

Factors Contributing to the Effectiveness of Knowledge Application Capability of IT Service Desk Staff Members in Higher Education Sector in Australia

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ABSTRACT

Information Technology Service Management (ITSM) is a discipline that deals with the management of IT services. IT service desk (SD) function, which is part of the technical support that maintains IT services, is one of the most important functions in ITSM. SD staff members rely on service knowledge management system (SKMS) (often referred to as explicit knowledge) when they perform processes and activities (e.g. incident management, request fulfilment). When no knowledge is found in the SKMS, the personal knowledge (i.e. tacit knowledge) of the staff members is used for that purpose. Prior studies examined several aspects of knowledge management (KM) in ITSM functions, such as knowledge creation and sharing. However, mere creation and sharing of knowledge do not necessarily create value or improve the performance of ITSM functions. According to knowledge-based theories, organisational performance depends on knowledge application capability (KAC) of individuals, rather than on the knowledge itself. SD staff have several reasons to create and access knowledge but not apply it. Causes are not clear yet, but include lack of opportunity and time, risk and distrust of the source of knowledge. Any effectiveness of KAC in that aspect would most likely improve the performance of SD function (e.g. reduce time or costs of handling an incident). This study attempts to understand factors that contribute to the effectiveness of KAC in SD function. The study employed a qualitative approach (interviews) to elicit input from 23 SD managers who work in Higher Education Sector in Australia. The results of the interviews are reported in this article.

Keywords: Information Technology Service Management (ITSM), Service Desk Function, Knowledge Management, Knowledge Application Capability, IT Incident Management

1. INTRODUCTION

The importance of knowledge in ITSM has been highlighted by both academic and practitioner (Iden & Eikebrokk, 2014; Trusson, Doherty, & Hislop, 2014; X. Wang, Clay, & Forsgren, 2015). IT SD function is an important cornerstone of any ITSM, and performed by a group of knowledgeable workers (managers and employees) who have technical skills and expertise to handle IT incidents. This is due to its role as a launching pad for addressing variety of IT incidents and problems (e.g. failures, questions, queries) (Löhe & Legner, 2013; Ortiz & Benitez, 2014; van Bon et al., 2007). SD staff rely on both SKMS and the personal knowledge of employees when they perform their tasks (i.e. incident management, request management) (Conger & Probst, 2014). In both cases, the performance of SD depends on the application of knowledge rather than on the knowledge itself (Alavi & Leidner, 2001). Thus, it is important for organisations to foster Knowledge Application Capability Effectiveness (KACE) at all processes of SD function.

Research shows that it is not knowledge per se that improves the performance of organisations, but the KACE of individuals in organisations (Davenport, De Long, & Beers, 1998; Desta, Garfield, & Meshesha, 2014; Maier & Schmidt, 2014; Manohar Singh & Gupta, 2014). Based on the definition of Kim and Lee (2010), KACE in this paper refers to the process of applying (i.e. act upon it) available knowledge for the purpose of solving problems and dealing with challenges in the IT SD function (e.g. IT incidents). Although some previous research has contributed greatly to our understanding of how individuals create and share knowledge (Conger & Probst, 2014; Graupner, Basu, & Singhal, 2009; Liang & Baozhang, 2009; Nabiollahi, Alias, & Sahibuddin, 2011), significant work remains to be done in that area. This paper attempts to address this issue through a qualitative methodology, using interviews conducted with IT managers in Higher Education Sector in Australia (HESA). This paper first provides a review of literature on both KM and ITSM, which is followed by a theoretical framework underpinning

the research gap. Then, data collection method and analysis are given. Next section presents the findings and discussions. The paper ends with conclusions and future research directions.

2. LITERATURE REVIEW

Knowledge refers to the understanding about an subject which a person possesses by experience or study, and which is either in a person's mind (often referred to as tacit knowledge) or known by people generally (often referred to as explicit knowledge). Moreover, it can be defined as the use of detailed information in a specific work (Moreno-Jiménez, Cardeñosa, Gallardo, & de la Villa-Moreno, 2014). Whatever knowledge is made available, the value is reflected in its ability to support functions and processes (Jain, 2013; Lyles, 2014; Muneer, Iqbal, Khan, & Long, 2014). IT service desk function (ITSDF) relies on both types of knowledge in addressing all IT incidents (e.g. managing security incident) and service requests (e.g. providing internet access to an employee) (Peppard, 2003; van Bon et al., 2007). For this reason, KACE in SD is required for better performance of the ITSDF (Desta et al., 2014). In ITSM context, knowledge management (KM) is considered as a process in the service transition phase and is important for improving the efficiency and reducing the cost of the entire lifecycle of the service. KM is supported by the SKMS which is defined as a "set of tools and databases that are used to manage knowledge and information of IT services" (van Bon et al., 2007).

ITSM research has emanated for many academic disciplines, and researchers therefore tend to conceptualise it in different ways (Shahsavarani & Ji, 2011). In a broad perspective, ITSM can be understood as a new method of managing IT services in which emphasis should be given to the quality of the services rather than to the IT assets (Cronholm & Salomonson, 2014; Wan & Jones, 2013). The output of this concept focuses on how organisations can provide high quality IT services to their customers (Hedge, Bhagwatwar, Bala, & Venkataraman, 2014). ITSM covers all IT service functions and activities, and seeks to integrate IT operations and organisation objectives (Shahsavarani & Ji, 2011). In other words, ITSM in its functions and processes aims to meet any organisation's objectives such as making profit, reducing costs, increasing sales, and even entering new markets by producing new or modified services (Brugh & Silvius, 2009; Iden & Eikebrokk, 2014).

In recent years, there has been an immense focus on ITSM research area by different researchers. The majority of ITSM researchers, who have been interested in KM, have focused only on knowledge creation and sharing, but no knowledge application. Over 180 studies have been published in journals and conference proceedings to date examining issues related to the ITSM, but only seven of them have addressed aspect of KM (Conger & Probst, 2014; Shahsavarani & Ji, 2011; Trusson et al., 2014). For instance, Graupner, Basu, and Singhal (2009) aimed to design a domain wiki for better ITIL knowledge-sharing. Another example is Jantti and Eerola (2006) who discussed using KM in ITSM for Problem Management (PM). The main aim of their work was to evaluate the usefulness of the IT service PM model as well as to present a theory-based model for PM. In their research, Jantti and Eerola (2006) found that there is no knowledge base available for the SD, which causes difficulties. In fact, nowadays ITSD staff members has many reasons to create and share knowledge but not to apply it (act upon it) (Pawliczek & Rössler, 2016; Waswas & Kraishan, 2017). Thus, understanding how individuals apply the available knowledge in addressing IT incidents is an important aspect in any KM initiative.

IS researchers continue to provide a significant contribution to the field of KM in ITSM, but they still neglect to deal specifically with KACE in ITSM. As indicated by Naya, Nayak, and Penukonda (2014) in their profound research, only 30 percent of the knowledge in SKMS is applied, and the remaining 70 percent is left behind in the system. In a similar study Conger and Probst (2014), reported that using all the available knowledge (e.g. personal, scatter and organisational) can help in reducing the cost and time of IT incident management. These studies leave several important questions unanswered, that is, how knowledge derived from different sources can be applied efficiently in ITSM. Evidently, research of KM in ITSM is still in its infancy and requires further investigation.

In ITSM, two types of knowledge (organisational and personal) are important to be applied for effective incident management handling (Gold, Arvind Malhotra, & Segars, 2001; Lawson, Petersen, Cousins, & Handfield, 2009; S. Wang, Noe, & Wang, 2014). At the outset, ITSM staff members rely on SKMS that holds knowledge databases (i.e. KEDB and FAQ) for matching IT incidents (Conger & Probst, 2014). When no knowledge is found there, the personal knowledge (tacit knowledge) of the individuals is often used for the purpose (Conger & Probst, 2014). According to Alavi and Tiwana (2002) and Manohar Singh and Gupta (2014), that knowledge, which involves personal experience and long-time practice of a person, is very hard to be applied for several reasons, including but not limited to lack of time or opportunity and risk aversion (Gold et al., 2001; Manohar Singh & Gupta, 2014). Typically, a great deal of both types of knowledge is not used, thereby creating so-called "knowledge gap" (Conger & Probst, 2014; Pfeffer & Sutton, 2000; Trusson et al., 2014). The application of the available

knowledge is vital for reducing the cost and time of IT incidents, and yet still remains one of the challenges in the area of ITSM (Trusson et al., 2014). Thus, the research question of this paper can be stated as: what are the factors that contribute the effectiveness of knowledge application capability in ITSM.

3. RESEARCH METHODS

The empirical study was carried out using semi-structured interviews with IT SD managers in Higher Education Sector in Australia (HESA). Those managers were chosen as they should be able to provide data required for the purpose of the paper. The interviews were intended to confirm or refute the assumptions made based on the literature review. These interviews, conducted between October and December 2016, obtained inputs from 23 IT SD managers in three groups: IT service desk team leaders (12 individuals), IT service desk director (8 individuals), and IT service desk deputy managers (3 individuals).

Informed by existing literature, the interview protocol was designed and developed (Creswell, 2012). All interviews were conducted by the chief investigator who was trained through qualitative coursework. Participants were recruited via email, with invitation sent to 67 IT SD managers. Of those receiving an invitation, 25.37% (17) of them replied to the invitation. An additional 6 participants were recruited in the study through snowball sampling, for a total of 23 participants. Participants were allowed to choose the most convenient option; to be interviews via telephone or to meet face to face. All participants chose to be interviewed by telephone. There was no compensation for participation. Prior to the interview, the interviewees received a package to familiarize them with the research terms and keywords.

The interviews were digitally recorded and lasted between 30-35 minutes while researcher hand-wrote detailed notes as well. Each interview was transcribed verbatim and coded before the next interview took place. Four interviews were excluded from the analysis because of technical recording problems or incomplete and ambiguous answers. A total of 19 interviews were then available and provided a lot of valuable information needed for the study. The demographic information of the participants is presented in Table 1.

4. DATA ANALYSIS AND RESULTS

The study reports the results of the data analysis of the semi-structured interviews preformed to address the research question. Following the recommendations of Miles and Huberman (1984), the data analysis was established. A total of four major themes emerged from the data of the semi-structured interview analysis that indicate the most important factors influencing KACE in ITSM. These themes have different roles regarding how and at which point they contribute to affecting KACE in IT SD function. When considering the themes, it should be noticed that some of these themes operate with SKMS (tacit knowledge) and some with the personal knowledge (tacit knowledge) of the IT SD staff members. The study has presented these themes in the following section according to their frequency in the interviews.

Table 1: Interviewees demographics

	N	%
Gender		
Female	6	26.09
Male	17	73.91
Total	23	
Year of experience		
1-5 years	6	26.09
6-10 years	8	34.78
11-15 years	3	13.04
16-20 years	5	21.74
Over 20 years	1	4.35
Total	23	
Position		
IT service desk director	8	34.78
IT service desk deputy manager	3	13.04
IT service desk team leader	12	52.17
Total	23	

4.1. Social Interaction

Many participants embraced the idea of interaction (when two or more people communicate with or react to each other) during the work and out of work. Up to 16 participants (70%) articulated agreement with such notion. Participants describes how they use their personal knowledge in addressing IT incidents as a results of being socialised in the workplace. In the context of such interaction, knowledge is applied through daily activates between mentors and newcomers. *“For me, it’s a way to show others what I’m capable of”* (DZ10). What is more, such factor is helpful in enhancing collaboration and establishing a learning community. Individuals can apply their ideas and images when they interact with each other. In fact, poor socialisation among staff members may erode the available knowledge and eventually affect the performance of IT service desk function, as illuminated in the following comment:

Well, yeah, that’s right I suppose. I have to say that when I first started my job, I had a lot of information about software security, but because I had to do administrative and I was alone, I feel that my knowledge in that aspect has receded considerably as a result of poor communication with other staff members (QS15).

The application of available knowledge, either organisational or personal, in IT service desk function does not please the IT service desk managers. Another IT managers has noted that difficulty when he explained:

Asking IT employees to apply or use their knowledge is problematic and the reasons for that are yet to be understood. Sometimes people have capacity to handle difficult IT incidents, but they don’t. When I was taking about that the other day with my team, some guy said to me that he feels that his knowledge is valuable for his future career” (GM9).

Overall, these findings indicate that as a result of social interaction, IT staff members would likely apply their knowledge in the process of IT incident management. Thus,

4.2. Expansive Responsibility

Providing employees with temporary responsivity, as opposed permanent responsibility, for dealing with complex or time consuming IT incidents in certain ways was perceived as something surprisingly positive to the KACE in It service desk function. Multiple participants (65 %) indicated that they would be interested

Well from my point of view this is really a useful means for persuading a staff member to their best. I think that’s very important. It’s like really something positive. If you allow me to take over responsibility for dealing with a complex IT incident, it gives me the feeling that I’m in control of things, even though it’s sometimes risky to be in such place. Anyhow, responsibility, even if it’s for short time, creates something positive and provides an opportunity for someone to unleash their power to solve too difficult problems. So, I think it’s really a positive thing (AS22).

In most cases, using this concept to impact KACE, for the benefit of IM, was perceived as something positive and yet not used in the IT service desk function in HESA. Expansive responsibilities allow IT employees to absorb the bigger picture faster and make connections (Wihlman, Hoppe, Wihlman, & Sandmark, 2014).

4.3. Internalisation of Knowledge

Available knowledge is applied through the internalisation refers to the actions in which newly created explicit knowledge is converted into tacit knowledge through the process of learning by doing (Nonaka, 1994). For instance, in the job of training, internalisation can be used as a method of simulation and experiment (Nonaka et al., 1998). In this case, SD employees for example, have an opportunity to apply their personal knowledge to handle a complex incident (e.g. security incident). Indeed, this is a sort of KC but it could be a method of KA as well, because Alavi and Tiwana (2002) argued that using existing knowledge for addressing the problems is considered as KAC. The results revealed that internalisation of knowledge is important for KACE of IT service desk employees.

Well, yes, I do actually a lot, I think that aspect is important. When you look at healthy IT service desk function, what they do, they try to accommodate knowledgeable people as much as possible in the process of IT incident management. In other words, how to absorb the knowledge/idea/experience, etc. of individuals so that it becomes part of the performance. Unfortunately it’s getting more difficult to see that and there are reasons for that because in many ways things are breaking down and not because of the availability of knowledge bust in fact because of the absence of KAC. Our IT managers always have looked at the people who are readily happy to accommodate the knowledge of others and vice versa (QU16).

This quotation suggests that the ability to accommodate individuals who are willing to apply their skills or knowledge in handling IT incidents would encourage other to do so.

4.4. Organisational Directives

In general, IT SD employees follow the official instructions to perform a wide range of tasks (e.g. apply available knowledge for an IT incident). From the perspective of organisational knowledge creation theory (OKCT), this refers to the use of “organisational directives” or official direction (Grant & Baden-Fuller, 2004). In some circumstances, however, their application of knowledge in addressing IT incidents is limited to certain types of knowledge that is explicitly mentioned in the SKMS. For that reason, IT SD managers stated that some employees had become reluctant to follow the organisational directives in addressing IT incidents when it comes to the tacit knowledge (i.e. personal knowledge). One IT SD manager articulated that:

Some people follow the rules very strongly, even to extent of being prepared to not providing any response for an incident until they are given orders or permeation by their managers. Now I have to do the job myself, whereas the solution for that incident in the system.... using the available knowledge in incident management remains a significant challenge in our department. In my estimation, team leaders play an important role here. Those leaders can help others to adhere closely to the official instructions and rules when they address IT incidents.

Another IT manager also noted the importance of organisational directives for KACE in IT service desk function.

Well, from my point of view a means like this will help knowledge to be applied in low cost. We operate four service desk locations distributed across the organisation. IT incidents management process should be guided by official instruction and procedures based upon service level agreement (SLA). These official instructions need to embody the KAC of our employees.

5. CONCLUSION

To date, the vast majority of studies on knowledge management in ITSM are narrow and limited to knowledge creation and sharing (Conger & Probst, 2014; Shahsavarani & Ji, 2011; Trusson et al., 2014). As many researchers (Desta et al., 2014; Manohar Singh & Gupta, 2014; Nonaka, Toyama, & Konno, 2005; Sveiby, 2001) have pointed out, that individuals in organisation have many reasons to create and share knowledge but not to apply it (act upon it). Despite recent initiatives in the literature, no prior research has addressed the factors affecting KACE in IT SD function. Empirical evidences about why some individuals are reluctant to use or apply the available knowledge are known (i.e. risk aversion, lack of time or opportunity) but, have not been elucidated yet.

To address that gap, this paper has sought to show how certain factors affect KACE on the IT SD staff members in AHES. A qualitative study provided insights into how some factors impact KACE in one of the most important area of ITSM (i.e. IT SD function). However, the findings of this paper are not generalizable, but results can be transferable and have utility in that aspect. Based on results, it was concluded that some social and organisational factors are deemed most important by participants. These findings are consistent with some research studies related to how KACE can be affected (Conger & Probst, 2014; Nabiollahi, Alias, & Sahibuddin, 2011; Trusson et al., 2014). Findings articulate the importance of building a strong environment for IT staff members to use and practice the available knowledge at the workplace. The main argument in this study strongly supported through specific comments made by participants.

6. LIMITATION AND FUTURE STUDIES

As this paper is necessarily preliminary, it represents one of the first attempts to address KACE in ITSM in HESA. Four themes were emerged form data including: social interaction, expensive responsibility, internalisation of knowledge and organisational directives. Considering the value of these factors in improving KACE of IT SD function, we urge IS researchers to move beyond those debates why individuals have many reasons to create and share knowledge but not to apply it (act upon it). Therefore, additional research is needed in this area in order to deeply understand the effect of other factors or even study other settings (e.g. health or banking). We hope that this will be a launching pad for future studies in the area of knowledge management in ITSM.

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