

## Towards Effective Knowledge Application Capability in ITSM through Socialisation, Externalisation, Internalisation and Combination.

**Abdulazeez Ftahi<sup>1</sup>, Abdul Hafeez-Baig<sup>2</sup> Raj Gururajan<sup>2</sup>,**

*<sup>1</sup>PhD student at USQ University – QLD, Australia*

*<sup>2</sup>Supervisory team, USQ University, QLD, Australia*

**\*Mosul University, Iraq – USQ University, Australia**

Prior research has focused on issues that are relevant to knowledge creation and sharing in Information Technology Service Management ITSM. Instead, the purpose of this paper is to examine how knowledge application capability effectiveness (KACE) in ITSM can be affected through several knowledge management processes. In ITSM, IT service desk function is on the most important functions that keeps and maintains IT services running. This function deals with various IT problems and incidents on a daily basis through utilisation of all available knowledge resources (i.e. organisational knowledge and personal knowledge). A framework was developed to identify factors affect KACE in IT service desk function. The framework is based on Nonaka (1994) model of organisational knowledge creation. The framework focuses upon socialisation, externalisation, internalisation and combination as contributors to the formation of KACE. The empirical research was conducted at group of eight (Go8) Universities in Australia, based on set of semi-structured interviews. Four major factors are shown to be related to the extent to which IT SD managers feel that KACE can be influenced. The results are founded upon a qualitative data in which manual and computer-aided content analysis were undertaken.

**Keywords:** Knowledge implementation, knowledge conversion modes, IT services, service desk function, incident management.

## 1 Introduction

Effective knowledge implementation or supplication is considered key to the success of contemporary organisations in which Information Technology Service management (ITSM) has become an integral part of managing their IT services. In common with many others processes and functions, IT service function (also referred to as Help desk or call centre) is defined as a set of organisational IT activities which provide support to customers in the form of services (Ortiz & Benitez, 2014). Through the utilisation of knowledge resources, IT services are provided at less cost and less risk by the contracted company as part of its responsibility for addressing IT issues (e.g. data breach, hardware failure, software compromise, hacking, viruses, fraud, and data theft) (C. Trusson, Hislop, & Doherty, 2017). Such IT issues or problems could be detrimental to an organisation as a whole, and even impacting the personal data of its customers (Tanovic & Mastorakis, 2016). Therefore, it is very important to consider the various factors associated with the knowledge application capability effectiveness (KACE). Kim and Lee (2010), defines KACE as a process of applying (i.e. act upon it) available knowledge for the purpose of solving problems and dealing with challenges.

Previous research has contributed greatly to our understanding of knowledge creation (KC) and knowledge sharing (KS) in ITSM (Conger & Probst, 2014; Graupner, Basu, & Singhal, 2009; Liang & Baozhang, 2009). However, KACE as an important aspect for the performance of an organisation as a whole (Alavi & Tiwana, 2002; Grant & Baden-Fuller, 2004; Nickerson & Zenger, 2004) is still neglected in the literature of ITSM. Although some of the prior attempts have identified the importance of KACE in improving the performance and creating value of knowledge resources in ITSM, theses attempts have not focused on factors that could affect KACE (Davenport & Prusak, 1998; C. R. Trusson, Doherty, & Hislop, 2014). This study attempts to address this issue through a qualitative methodology, using interviews conducted with some IT service desk managers in selected universities in Australia. The remainder of this paper is structured as follows. In the following section, a review of related literature is provided. Next, we outline the theoretical framework, rooting this in literature of KM and ITSM for public services. In the following section, data collection and analysis and findings are explained. The paper ends with conclusions and future research directions.

### 1.1 Literature review

IT services have grown rapidly over the past years and become supreme and integral parts of contemporary organisations across the globe. According to World Development Report 2017, IT services in 2016 represented 85% of the United States' GDP only, and they are increasing in numbers for the rest of the world (*Governance and The Law*, 2017). The growth in demand and expenditure currently being experienced in this sector is also accompanied by the rise in managing these services. This rise in the rate of IT services has led managers in organisations

to realise the importance of Information Technology Service Management (ITSM) (Cronholm & Salomonson, 2014; C. R. Trusson et al., 2014). Recent research has shown that ITSM is one of the most salient construct in today's organisations (Conger & Probst, 2014; Nabiollahi, Alias, & Sahibuddin, 2011; Shahsavarani & Ji, 2011; van Bon et al., 2007). Perhaps this is because it is a discipline for managing IT services which are important in both private and public organisations (Cronholm & Salomonson, 2014). In accord with this view, it is likely that IT service industry will dominate the world scene for the immediate future.

ITSM is a mix of technology, information and knowledge that forms a new method of managing IT services, in which emphasis is given to the quality of the services rather than to the IT assets (Conger & Probst, 2014; C. R. Trusson et al., 2014; van Bon et al., 2007; Wan & Jones, 2013). ITSM is a relatively new discipline focused 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). ITSM in its functions and processes, aims to meet any organisation's objectives (i.e. making profit, reducing costs, increasing sales, and even entering new markets) and minimise service disruption. (Brugh & Silvius, 2009; Iden & Eikebrokk, 2013). This can be achieved when the response time to an IT service incident or failure is minimised (Jäntti & Hotti, 2016).

Scholars in that area have long recognised that the success of IT SD function hinges on the effectiveness of using knowledge resources (often referred to KACE) in addressing IT incidents (Cater-Steel, Toleman, & Tan, 2006; Jantti & Eerola, 2006; Rance, Rudd, Lacy, & Hanna, 2011; Schaefer & Woo, 2010; Steinberg, Rudd, Lacy, & Hanna, 2011; C. R. Trusson et al., 2014). In the literature, KACE is the most important part of any KM initiative (Alavi & Tiwana, 2002). According to Shahsavarani and Ji (2011) KACE in ITSM is still neglected. A review of studies published between 2000 and 2017 revealed limited interest KACE in ITSM as the focus was mainly given to knowledge creation and sharing in ITSM. For instance, Graupner et al. (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 in some situations there is no knowledge base available for the IT service desk staff, which causes difficulties. In fact, nowadays knowledge is available in

myriad forms (e.g. SKMS, YouTube, personal knowledge), but the application of that knowledge what is lacking.

Since 2014, a number of active researchers in the ITSM field have also provided contributions to the earlier research. For instance, Conger and Probst (2014) tried to reduce the cost and time of IM by converting tribal knowledge to organisational knowledge. The focus of this research was on KS. Similarly, Trusson et al. (2014) examined KS using ITSM tools. They focused on an important aspect, the dysfunctional process conflict in ITSM. In this study, they collected data from IT workers and IT managers. They found that the tension between empowering workers and expecting them to apply or use knowledge is a serious concern for IT managers. To examine this concern, further research may be needed to investigate how IT service staff can apply the knowledge that is made available, especially for the IM process. According to several recent studies, KACE in IM, as an important new area of research in ITSM, is still overlooked (Bezerra, Pinheiro, & Albuquerque, 2014; Ortiz & Benitez, 2014).

Organisational knowledge creation theory (OKCT) has been used to explain many aspects in different areas. Several researchers have made contributions in this area (Alavi & Tiwana, 2002; Nonaka, Toyama, & Konno, 2005; Nonaka, Von Krogh, & Voelpel, 2006). This theory has been used to explain a diverse range of subjects such as innovation and technology management, leadership and management information systems (Nonaka et al., 2006). However, it has been rarely used in ITSM research (Shahsavarani & Ji, 2011). What is more, ITSM scholars used OKCT to explain KC and KS only, but have yet to address KACE in ITSM. KACE is an important area of research in ITSM if an organisation seeks efficiency and cost reduction of its IT services (e.g. cost of handling an incident). According to Kim and Lee (2010, p. 136) “the effective application of knowledge has helped companies improve their efficiency and reduce costs”. In this aspect, Teo and Bhattacharjee (2014) argue that creating value for the organisation are tightly related to the effectiveness in its knowledge implementation process.

The processes of socialisation and externalisation described by Nonaka et al. (2005) are deemed to be important for knowledge implementation. Firstly, socialisation refers to the way in which individuals can share their knowledge when they meet each other in a place. For instance, room meetings, offices, websites and emails allow employees to apply knowledge with their colleagues through shared activities or spending time (Nonaka et al., 2005; Nonaka,

Toyama, & Nagata, 2000). Through this process, newcomers can gain skills through apprenticeships, and by action and/or interaction with experienced workers (Becerra-Fernandez & Sabherwal, 2001). Secondly, externalisation is the process of creating explicit knowledge from tacit knowledge through the use of metaphors, models and analogies (Birasnav, 2014). This involves techniques that translate knowledge into understandable forms such as images, words, and visuals (Wang, Noe, & Wang, 2014). Individuals can apply other's knowledge by following these forms when they perform their tasks and through the sequential use or practice. This repeated use of knowledge can be understood as KA because individuals in fact are applying tacit knowledge using explicit forms.

Likewise, the key knowledge actions of internalisation and combination are also important for knowledge implementation. Internalisation refers to 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, IT service desk employees for example, would have an opportunity to apply their personal knowledge in handling complex and time consuming IT incidents (e.g. security incident). This is a sort of knowledge creation, but it could be a method of knowledge application as well, because Alavi and Tiwana (2002) argued that through this process, existing knowledge could be used for addressing real problems. Combination on the other hand converts explicit knowledge into more complex sets of explicit knowledge (Nonaka et al., 1998). It involves reorganizing existing knowledge to create new knowledge (Nonaka, 1994). It focuses on facilitating coordination, communication and knowledge integration (KI) at the individual's level as well as organisational level (Becerra-Fernandez & Sabherwal, 2001). Thus, internalisation and combination can effect KACE in IT service desk function (Löhe & Legner, 2013). This may be attributable to the notion that aggregating knowledge embraces KAC also, especially for tacit knowledge.

All of the aforementioned factors could affect KACE in IT service desk function. Each Factor is expected to foster the application of existing knowledge (i.e. SKMS and personal knowledge) allowing individuals to use that knowledge to achieve ITSM goals. Again, our focus in this paper is on KACE in IT service desk function rather than on ITSM in general.

## **1.2 Research method**

In order to answer the research question, data was collected from IT service desk managers through a set of semi-structured telephone interviews. IT service desk managers were chosen as respondents as they

should be able to provide data required for the purpose of the paper. The sample was, for this reason, based on a judgement or purposeful selection of participants (Marshall, 1996). With this regards, Flyvbjerg (2006) calls this as “information-oriented selection” which means that the sample is selected based on the expectations of having rich information about the phenomenon of interest. This selection process was supported by previous studies in information system domain (Becerra-Fernandez & Sabherwal, 2001; Grimsley & Meehan, 2007; Ho, Ang, & Straub, 2003). In fact, a group of universities were selected as a sample for this study on the basis of their relevance to the main research question (Mason, 2017). The identified universities thereafter were contacted with request for participation along with information about the research paper. An interview protocol was developed based on previous studies in order to confirm/refute factors that could influence KACE in ITSM.

### **1.2.1 Data analysis**

Before the data analysis started, all interviews were listened several times in order to identify elements that specifically related to the study objective. The interviews were then coded and verbatim transcribed, reviewed by the interviewer himself to ensure that the transcriptions reflected the actual meaning of the interview as far as possible. The text was then analysed and categorized following the thematic approach. After that, manual content analysis was used to categorise data in themes that most frequently mentioned by participants and consistent with factors listed through the literature review. Finally, Leximanacer, a text analytics tool which produces thematic map, was used to further confirm the data analysis. After the analysis, the researcher listened to the interviews once again, to ensure all important insights had been included in the analysis.

#### **1.2.1.1 Manual content analysis**

The first stage of the data involved manual content analysis of the interview transcriptions. Manual content analysis refers to the process in which qualitative data can be categorised under emerging themes (Speziale, Streubert, & Carpenter, 2011). In this aspect, Lewis, Zamith, Hermida, and Media (2013) define this approach as way for making qualitative data understandable and meaningful by identifying themes within text and for building evidences that support the research question. Following the recommendation of Miles, Huberman, and Saldana (2013), three steps were employed for the manual content analysis process. The steps are data reduction, data display and drawing conclusions or verification.

Data reduction was intended to elicit insights and meanings from the speech of participants, allowing the researcher to extract maximum results from interviews throughout the process of identifying, abstracting, transforming and simplifying the raw data (Miles et al., 2013). Data display was the second stage. In this stage, concepts and thoughts were arranged in matrixes of rows and columns that are designed based on the previously created summery sheets and

pattern codes. In this paper, this step was used for gaining conceptual coherence by collecting concepts that match each theme (Alhojailan, 2012). This would enabled the researcher to spot any similarities, differences and other interrelationships in the data that is collected (Alhojailan, 2012). According to Muijs (2010), data display helps in increasing the overall reliability of the research by providing evidences, support and validate interpretations. In this paper, data was displayed in narrative text and quotations. Finally, data drawing and conclusion was used for creating abridgements or summaries and coding of previous steps in order to generate ideas and meanings. This included establishing and grouping categories of information that can go together, identifying relationships among constructs, the process of identifying similar statements and contrasting, and building conceptual coherence and consistency (Miles et al., 2013). According to Speziale et al. (2011), this step would be essentials for assessing the validity of the findings.

#### **1.2.1.2 Computer-aided content analysis**

Leximancer was used for generating a diagrammatic view of the data and for visual demonstration of how different concepts and themes are related in order to draw a comprehensive picture of evidences in summarised from (Beattie, McInnes, & Fearnley, 2004; Beattie & Thomson, 2007; Clatworthy, Jones, & research, 2003; Hussainey, Schleicher, Walker, & research, 2003; Thomas, 2014). Two sequential stages of co-occurrence data extraction: semantic and relational were employed (Smith & Humphreys, 2006; Thomas, 2014). Semantic extraction was used for extracting data from the frequencies of word co-occurrences in the actual texts (Landauer & Dumais, 1997). This stage provided a meaningful name for each concept as a way to allow interpretation and visualization of data (Smith & Humphreys, 2006). Relational extraction on the other hand was conducted for providing further insights and inductions (Krippendorff & Bock, 2009). According to Thomas (2014), insights and inductions are needed for providing many general principles based on a set of fact. These principles are important as they show how closely concepts are linked to one another and how other significant terms are related to the phenomenon of interest being examined (Smith, 2003).

#### **1.2.2 Results**

In order to produce more robust results and eliminate the less relevant ones, the number of concepts was initially set to 30 as Leximancer can generate very lengthy concept lists (Thomas, 2014). The final list contained 15 concepts, with relative counts ranging from 286 instances (100%) to 17 instances (5.94%). The list in Table 1 presents concepts in rank order according to the number of occurrence of the each concept in the transcriptions of the interviews in the

dataset. From the table, it is clear that the foremost concept in the list was “to Socialising”, mentioned 286 times in the interviews. The second and the third concepts reported by participants was “Talking’ and “chatting”, with a count of 223 and 201 respectively. The results in the table reveal that various types of experience of mixing with people were frequently mentioned and were found relevant to KACE in IT service desk function.

Table 1: Ranked concept list			
Concept	Absolute count	Relative count %	
Socialising	286	100	
Talking	223	77.97	
Chatting	201	70.28	
Acceptance	186	65.03	
Acting	186	65.03	
Opinion	171	59.79	
walking	145	50.70	
befriend	133	46.50	
Working	117	40.91	
Training	93	32.52	
Learning	68	23.78	
Practicing	68	23.78	
Discussion	49	17.13	
Absorbing	31	10.84	
Teaching	17	5.94	

As the content analysis results above were based merely on the count of concepts or words in the transcriptions of the interviews, rational analysis was then employed to provide more details. Rational analysis is important to explain how concepts are related to one another and how themes appear close to each other (Thomas, 2014).

Using relational analysis, Figure 1 shows that the terms most closely connected to KACE in addressing IT incidents management are Socialisation, Externalisation, Internalisation and Combination.



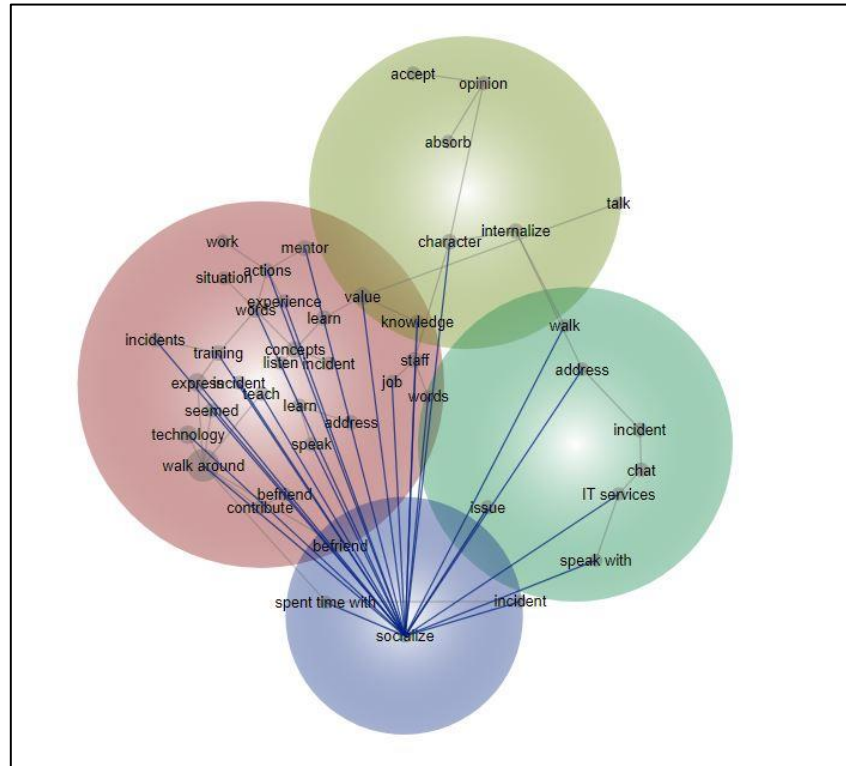


Figure 3: Leximancer map

In interpreting these results, the insights from IT service desk managers and the theoretical expectations, the factors that affect KACE of IT service desk function were placed in four themes: Socialisation, Externalisation, Internalisation and Combination. However, as IT service desk function is a rapidly changing function in ITSM, the four factors resulted from the qualitative study, do not sufficiently explain or offer insights into the phenomenon of interest outside educational sector in Australia.

### 1.3 Discussion and conclusion

From the manual and computer-aided data analysis, it is apparent that IT practitioners recognise the four abovementioned factors to be integral for KACE of IT service desk function. Despite the importance of KACE for ITSM, the review of the literature in that aspect suggests that there is a dearth of empirical research concerning that matter. Jäntti and Hotti (2016) and C. Trusson et al. (2017) also support this view and suggest that the KAC, which allows IT staff members in organisation to fulfil their duties, has been neglected. The primary contribution of this paper is that ITSM managers in higher education sector in Australia could the process of Socialisation, Externalisation, Internalisation and Combination to enhance the performance of IT service desk function. A further key aim and contribution of the paper was show how Leximancer can be

utilised in automatic content analysis of qualitative data in the context of knowledge management and ITSM studies through using two stages of data extraction. The findings complement and contextualise a growing body of literature that have emerged and written in both knowledge management and IT service management (Conger & Probst, 2014; Cronholm & Salomonson, 2014; C. R. Trusson et al., 2014). 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 the four emerged factors in this study proactively affect KACE in IT service desk function.

In conclusion, the main argument in this study thus has been strongly supported through specific comments made by participants in a qualitative study. Four themes were emerged from data including: socialisation, externalisation, internalisation and combination. Considering the value of these factors in improving KACE of IT service desk function, we urge IS researchers to move beyond those debates and deeply understand why individuals are sometimes reluctant to use their personal knowledge in addressing complex or time consuming IT incidents?

- Alavi, M., & Tiwana, A. (2002). Knowledge integration in virtual teams: The potential role of KMS. *Journal of the American Society for Information Science and Technology*, 53(12), 1029-1037.
- Alhojailan, M. I. (2012). Thematic analysis: A critical review of its process and evaluation. *West East Journal of Social Sciences*, 1(1), 39-47.
- Beattie, V., McInnes, B., & Fearnley, S. (2004). *A methodology for analysing and evaluating narratives in annual reports: a comprehensive descriptive profile and metrics for disclosure quality attributes*. Paper presented at the Accounting Forum.
- Beattie, V., & Thomson, S. J. (2007). *Lifting the lid on the use of content analysis to investigate intellectual capital disclosures*. Paper presented at the Accounting Forum.
- Becerra-Fernandez, I., & Sabherwal, R. (2001). Organizational knowledge management: A contingency perspective. *Journal of management information systems*, 18(1), 23-56.
- Bezerra, G. d. T. V., Pinheiro, V. C. M., & Albuquerque, A. B. (2014). *Incident Management Optimization through the Reuse of Experiences and Natural Language Processing*. Paper presented at the International Conference on the Quality of Information and Communications Technology (Quatic), Braga, Portugal.
- Birasnav, M. (2014). Knowledge management and organizational performance in the service industry: The role of transformational leadership beyond the effects of transactional leadership. *Journal of Business Research*, 67(8), 1622-1629.
- Cater-Steel, A., Toleman, M., & Tan, W.-G. (2006). Transforming IT Service Management – the ITIL Impact. *Australasian Conference on Information Systems*.
- Clatworthy, M., Jones, M. J. J. A., & research, b. (2003). Financial reporting of good news and bad news: evidence from accounting narratives. *Accounting and Business Research*, 33(3), 171-185.
- Conger, S., & Probst, J. (2014). Knowledge Management in ITSM: Applying the DIKW Model. In *Engineering and Management of It-Based Service Systems*. Verlag Berlin: Springer.
- Cronholm, S., & Salomonson, N. (2014). Measures that matters: service quality in IT service management. *International Journal of Quality and Service Sciences*, 6(1), 60-76.
- Davenport, T. H., & Prusak, L. (1998). *Working knowledge: How organizations manage what they know*. USA: Harvard Business Press.
- Flyvbjerg, B. (2006). Five misunderstandings about case-study research. *Qualitative inquiry*, 12(2), 219-245.
- Governance and The Law*. (2017). Retrieved from Washington:
- Grant, R. M., & Baden-Fuller, C. (2004). A knowledge accessing theory of strategic alliances. *Journal of Management Studies*, 41(1), 61-84.
- Graupner, S., Basu, S., & Singhal, S. (2009). *Collaboration Environment for ITIL*. Paper presented at the Integrated Network Management-Workshops, New York.
- Grimsley, M., & Meehan, A. (2007). e-Government information systems: Evaluation-led design for public value and client trust. *European Journal of Information Systems*, 16(2), 134-148.
- Ho, V. T., Ang, S., & Straub, D. (2003). When Subordinates Become IT Contractors Persistent Managerial Expectations in IT Outsourcing. *Information Systems Research*, 14(1), 66-86.
- Hussainey, K., Schleicher, T., Walker, M. J. A., & research, b. (2003). Undertaking large-scale disclosure studies when AIMR-FAF ratings are not available: the case of prices leading earnings. *Accounting and Business Research*, 33(4), 275-294.
- Jantti, M., & Eerola, A. (2006). *A Conceptual Model of IT Service Problem Management*. Paper presented at the International Conference on Service Systems and Service Management, France.

- Jäntti, M., & Hotti, V. (2016). Defining the relationships between IT service management and IT service governance. *Information Technology and Management*, 17(2), 141-150.
- Kim, S., & Lee, H. (2010). Factors affecting employee knowledge acquisition and application capabilities. *Asia-Pacific Journal of Business Administration*, 2(2), 133-152.
- Krippendorff, K., & Bock, M. A. (2009). *The content analysis reader*: Sage.
- Landauer, T. K., & Dumais, S. T. (1997). A solution to Plato's problem: The latent semantic analysis theory of acquisition, induction, and representation of knowledge. *Psychological Review*, 104(2), 211-240.
- Lewis, S. C., Zamith, R., Hermida, A. J. J. o. B., & Media, E. (2013). Content analysis in an era of big data: A hybrid approach to computational and manual methods. 57(1), 34-52.
- Liang, W., & Baozhang, W. (2009). *Research on Enterprise ITSM Knowledge Management Model*. Paper presented at the International Conference on Management and Service Science, Wuhan, China.
- Löhe, J., & Legner, C. (2013). Overcoming implementation challenges in enterprise architecture management: a design theory for architecture-driven IT Management (ADRIMA). *Information Systems and e-Business Management*, 12(1), 101-137. doi:10.1007/s10257-012-0211-y
- Marshall, M. N. (1996). Sampling for qualitative research. *Family Practice*, 13(6), 522-526.
- Mason, J. (2017). *Qualitative researching*. London: Sage Publications.
- Miles, M. B., Huberman, A. M., & Saldana, J. (2013). *Qualitative data analysis*. London: Sage Publication.
- Muijs, D. (2010). *Doing quantitative research in education with SPSS*. London: Sage Publications Ltd.
- Nabiollahi, A., Alias, R. A., & Sahibuddin, S. (2011). Involvement of Service Knowledge Management System in Integration of ITIL V3 and Enterprise Architecture. *American Journal of Economics and Business Administration*, 3(1), 165-170.
- Nickerson, J. A., & Zenger, T. R. (2004). A knowledge-based theory of the firm—The problem-solving perspective. *Organization Science*, 15(6), 617-632.
- Nonaka, I. (1994). A Dynamic Theory of Organizational Knowledge Creation. *Organization Science*, 5(1), 14-37.
- Nonaka, I., Toyama, R., & Konno, N. (2005). SECI, ba and leadership: a unified model of dynamic knowledge creation. *Knowledge Management: Critical Perspectives on Business and Management*, 2, 317.
- Nonaka, I., Toyama, R., & Nagata, A. (2000). A Firm as a Knowledge-creating Entity: A New Perspective on the Theory of the Firm. *Industrial and Corporate Change*, 9(1), 1-20.
- Nonaka, I., Von Krogh, G., & Voelpel, S. (2006). Organizational knowledge creation theory: Evolutionary paths and future advances. *Organization Studies*, 27(8), 1179-1208.
- Ortiz, S. S., & Benitez, A. P. (2014). FOSS Service Management and Incidences. In *Open Source Software: Mobile Open Source Technologies* (pp. 76-79). Berlin Heidelberg: Springer.
- Rance, S., Rudd, C., Lacy, S., & Hanna, A. (2011). *ITIL Service Transition*. London: TSO.
- Schaefer, B., & Woo, M. (2010). Structuring the IT Organization for Cloud Services. *EDUCAUSE Center for Applied Reserach, Research Bulletin*, 2010(12).
- Shahsavarani, N., & Ji, S. (2011). *Research in Information Technology Service Management (ITSM): Theoretical Foundation and Research Topic Perspectives*. Paper presented at the International Conference on Information Resources Management (Conf-Irm), Seoul, South Korea.
- Smith, A. E. (2003). *Automatic extraction of semantic networks from text using Leximancer*. Paper presented at the Proceedings of the 2003 Conference of the North American

- Chapter of the Association for Computational Linguistics on Human Language Technology: Demonstrations.
- Smith, A. E., & Humphreys, M. S. (2006). Evaluation of unsupervised semantic mapping of natural language with Leximancer concept mapping. *Behavior research methods*, 38(2), 262-279.
- Speziale, H. S., Streubert, H. J., & Carpenter, D. R. (2011). *Qualitative research in nursing: Advancing the humanistic imperative*: Lippincott Williams & Wilkins.
- Steinberg, R., Rudd, C., Lacy, S., & Hanna, A. (2011). *ITIL Service Operation*. London: TSO.
- Tanovic, A., & Mastorakis, N. E. (2016). Advantage of using service desk management systems in real organizations. *International Journal of Economics and Management Systems*, 1, 18-86.
- Teo, T. S. H., & Bhattacharjee, A. (2014). Knowledge transfer and utilization in IT outsourcing partnerships: A preliminary model of antecedents and outcomes. *Information & Management*, 51(2), 177-186.
- Thomas, D. A. (2014). Searching for significance in unstructured data: text mining with leximancer. *European Educational Research Journal*, 13(2), 235-256.
- Trusson, C., Hislop, D., & Doherty, N. F. (2017). The rhetoric of “knowledge hoarding”: a research-based critique. *Journal of Knowledge Management*, 21(6), 1540-1558.
- Trusson, C. R., Doherty, N. F., & Hislop, D. (2014). Knowledge sharing using IT service management tools: conflicting discourses and incompatible practices. *Information Systems Journal*, 24(4), 347-371.
- van Bon, J., de Jong, A., Kolthof, A., Pieper, M., Tjassing, R., Veen, A. v. d., & Tienke Verheijen. (2007). *Foundations of ITIL V3*: Van Haren Publishing.
- Wan, J., & Jones, J. D. (2013). Managing IT service management implementation complexity: from the perspective of the Warfield Version of systems science. *Enterprise Information Systems*, 7(4), 490-522.
- Wang, S., Noe, R. A., & Wang, Z.-M. (2014). Motivating knowledge sharing in knowledge management systems a quasi-field experiment. *Journal of Management*, 40(4), 978-1009.