP system when required</td>
<td>Knowledge Retention</td>
</tr>
<tr>
<td>Overall, SAP system related knowledge has been managed satisfactorily.</td>
<td>Goodness of KM process (criterion 1)</td>
</tr>
<tr>
<td>Users have sufficient SAP knowledge.</td>
<td>Individual Knowledge (criterion 2)</td>
</tr>
</tbody>
</table>

The Analysis
Using statistical analyses, this section addresses the following objectives: (1) whether the employment cohorts have different views on the phases of KM-process, (2) whether all employment cohorts have sufficient knowledge to comment on the phases of the KM-process, and (3) whether certain employment cohorts place a greater emphasis on some phases of the KM-process.

Descriptive Statistics
The survey received a total of 319 responses representing 27 organizations. Nine responses were removed from the data analysis due to perceived frivolity, yielding 310 valid responses for analysis purposes. Using the characteristics identified in the literature review, respondents were classified into four employment cohorts (i.e. Strategic, Management, Operational and Technical) based on their employment title and the demographic information pertaining to their involvement with the SAP system.
In order to minimize individual errors of judgment, three academics and two senior business analysts from surveyed organizations, participated in the classification of respondents into cohorts. Participants individually mapped a sample of respondents into the four employment cohorts and compared results. Guidelines were designed to increase the systemisation, repeatability and the validity of the process. Comparison of the individual classifications revealed an average inter-coder agreement of 80%\(^3\) (Krippendorff 1980). The classification exercise revealed (see table 3) 11% of respondents were from the Strategic level, 39% from Management level, 35% were from the Operational levels and 15% represented Technical staff. All indications suggest that this distribution is representative of users of the SAP system in Queensland Government. Table 4 and figure 2 demonstrate the mean values of the phases of KM-process across the four employment cohorts.

### Table 7: Classification of Respondents

<table>
<thead>
<tr>
<th></th>
<th>#</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategic</td>
<td>35</td>
<td>11%</td>
</tr>
<tr>
<td>Management</td>
<td>122</td>
<td>39%</td>
</tr>
<tr>
<td>Operational</td>
<td>108</td>
<td>35%</td>
</tr>
<tr>
<td>Technical</td>
<td>45</td>
<td>15%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>310</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

Following broad observations are made from results in table 4 and figure 2. It is observed that for *all phases of KM-process* (see highlighted area “A”), mean values ascend according to the employment hierarchy, from the highest level of employment cohort (strategic) with the highest mean value, followed by management, and operational with the lowest mean score. Moreover, it is observed that the criterion item that assesses the *knowledge of the uses* (i.e. “users have adequate knowledge of SAP”), demonstrates the lowest mean score within each of the employment cohorts (see highlighted area “B”). To the contrary, the ‘appropriateness of help desk knowledge’ reports the highest mean score within each employment cohort (See highlighted area C). Furthermore, figure 2 alludes to the possible differences in opinions in relation to knowledge transfer across all employment cohorts (see highlighted area “D”). This prompted the importance of conducting a thorough statistical analysis to determine whether there are significant differences on Knowledge transfer, across the employment cohorts.

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\(^3\) Krippendorff (1980) recommends inter-coder reliability of at least 70% and suggests that any significant discrepancies should be discussed until consensus on the mappings is reached.
Comparative Statistics

In order to assess whether the employment cohorts demonstrate different views across the phases of the KM-process and especially to investigate preliminary findings on knowledge transfer, paired t-test for the four employment cohorts across the phases was carried out. Table 6 depicts the results of the analysis, with significant differences highlighted. Confirming the exploratory findings of figure 2, table 5 demonstrates significant differences in perceptions on knowledge transfer (i.e. training programs) between all employment cohort pairs, except between strategic and management. Moreover, it is shown that Strategic and Management cohorts do not demonstrate any differences in opinions on any phases of KM-process. Conversely, table 5 demonstrates significant differences between Strategic and Technical staff in relation to all phases of the KM-process, but one (knowledge creation). The two criterion items did not demonstrate any significant differences between employment cohorts.

Table 9: Results of paired t-test

<table>
<thead>
<tr>
<th>Employment Cohorts</th>
<th>Creation t value</th>
<th>df</th>
<th>Sig (2-tailed)</th>
<th>Transfer t value</th>
<th>df</th>
<th>Sig (2-tailed)</th>
<th>Use / Re-Use t value</th>
<th>df</th>
<th>Sig (2-tailed)</th>
<th>Retention t value</th>
<th>df</th>
<th>Sig (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategic Management</td>
<td>-0.513</td>
<td>155</td>
<td>0.609</td>
<td>-1.035</td>
<td>155</td>
<td>0.302</td>
<td>-0.926</td>
<td>155</td>
<td>0.356</td>
<td>-1.137</td>
<td>155</td>
<td>0.257</td>
</tr>
<tr>
<td>Strategic Operational</td>
<td>-0.518</td>
<td>141</td>
<td>0.605</td>
<td>-2.052</td>
<td>141</td>
<td>0.042</td>
<td>-1.05</td>
<td>141</td>
<td>0.296</td>
<td>-1.539</td>
<td>141</td>
<td>0.126</td>
</tr>
<tr>
<td>Strategic Technical</td>
<td>1.188</td>
<td>78</td>
<td>0.238</td>
<td>2.244</td>
<td>78</td>
<td>0.028</td>
<td>2.197</td>
<td>78</td>
<td>0.031</td>
<td>1.909</td>
<td>78</td>
<td>0.060</td>
</tr>
<tr>
<td>Management Operational</td>
<td>-0.019</td>
<td>228</td>
<td>0.985</td>
<td>1.684</td>
<td>228</td>
<td>0.093</td>
<td>0.196</td>
<td>228</td>
<td>0.845</td>
<td>0.56</td>
<td>228</td>
<td>0.576</td>
</tr>
<tr>
<td>Management Technical</td>
<td>0.889</td>
<td>165</td>
<td>0.375</td>
<td>1.739</td>
<td>165</td>
<td>0.084</td>
<td>1.739</td>
<td>165</td>
<td>0.084</td>
<td>1.061</td>
<td>165</td>
<td>0.290</td>
</tr>
<tr>
<td>Operational Technical</td>
<td>0.922</td>
<td>151</td>
<td>0.358</td>
<td>0.376</td>
<td>151</td>
<td>0.707</td>
<td>1.558</td>
<td>151</td>
<td>0.121</td>
<td>0.635</td>
<td>151</td>
<td>0.526</td>
</tr>
</tbody>
</table>

Correlation Analysis

Next, in order to assess whether the four employment cohorts place equal emphasis on every phase of KM-process, the two criterion items were correlated with the four phases of KM-
process across the employment cohorts. Arguably, the correlation coefficients demonstrate the ‘relative emphases’ that each cohort place on the phases of the KM-process.

Table 10: Correlation Analysis

<table>
<thead>
<tr>
<th></th>
<th>Strategic</th>
<th>Management</th>
<th>Operational</th>
<th>Technical</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
<td>B</td>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td>Overall satisfaction with the process</td>
<td>1.00</td>
<td>0.11</td>
<td>1.00</td>
<td>0.61</td>
</tr>
<tr>
<td>Overall knowledge of the individual</td>
<td>0.11</td>
<td>1.00</td>
<td>0.61</td>
<td>1.00</td>
</tr>
<tr>
<td>Creation</td>
<td>0.37</td>
<td>0.46</td>
<td>0.53</td>
<td>0.46</td>
</tr>
<tr>
<td>Transfer</td>
<td>0.36</td>
<td>0.46</td>
<td>0.61</td>
<td>0.83</td>
</tr>
<tr>
<td>User / Re-Use</td>
<td>0.61</td>
<td>0.31</td>
<td>0.61</td>
<td>0.53</td>
</tr>
<tr>
<td>Retention</td>
<td>0.66</td>
<td>0.28</td>
<td>0.64</td>
<td>0.54</td>
</tr>
</tbody>
</table>

Analyzing the correlations between the dimension averages and the two criterion items (marked as A and B in table 6), it is evident that all employment cohorts place a relatively greater emphasis on knowledge retention when evaluating the goodness of a KM-process (A with F). However, the relative emphasis shifts to knowledge transfer, when the respondents evaluate the individual knowledge where it demonstrates the highest correlation across all employment cohorts (B with D). Moreover, all employment cohorts demonstrate significant correlations with all other phases of KM-process.

**Observations and Interpretations**

Though past IS studies have reported anecdotal evidence of a relationship between KM and ES performance, understanding of multiple stakeholder (reflected in this study as ‘employment cohorts’) perspective have been lacking. With the main objective of investigating the purported differences of employment cohorts in ES KM initiatives, this study analysed data gathered from 310 respondents representing 27 organizations that had implemented SAP R/3 in 1990s. The KM-process, based on Alavi and Leidner (2001), was extended through a review of 13 relevant studies, while the four employment cohorts were derived inductively from the study data. The following observations and interpretations are made using the descriptive and the comparative statistics.

**Overall Assessment:** As discussed earlier, the main purpose of this research was to investigate the purported differences between the key employment cohorts across the phases of the KM-process. It was observed that the employment cohorts posses differentiating views on certain phases of the KM-process. Knowledge transfer was identified as the only phase where the employment cohorts have significant differences in perceptions (demonstrated using the independent sample t-tests), possibly implying that every employment cohort requires a special training program rather than a standard knowledge transfer process. This is consistent with the literature on employment cohorts (e.g. Anthony, 1965) where it amplifies the distinctly different requirements from an Enterprise System. This also demonstrates the importance of gathering perceptions from multiple stakeholders.

**KM-Phases:** The correlation analysis demonstrated that when assessing the goodness of the KM-process, all employment cohorts place a higher importance on knowledge retention than other phases. Similarly, knowledge transfer was perceived more important than other phases, when assessing the individual knowledge. The significant correlations between all phases and the two criterion items across the four employment cohorts demonstrate that all employment cohorts are reasonably informed to comment on all aspects of a KM initiative.
Lack of Formal Training for operational staff: The correlations analysis – where knowledge transfer had the highest correlation for criterion item 2 – and descriptive statistics – where the strategic and management cohorts report above-median mean values for knowledge transfer – demonstrate inadequate training for operational and technical staff at the sampled organizations. As suggested in many studies (Markus and Tanis 2000; Sumner 2000), and attested by the strongest correlation that knowledge transfer demonstrated in measuring the ES-knowledge possessed by an individual, these organizations should aim to address issues by providing appropriate training on Enterprise Systems.

Knowledge Retention: When assessing the goodness of the overall KM initiative, all employment cohorts placed a stronger emphasis on knowledge retention, compared to the other phases. As (Gable, Heever et al. 1997) identified ‘staff poaching’ and ‘knowledge drain’ due to skill-shortage of ES experience and expertise in the marketplace may have contributed to the given importance to the adequate knowledge retention strategies.

Conclusion
In conclusion, this paper addressed several key questions pertaining to stakeholder perspective of KM initiatives. The study empirically demonstrated that different employment cohorts possess differentiating views on certain phases of KM-process. It highlighted that all employment cohorts place a stronger emphasis on knowledge transfer (i.e. training), when assessing the knowledge they possess. The study also emphasized the importance of knowledge retention for the overall success of the KM initiative. It is observed that the respondents’ ‘Perspective on measurement’ is an important design consideration in such evaluation, especially, when the breadth of contemporary Information Systems is not limited a single employment cohort. The researchers should be cautious in specifying the employment cohorts to avoid any perplexing results. Though the results of this study are heartening, the present study has several limitations. First, the data analyzed was gathered only from public sector organizations using a single type of Enterprise System application (i.e. SAP R/3), which could affect the generalizability of the findings (Messick 1995). Second, operationalization of the KM-process is rather restricted in the current study and should be expanded to facilitate further understanding.

References


